Client	Deicorp Projects Petersham Pty Ltd
Location	3-7, 13-17 Regent Street, 287-309 Trafalgar Street & 16-20 Fisher Street Petersham
Document Type	Arboriculture Impact Assessment.
Date/Time	10th November 2016.

The Ents Tree Consultancy.
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1. Contents

2 Introduction

2.1 On the 2nd February 2016 Deicorp Projects Petersham Pty Ltd engaged The Ents Tree Consultancy to complete an Arboricultural Impact Assessment for the proposed development site at Petersham RSL. This report will assess the trees that are on or adjoining the proposed site which may be impacted upon by the works or the associated activities. The client stated that the trees have been nominated to be inspected in relation to a development application which involves the demolition of the existing buildings / structures and the construction of new building structures and some landscape works. Consultation was sought with the client about the number and position of trees to be inspected prior to a survey being completed.

2.2 The site inspection of the nominated trees occurred on the 5th February 2016. The report has been updated 10th November 2016. The client was not present for the site inspection but had previously issued a verbal brief providing background information in regards to the trees on the site. This tree report will detail the condition of the nominated trees, observe the proposed works and recommend removal or retention of the trees on site. Recommendations for removal or retention will be based on the proposed works and compatibility of the trees with the works as well as the trees hazard potential or ULE Rating. The report will also assess any potential impacts for tree nominated to be retained and attempt to remove or minimise them where possible. Recommended tree protection measures as set out in the Australian Standard AS4970 Protection of Trees on development sites will be nominated as required.

2.3 The purpose of this report is to assess the proposed works as well as the health and suitability of the tree nominated at the time of the inspection. The report will also provide tree management options for trees on the site in regards to the proposed works. In this report the client has requested several trees be removed. The Tree Protection Guidelines will be discussed for all trees nominated to be retained. The information in this report will be based on the information presented by the client at the time of the inspection as well as the site inspection. The Australian Standard AS4970 Protection of Trees on development sites will be used as a guide to managing the site. Additional Tree Protection measures are included in appendix 8.

2.4 To achieve the objectives of the report, the trees will be assessed noting the species, size, general condition. The trees will be assessed using the internationally recognised VTA assessment method for above ground parts only. The trees characteristics and eventual size will be taken into consideration as will the trees position in relation to structures and hard scapes. Recommendations will be outlined in section 5 of the report. A detailed list of the trees surveyed will be provided in Appendix 2 of the report and an existing numerical system has be used to identify them for this report and future reference on this job site.

3 Methodology

3.1 The trees were assessed using the standard Visual Tree Assessment technique (VTA). The trees were assessed from the ground for the purpose of this report.

3.2 A Lufkin 6.5m diameter tape was used to obtain the Diameter at breast height (DBH) as recommended at 1.4 metres unless otherwise stated due to variations in the trees form.

3.3 The height of the trees was estimated and the spread of the trees canopy was paced out.

3.4 A Canon 5D Digital camera with a 24-105mm lens was used to take all photographs in this report.

3.5 The ULE rating system has been used as a guide to assist in determining the Useful Life Expectancy of the trees surveyed. Refer to Appendices 1.

4 Discussion

4.1 The trees nominated to be inspected are located site on the land owned by Petersham RSL Regent Street Petersham. The land owned by Petersham RSL has been divided into 3 sites for the purpose of the development. Some of the trees are significant in the immediate landscape and some are likely to be considered important in the local areas landscape in terms of amenity and function. The trees are located on partially sheltered site with some protection from surrounding structures, trees and topography. The soil on site appears to be a clay loam that has been disturbed previously when the existing building and hardscapes were built.

4.2 Based on the information provided by the client, the works involve the demolition of the existing buildings and built structures with the construction of new buildings with a new landscape plan. To achieve this, most of the existing trees on site are proposed to be removed to allow the works to proceed. Some of the trees adjoining the site are proposed to be removed, whilst others are proposed to be retained and protected for the duration of the works by separating them from the works site. All trees that are nominated to be retained on the adjoining site will be kept in good condition for the duration of the works using the Australian Standard AS4970 2009 Protection of trees on development sites for the basis of all tree management practices.

4.3 **Site 1** is the section of the job to the North of Fisher Street and to the East of Regent Street. The works involve the demolition of the existing building and a construction of a new building with some landscape works. The trees adjoining the site are small mature council street trees. These trees are not compatible with the proposed works and are proposed to be removed and replaced. The trees proposed to be removed are trees 7-14. The removal of these trees will allow for the replacement of the trees with new specimens within the property. The removal of the trees in the council streetscape will provide an opportunity for creating a uniform avenue planting in the streetscape.

4.4 **Site 2** is located to the South of Fisher Street, to the North of New Canterbury Road and to the East of Regent Street. The area is currently a carpark which contains a mixture of semi mature and mature trees. The trees are located both on and adjoining the site. Street tree 15 is proposed to be removed. All of the other street trees 31 to 39 are proposed to be retained and protected for the duration of the works. The majority of the trees on the site, 40-64 and trees 72 -83 are proposed to be removed for the purpose of the works. These trees will be replaced within a new landscape plan. The trees that are proposed to be retained on the site are trees 46, 47, 65 – 69, 71 & 72. These trees will need appropriate tree protection installed prior to the works commencing.

4.5 Of the trees nominated to be retained on site trees 46, 65-69 and trees 70 & 71 have been assessed as having a minor disturbance proposed to their projected tree protection zone. Tree 47 will have a slightly higher rate of disturbance with 13%, an acceptable amount of disturbance for a tree of this species and this age. Tree protection for trees 46 & 47 will be formed by hoarding to the west and the south. The streetscape outside of the hoarding, including the footpaths will remain active and will not be disturbed. The areas of the tree protection zone within the hoarding to the south, north and east will need to be protected by either 1.8m chainmesh fencing to .5m off the edge of any built structure or by a combination of trunk wraps and ground protection covering the tree protection zones to the edge of the proposed excavation. Tree 65-69, tree 70 & 71 will require tree protection in the form of 1.8m chain mesh fencing to the West isolating the tree protection zone from the works. The fence should extend to .5m from the proposed works to the west and to the edge of the tree protection zone to the north and the south, meeting the boundary fence to the east.

4.6 The council street trees 36-39 are young trees to the south of the site on the New Canterbury Road Frontage. These trees will have no disturbance to their projected root zones and will be outside of the hoarding separating them from the works. If tree protection is required 1.8m chain mesh fencing should be installed within the nature strip isolating the tree from the works whilst allowing for continued pedestrian and vehicular access as this is a busy street frontage.

4.7 Trees 31 to 35 on the Regent Street frontage will have root disturbances proposed to the eastern aspect within the site boundary. The nature strip area and the streetscape to the western aspect will not be disturbed according to the client. Trees 34 & 35 will have less than 10% root disturbance which is considered a minor disturbance. Trees 31 and 33 have a calculated disturbance of 18 & 14% respectively a disturbance that is considered to be within the acceptable range. Tree 32 has a calculated root disturbance of 27% which is at the upper limit of what is considered to be acceptable before measurable impacts on the trees health are anticipated. All of these trees will need to be managed with care to ensure that the works are completed by sympathetic construction techniques.

4.8 The proposed boundary / retaining wall along the western boundary of the site is within the structural root zone of trees 31-34. The wall that is proposed to be built on the western boundary must be constructed using a pier and beam footing. The piers are to be excavated by hand under the supervision of the AQF level 5 Site Arborist. The beam must be at ground level or root mapping will be required to check the desired levels are able to be achieved without severing roots 50mm+. The entry path within the structural root zone to the SE of tree 32 must be excavated by hand to ascertain if there are any structural roots at the desired levels. A customised structure may be required if roots 50mm+ are located and cannot be severed. These works must be supervised and recorded by the AQF level 5 site Arborist.

4.9 Trees 31 to 35 will require tree protection to separate them from the works site and works activities. The streetscape, nature strip and footpath are reported by the client to remain undisturbed. The tree protection zone in these areas will operate as normal with continued pedestrian and vehicular access. The area to the eastern aspect within the site boundary will be the works zone. This area will be separated from the trees by the hoarding which will be located on the boundary line. Tree protection for trees 31 to 35 should consist of either 1.8m chainmesh fencing to .5m off the edge of any built structure or by a combination of trunk wraps and ground protection covering the tree protection zones to the edge of the proposed excavation to the east. Any excavations within 4m of these trees will need to by hand under the supervision of the AQF level 5 site Arborist.

4.10 **Site 3** is bounded by Trafalgar Street to the north, Regent Street to the east and Fisher Street to the south. The trees on and adjoining the site are a combination of semi-mature to mature trees. The majority of trees on and adjoining the site are proposed to be removed. The trees proposed to be removed are trees 1-6, 16, 19-22, 24-29. It is envisaged that the street trees removed will be replaced with a uniform planting at the end of the works period. The trees removed on site will be replaced within the new landscape plan.

4.11 **Trees 17, 18 & 30** are semi mature council street trees located on to the south of the works site on the Fisher Street Frontage. Tree 23 is located to the East of the site on the Regent Street frontage. All trees have been calculated to have a disturbance of less than 10% of their projected tree protection zone which is considered a minor disturbance relation to AS4970 the Protection of Trees on Development Sites. There are no long term impacts on the health of any of these trees anticipated. To protect the trees from the works tree protection will be required. Trees 17, 18 and 30 will be separated from the works by the hoarding on the boundary. To allow for continued pedestrian access and vehicular movement trunk wraps should be used. The tree protection areas within the works site can either be protected by 1.8m chain mesh fencing or a combination of trunk wraps and ground protection. The tree protection should cover the tree protection zone on the site and stop .5m from the proposed structure.

4.12 **Tree 23** is a mature palm tree that has a disturbance planned to occur within its tree protection zone and structural root zone to the west of the tree. The disturbance to both areas is limited and there are no significant impacts anticipated for this tree. The pruning of the palm trees root mass will need to be completed by hand under the supervision of the AQF level 5 site Arborist. Tree protection for this tree should consist of trunk wraps to protect the trees vascular tissue from the surrounding works activities. The existing footpath to the east of the tree will remain in place and active for the duration of the works. All areas to the west of the tree within the works site are proposed to be built upon and no tree protection will be required in these areas.

5 Recommendations

5.1 After reviewing the site and the information provided by the client it is my recommendation that the works proceed with the following recommendations

5.2 To allow the works to proceed trees 1 & 16, trees 19 – 22, trees 24-29, trees 40 -45, trees 48-64 and trees 72 - 83- are proposed to be removed. An effort to replace these tree should be made within the new landscape plan. Trees 17, 18, 23, 30, 31-39, 46, 47 and trees 65 - 71 are proposed to be retained and protected for the duration of the works.

5.3 Any excavation within or at the edge of nominated Structural Root Zone of any tree will need to be completed under the supervision of the AQF level 5 site Arborist. If any roots 50mm+ are located the AQF level 5 Arborist should be consulted. If the root cannot be retained, the root is to be severed cleanly if deemed appropriate by the AQF level 5 Arborist. All works are to be documented by the AQF level 5 site Arborist. It will be the clients responsibility to contact the site arborist and to co-ordinate the works.

5.4 It is recommended that all tree protection measures are in place as described in section 4 of the report prior to the commencement of any further works. The AQF level 5 site Arborist will need to sign off on the tree protection measures prior to works recommencing. Monthly inspections will be required to monitor the works and ensure that the tree protection is in place and the trees are being cared for adequately.

5.5 At the end of the works period the tree will be inspected by an AQF 5 Arborist to determine if the trees have been maintained adequately. If this is done the compliance certificate will be issued. If trees have been damaged or breaches of the Australian Standards have occurred council will be contacted for further advice.

5.6 It is recommended that construction proceeds using the Australian Standard AS4970 2009 Protection of trees on development sites as a basis for tree protection on the site as well as the site specific instructions listed in section 5 of this report. Additional Tree Protection measures are listed in Appendix 7 of the report to assist in the care of the trees on site.

Please do not hesitate to call ***0422 265 128*** if you have any questions regarding the contents of this report.

Regards

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Disclaimer

All trees have been assessed based on the information and facts of the site and as presented by the client or relevant parties at the time of inspection. No responsibility can be taken for incorrect or misleading information provided by the client or other parties. The nominated tree/s are assessed for biological requirements and hazard potential with reasonable care. The trees are assessed from the ground and by visual means only unless otherwise stated. All tree protection and tree preservation measures are designed to minimise the damage to the tree/s or to reduce the hazard potential of the tree/s. No responsibility can be taken by the author of this report for future damage to structures by the existing trees or planted trees. Trees are inherently dangerous, therefore will always have a hazard potential. Trees fail in ways that are not predictable or fully understood. There is no guarantee expressed or implied that failure or deficiencies may not arise of the subject trees in the future. No responsibility is accepted for damage to property or injury/death caused by the nominated tree/s.

Appendix 1 ULE Rating

Useful Life Expectancy (ULE): Useful life expectancy refers to an expected period of time the tree can be retained within the landscape before its amenity value declines to a point where it may detract from the appearance of the landscape and/or becomes potentially hazardous to people and/or property. ULE values consider tree species, current age, health, structure and location. ULE values are based on the tree at the time of assessment and do not consider future changes to the tree's location and environment which may influence the ULE value.

Category rating:	Category definition in years:
0	Immediate removal
1	0-5 Years
2	5-10 Years
3	10-20 Years
4	20-30 Years
5	30-50 Years
6	>50 Years

Appendix 2 Assessment of Trees

Tree No	Species	Height (m)	DBH* & DAC**	Canopy Spread (m)	TPZ ***	Health	Structure	ULE Rating ***	Stars Rating ****	Observations and comments
1	*Fraxinus ornus* Manna Ash	3	.15 DAC .20	3	2 SRZ 1.7	A	A	5	L	This is a small tree located on site the council streetscape.
2	*Fraxinus ornus* Manna Ash	4	.24 DAC .30	5	3 SRZ 2	A	A	5	L	This is a small tree located on site the council streetscape. Crown .5m over the property boundary.
3	*Callistemon viminalis* Bottle Brush	6	.35 DAC .45	7	4.8 SRZ 2.35	A	Ba	5	L	This tree is located on the council nature strip and has its crown .5m over the site boundary.
4	*Callistemon viminalis* Bottle Brush	4	.24 DAC .35	4	3 SRZ 2.15	A	Ba	5	L	This tree is located on the council nature strip.
5	*Callistemon viminalis* Bottle Brush	8	.41 DAC .50	8	4.8 SRZ 2.5	A	Ba	5	L	This tree is located on the council nature strip and has its crown 2m over the site boundary at approximately 3m high.
6	*Callistemon viminalis* Bottle Brush	7	.35 DAC .45	8	4.8 SRZ 2.35	A	Ba	5	L	This tree is located on the council nature strip and has its crown 2m over the site boundary.
7	*Melaleuca bracteata* Black Tea Tree	8	.39 DAC .45	7	4.8 SRZ 2.35	A	A	5	L	A council street tree.
8	*Melaleuca bracteata* Black Tea Tree	8	.38 DAC .45	6	4.8 SRZ 2.35	A	A	5	L	A council street tree, lopped for power lines.
9	*Melaleuca bracteata* Black Tea Tree	8	.32 DAC .40	6	3.75 DAC 2.25	A	A	5	L	A council street tree.
10	*Melaleuca bracteata* Black tea tree	7	.27, .21 DAC .35	6	5 SRZ 2.15	A	A	5	L	A council Street Tree
11	*Zelkova serrata* Japanese Elm	8	2 x .10, .15 DAC .30	7	3.6 SRZ 2	A	A	5	L	This council street tree has a wound at the base from 1.3-1.5m.
12	*Pyrus calleryana* Ornamental Pear	5	.08 x 2 DAC .15	4	2 SRZ 1.5	A	A	4	L	This is a council street tree.

Tree No	Species	Height (m)	DBH* & DAC**	Canopy Spread (m)	TPZ ***	Health	Structure	ULE Rating ***	Stars Rating ****	Observations and comments
13	*Zelkova serrata* Japanese Elm	5	.10, .08 DAC .20	4	2.4 SRZ 1.7	Ba	Ba	4	L	This council street tree has dieback and appears to be stressed.
14	*Pyrus calleryana* Ornamental Pear	10	.27 DAC .35	5	3 DAC 2.15	A	A	5	L	Council Street Tree
15	*Callistemon viminalis* Bottle Brush	7	2 x .20, .10 DAC .45	5	5.5 SRZ 2.35	A	Ba	5	L	This tree is a council street tree.
16	*Fraxinus ornus* Manna Ash	6	.17 DAC .25	5	2.25 SRZ 1.85	A	A	4	L	This is a council street tree.
17	*Lophostemon confertus* Brush Box	13	.39 DAC .45	7	5 SRZ 2.35	A	A	6	M	A council street tree.
18	*Tristaniopsis laurina* Water Gum	6	2 x .10 DAC .20	4	2.4 SRZ 1.7	A	A	5	L	A council street tree.
19	*Callistemon viminalis* Bottle Brush	7	.17, .20 DAC .35	6	4.2 SRZ 2.15	A	A	5	L	
20	*Callistemon viminalis* Bottle Brush	6	.20 x 2 DAC .35	6	5 SRZ 2.15	A	A	5	L	
21	*Eucalyptus microcorys* Tallowood	18	.67, .55 DAC 1.1	13	14.25 DAC 3.45	A	Ba	5	M	This large tree forks low down with its branches spreading Sth and Nth not able to be pruned 8m from the trees centre.
22	*Eucalyptus microcorys* Tallowood	18	.56, .48, .70 DAC 1.35	13	15 DAC 3.85	A	Ba	5	M	This large tree forks low down with its branches spreading Sth and Nth not able to be pruned 8m from the trees centre.
23	*Syagrus romanzoffiana* Cocos palm	17	.30 DAC .35	6	3.6 SRZ 2.15	A	A	5	L	
24	*Corymbia maculata* Spotted Gum	19	.63 DAC .70	12	7.8 DAC 2.85	A	A	5	M	This tree will require approximately 8m crown clearance to the West
25	*Corymbia citriodora* Lemon scented gum	19	.64 DAC .75	14	7.75 DAC 2.95	A	A	5	M	This tree will require approximately 7 crown clearance to the West

Tree No	Species	Height (m)	DBH* & DAC**	Canopy Spread (m)	TPZ ***	Health	Structure	ULE Rating ***	Stars Rating ****	Observations and comments
26	*Corymbia citriodora* Lemon Scented Gum	18	.47, .50 .69	12	9 SRZ 2.9	A	A	5	M	Requires clearance 4m to the NW from tree for crown.
27	*Eucalyptus botryoides* Southern Mahogany	14	.35, .37, .30 DAC .70	12	8.5 SRZ 2.85	A	Ba	4	L	This tree has been lopped, is suppressed and has fungus present in its crown.
28	*Corymbia citriodora* Lemon Scented Gum	15	.25 DAC .35	8	3 SRZ 2.15	A	Ba	4	L	This tree has a significant wound at the base and is partially suppressed.
29	*Pittosporum undulatum* Sweet Pittosporum	8	.10 x 3 DAC .30	7	3.6 SRZ 2	A	A	4	L	Self-sown tree.
30	*Corymbia citriodora* Lemon Scented Gum	17	.28 DAC .35	7	3.6 SRZ 2.15	A	A	5	L	
31	*Melaleuca quinquenervia* Paperbark	16	.95 DAC 1.1	10	11.5 SRZ 3.5	A	A	5	M	A mature council street tree with some included unions.
32	*Melaleuca quinquenervia* Paperbark	16	1.14 DAC 1.3	11	14 DAC 3.7	A	Ba	4	M	This council street tree has termite damage, included unions and wounds in the primary branches and trunk.
33	*Melaleuca quinquenervia* Paperbark	14	.57 DAC .65	9	6.75 DAC 2.75	A	Ba	5	M	This council street tree is partially suppressed.
34	*Melaleuca quinquenervia* Paperbark	10	.34 DAC .40	6	4.2 DAC 2.25	Ba	Ba	4	L	A mature council street tree with some included unions that is partially suppressed.
35	*Melaleuca quinquenervia* Paperbark	12	.40 DAC .50	8	4.8 SRZ 2.5	A	A	5	M	A mature council street tree with some included unions.
36	*Callistemon viminalis* Bottle Brush	4	.20 DAC .30	3	2.4 SRZ 2	A	Ba	5	L	Young council street tree.
37	*Callistemon viminalis* Bottle Brush	4	.15 DAC .20	2	2 SRZ 1.7	A	Ba	5	L	Young council street tree.

Tree No	Species	Height (m)	DBH* & DAC**	Canopy Spread (m)	TPZ ***	Health	Structure	ULE Rating ***	Stars Rating ****	Observations and comments
38	*Callistemon viminalis* Bottle Brush	4	.20 DAC .30	2	2.4 SRZ 2	A	Ba	5	L	Young council street tree.
39	*Callistemon viminalis* Bottle Brush	3	.20 DAC .30	3	2.4 SRZ 2	A	Ba	5	L	Young council street tree.
40	*Eucalyptus microcorys* Tallowood	19	.99 DAC 1.15	14	12 SRZ 3.5	A	A	5	M	This tree will require a 7m setback for crown clearance.
41	*Eucalyptus cinerea* Argyle Apple	15	.40 DAC .50	6	4.8 SRZ 2.5	Ba	Ba	3	L	This tree is suppressed and appears to be stressed.
42	*Eucalyptus microcorys* Tallowood	14	.35 DAC .45	7	4.2 SRZ 2.35	Ba	Ba	4	L	This tree is suppressed and has a one sided crown.
43	*Eucalyptus microcorys* Tallowood	15	.62 DAC .70	9	7.25 SRZ 2.85	A	A	5	L	
44	*Eucalyptus scoparia Wallangarra White Gum*	13	.25 SRZ .35	5	3 SRZ 2.15	A	Ba	5	L	
45	*Casuarina glauca* She Oak	16	.42 DAC .50	9	5 SRZ 2.5	A	Ba	5	L	This tree has been lopped for power lines.
46	*Casuarina glauca* She Oak	17	2 x .30 DAC .60	9	7.25 DAC 2.75	A	A	5	L	
47	*Liquidambar styraciflua* Liquidambar	14	.38 DAC .45	8	4.75 DAC 2.35	Ba	Ba	4	L	This tree is covered in ivy.
48	*Lophostemon confertus* Brush Box	17	.35 x 2 DAC .60	10	7.5 SRZ 2.7	A	A	6	M	
49	*Brachychiton acerifolious* Flame Tree	8	.19 DAC .25	5	2.4 SRZ 1.85	A	A	5	L	

Tree No	Species	Height (m)	DBH* & DAC**	Canopy Spread (m)	TPZ ***	Health	Structure	ULE Rating ***	Stars Rating ****	Observations and comments
50	*Eucalyptus tereticornis* Red Gum	18	.35 DAC .40	7	4.2 SRZ 2.25	A	A	5	L	
51	*Jacaranda mimosaefolia* Jacaranda	10	.45 DAC .55	8	5.5 SRZ 2.6	A	Ba	5	L	This tree is covered in ivy.
52	*Eucalyptus microcorys* Tallowood	12	.28 DAC .35	7	3.5 SRZ 2.15	A	Ba	5	L	
53	*Plumeria actinophylla* Frangipani	5	.10, .20 DAC .30	5	3.6 SRZ 2	A	A	6	L	
54	*Casuarina glauca* She Oak	10	.17 DAC .25	5	2.25 SRZ 1.85	A	Ba	5	L	This tree is suppressed.
55	*Callistemon viminalis* Bottle Brush	3	.08 DAC .10	2	2 SRZ 1.5	A	A	5	L	
56	*Casuarina glauca* She Oak	9	.10 DAC .15	5	2 SRZ 1.5	A	A	5	L	
57	*Casuarina glauca* She Oak									Dead tree
58	*Casuarina glauca* She Oak	7	.10 x 3 DAC .30	4	3.6 SRZ 2	A	Ba	4	L	This tree has been coppiced and lopped.
59	*Allocasuarina littoralis* Black She Oak	14	.38 DAC .45	7	4.75 DAC 2.35	Ba	Ba	4	L	
60	*Pittosporum undulatum* Sweet Pittosporum	8	4 x .10 DAC .25	6	3.5 SRZ 1.85	A	Ba	3	L	This tree is partially suppressed and has been coppiced.
61	*Eucalyptus microcorys* Tallowood	18	.64 DAC .75	10	7.8 DAC 2.95	A	A	5	M	

Tree No	Species	Height (m)	DBH* & DAC**	Canopy Spread (m)	TPZ ***	Health	Structure	ULE Rating ***	Stars Rating ****	Observations and comments
62	*Cinnamomum camphora* Camphor Laurel	4	.08 DAC .10	3	2 SRZ 1.5	A	Ba	0	L	Self-sown weed that has been coppiced.
63	*Eucalyptus scoparia* Wallangarra White Gum	17	.35 DAC .40	8	4.2 SRZ 2.25	A	Ba	5	L	This tree is partially suppressed.
64	*Eucalyptus scoparia* Wallangarra White Gum	16	.43 DAC .50	8	5.25 SRZ 2.5	A	Ba	5	L	This tree is partially suppressed.
65	*Elaeocarpus reticulatus* Blueberry Ash	5	.10 DAC .15	3	2 SRZ 1.5	A	A	5	L	This tree has been wounded on its trunk.
66	*Elaeocarpus reticulatus* Blueberry Ash	6	.10 DAC .15	3	2 SRZ 1.5	A	A	5	L	This tree has been wounded on its trunk.
67	*Elaeocarpus reticulatus* Blueberry Ash	5	.10 DAC .15	3	2 SRZ 1.5	A	A	5	L	This tree has been wounded on its trunk.
68	*Eucalyptus scoparia* Wallangarra White Gum	17	.45 DAC .55	9	5.5 SRZ 2.6	A	A	5	L	
69	*Allocasuarina littoralis* Black She Oak	13	.33 DAC .40	7	4 SRZ 2.25	A	A	5	L	
70	*Draceana sp*	8	.22 DAC .30	3	2.5 SRZ 2	A	A	5	L	
71	*Plumeria actinophylla* Frangipani	5	2 x .10 DAC .15	4	2 SRZ 1.5	A	A	6	L	
72	*Eucalyptus microcorys* Tallowood	12	.47 DAC .55	8	5.5 DAC 2.6	A	A	5	M	
73	*Syagrus romanzoffiana* Cocos Palm	10	.30 DAC .35	5	3.6 SRZ 2.15	A	A	5	L	

Tree No	Species	Height (m)	DBH* & DAC**	Canopy Spread (m)	TPZ ***	Health	Structure	ULE Rating ***	Stars Rating ****	Observations and comments
74	*Melaleuca quinquenervia* Paper Bark	11	.10, .15 DAC .20	5	3 SRZ 1.7	A	Ba	4	L	This tree has a moderate inclusion at the base.
75	*Casuarina glauca* She Oak	14	.20, 3 x .10 DAC .45	6	5.5 DAC 2.35	A	Ba	5	L	This tree has multiple leaders off the base.
76	*Syagrus romanzoffiana* Cocos Palm	12	.40 DAC .45	5	4.8 SRZ 2.35	A	A	5	L	
77	*Eucalyptus microcorys* Tallowood	15	.45 DAC .55	8	5.5 SRZ 2.6	A	A	5	L	
78	*Melaleuca quinquenervia*	7	.10 DAC .15	4	2 SRZ 1.5	A	A	5	L	
79	*Syagrus romanzoffiana* Cocos Palm	10	.30 DAC .35	5	3.6 SRZ 2.15	A	A	5	L	
80	*Syagrus romanzoffiana* Cocos Palm	10	.30 DAC .35	5	3.6 SRZ 2.15	A	A	5	L	
81	*Syagrus romanzoffiana* Cocos Palm	8	.30 DAC .35	5	3.6 SRZ 2.15	A	A	5	L	
82	*Eucalyptus microcorys* Tallowood	18	.43 DAC .55	12	5.25 SRZ 2.6	A	A	5	M	
83	*Eucalyptus microcorys* Tallowood	18	.47 DAC .60	8	5.5 DAC 2.7	A	A	5	M	

Explanatory Notes for Table

- *Dbh = Diameter of trunk at breast height.
- ** DAC = Diameter above the root collar used to measure the Structural Root Zone (SRZ).
- ***TPZ is the recommended TPZ 12x the DBH at 1.4m, SRZ is the trees structural root zone. Refer to AS4970 for details.
- ****ULE Explanation can be found in Appendix 1.
- IACA S.T.A.R.S Rating system. Refer to Appendix 5

Appendix 3 Images of Tree

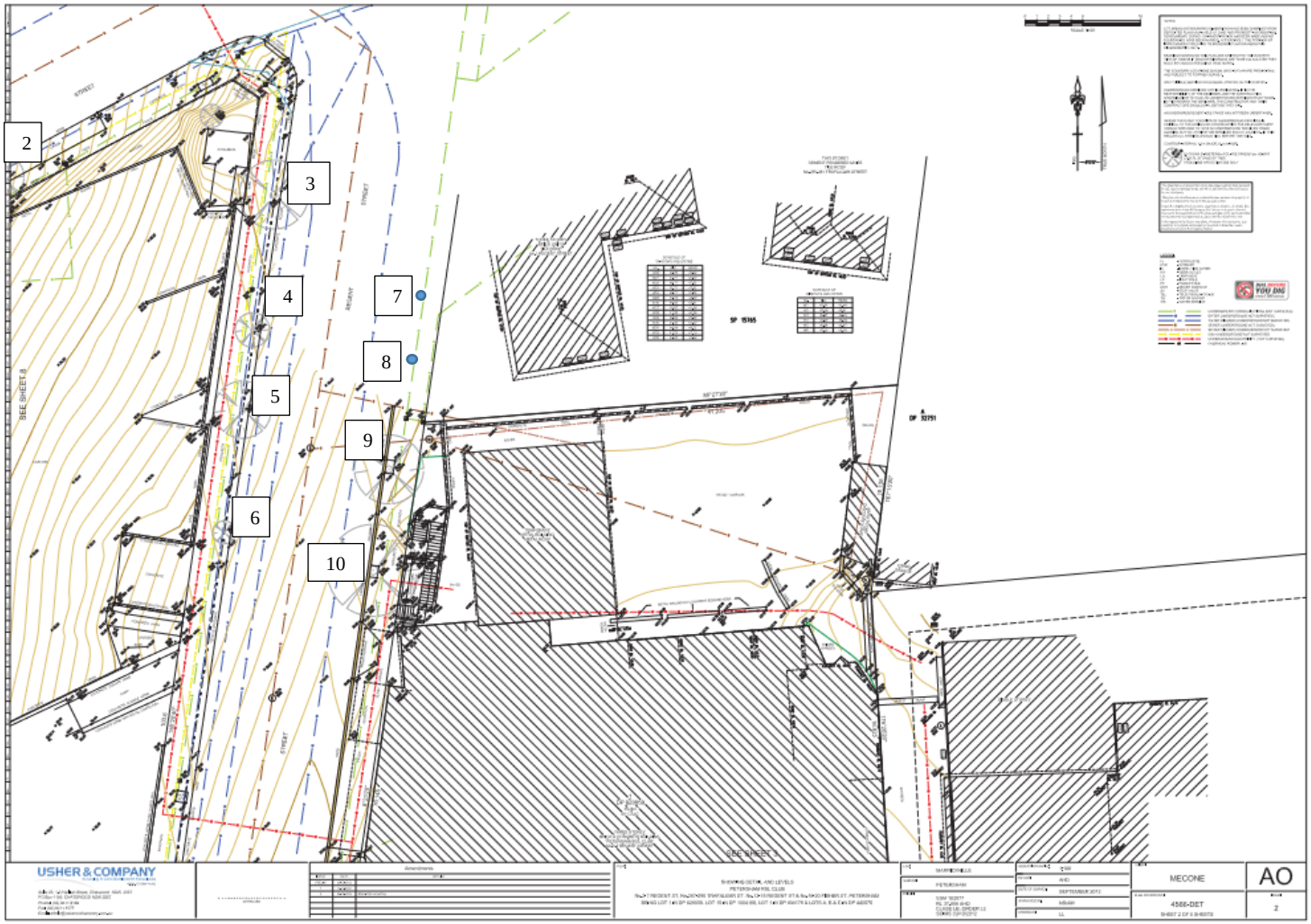
Image 1 above left of trees 3-10 on the northern end of Regent Street. Image 2 above right shows trees 21 -26 on the corner of Fisher and Regent Street. Image 3 below left shows trees 17-26 on Fisher Street. Image 4 below left shows trees 11-15 on Fisher Street.

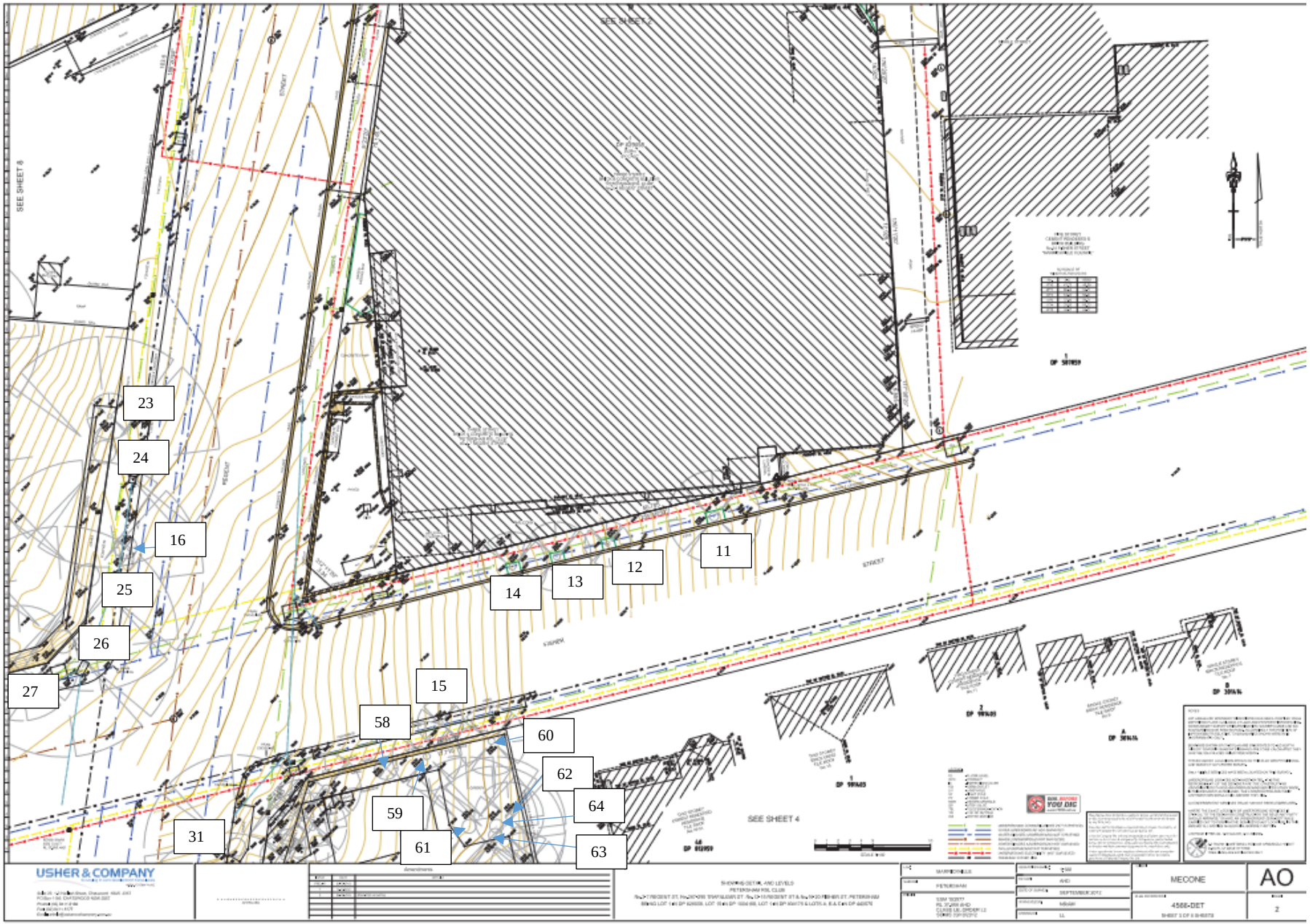


Image 5 above left shows trees 31-35 on Regent Street. Image 6 above centre shows trees 36-39 on New Canterbury Road. Image 7 Above right shows trees 58-63. Image 8 below left shows trees 62-64. Image 9 below left centre shows trees 40-45. Image 10 below right centre shows trees 72-78. Image 11 below right shows trees 78-83.




Appendix 4 Existing Site Plans

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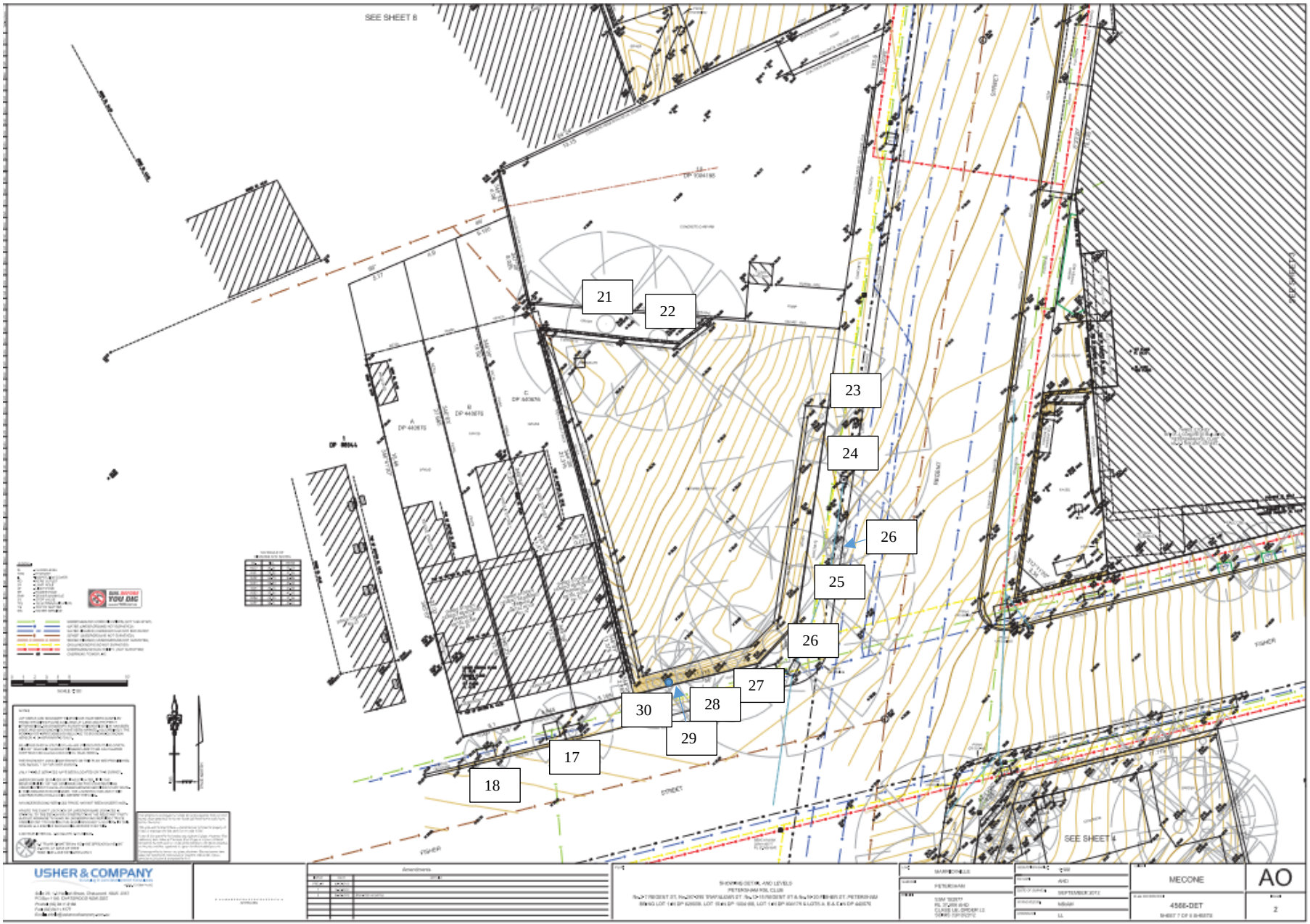
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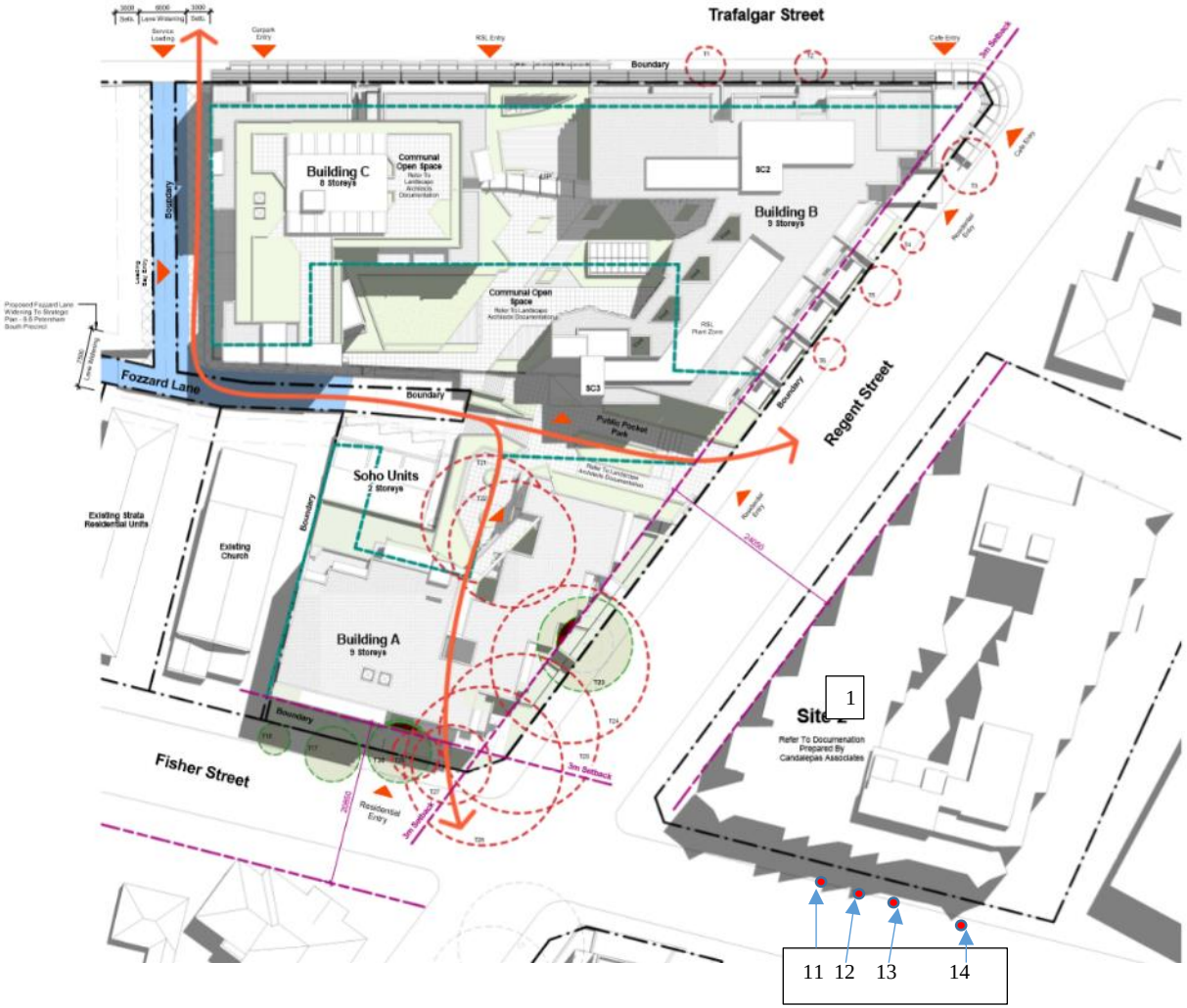
Appendix 4 Proposed Site Plan Site 1 & 3



Site Analysis	
Site Area	5422 m²
Maximum Permissible GFA	13 555.0 m²
Proposed Building GFA	
Multi Residential	14931 m²
SOHO Units	253 m²
RSL	3599 m²
Total	18733 m²

Unit Analysis	
Unit Type	5422 m²
1 Bed (1B)	37
1 Bed + Study (1BS)	80
2 Bed Small (2Bs)	27
2 Bed (2B)	27
2 Bed Large (2Bl)	37
Total	201

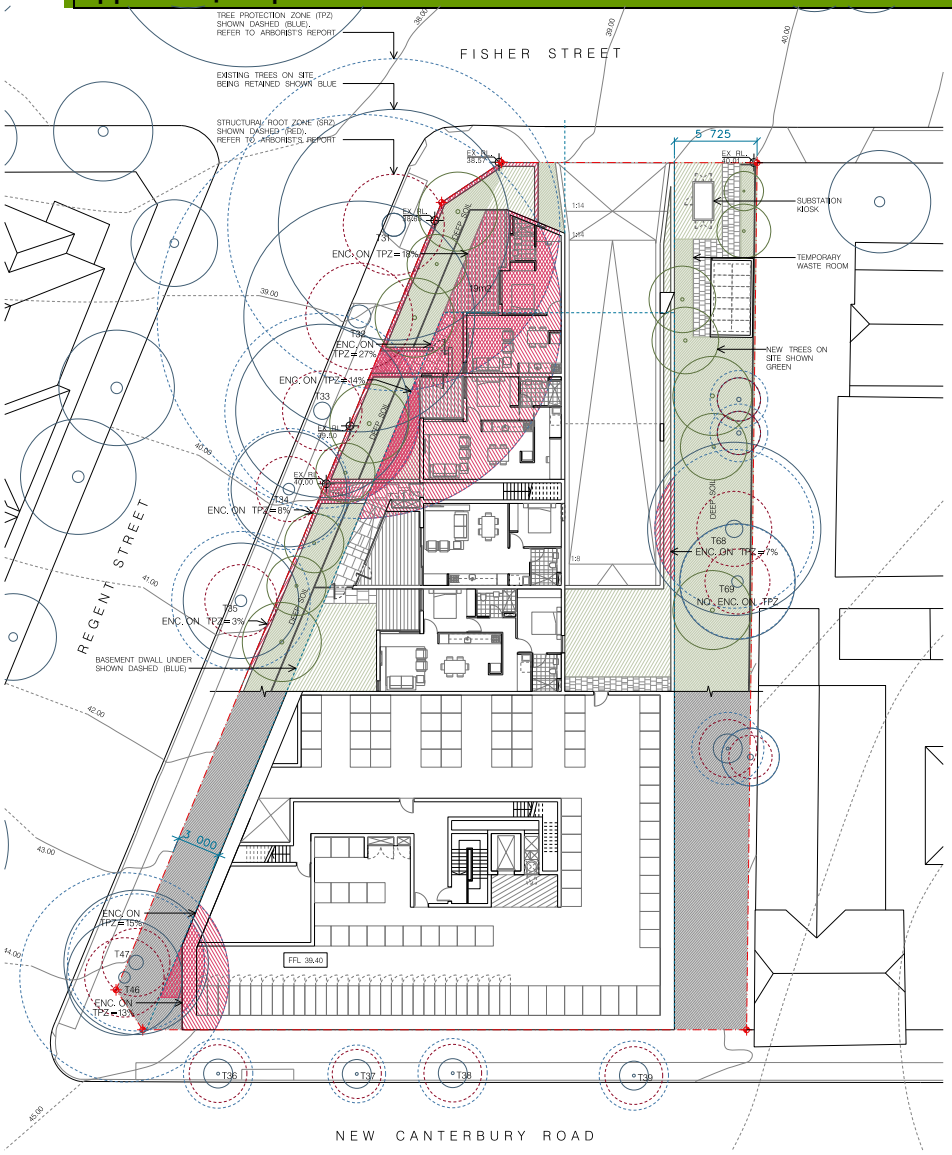
Adaptable (NAU) Unit Yield		
Total No. of Units Proposed in Site 3		201
Required Adaptable Units in Site 3		41 / 20%
NAU Type	Units	Total
A1	A101, A201, A301, A401 A501, A601, A701	7
A2	A106, A206, A306, A406, A506, A606, A706, A806	8
B1	B108, B208, B308, B408 B508, B608, B708	7
B2	B302, B402, B502, B602, B652, B702, B852	7
C1	C209, C309, C409, C509, C609, C709	6
C2	C101, C201, C301, C401, C501, C601	6
Grand Total		41 / 20%

Parking Analysis			
Occupancy	Car Parking	Motor Bikes	Bicycle
RSL	150 (9 Disabled)	8	28
Residential	201 (41 Disabled)	8	121
Total	201	12	146

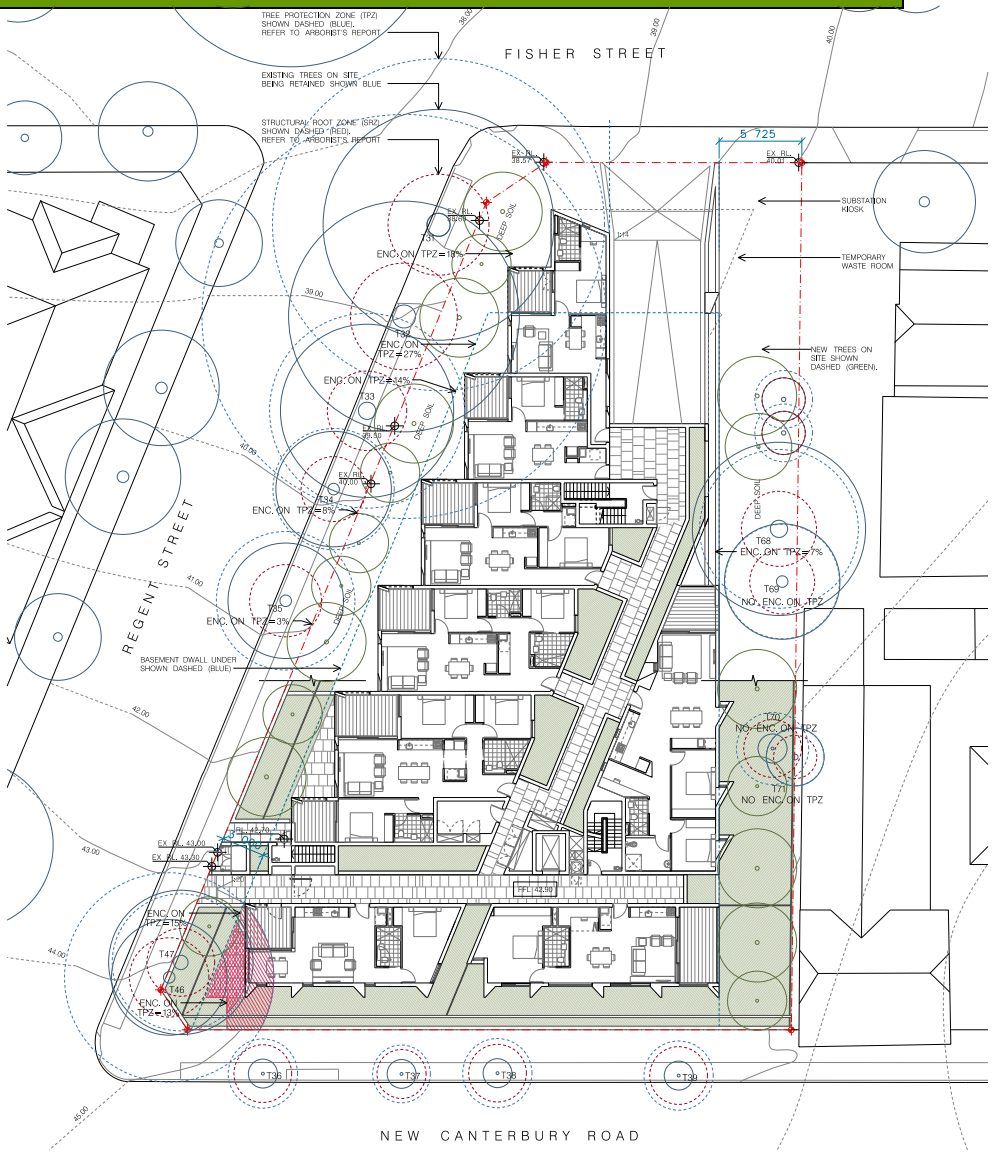
General Legend

Tree	TPZ Encroachment (%)
T23	6.66%
T30	6.65%

Appendix 4 Proposed Site Plan Site 2



01 GROUND FLOOR PLAN
1:200



02 LEVEL 1 FLOOR PLAN
1:200

ENCROACHMENT ON TREE PROTECTION ZONE
TREE PROTECTION ZONE
STRUCTURAL ROOT ZONE

Appendix 5 Legend for S.T.A.R.S matrix assessment

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.

Tree Significance - Assessment Criteria

1. High Significance in landscape

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

2. Medium Significance in landscape

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

3. Low Significance in landscape

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

Environmental Pest / Noxious Weed Species

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

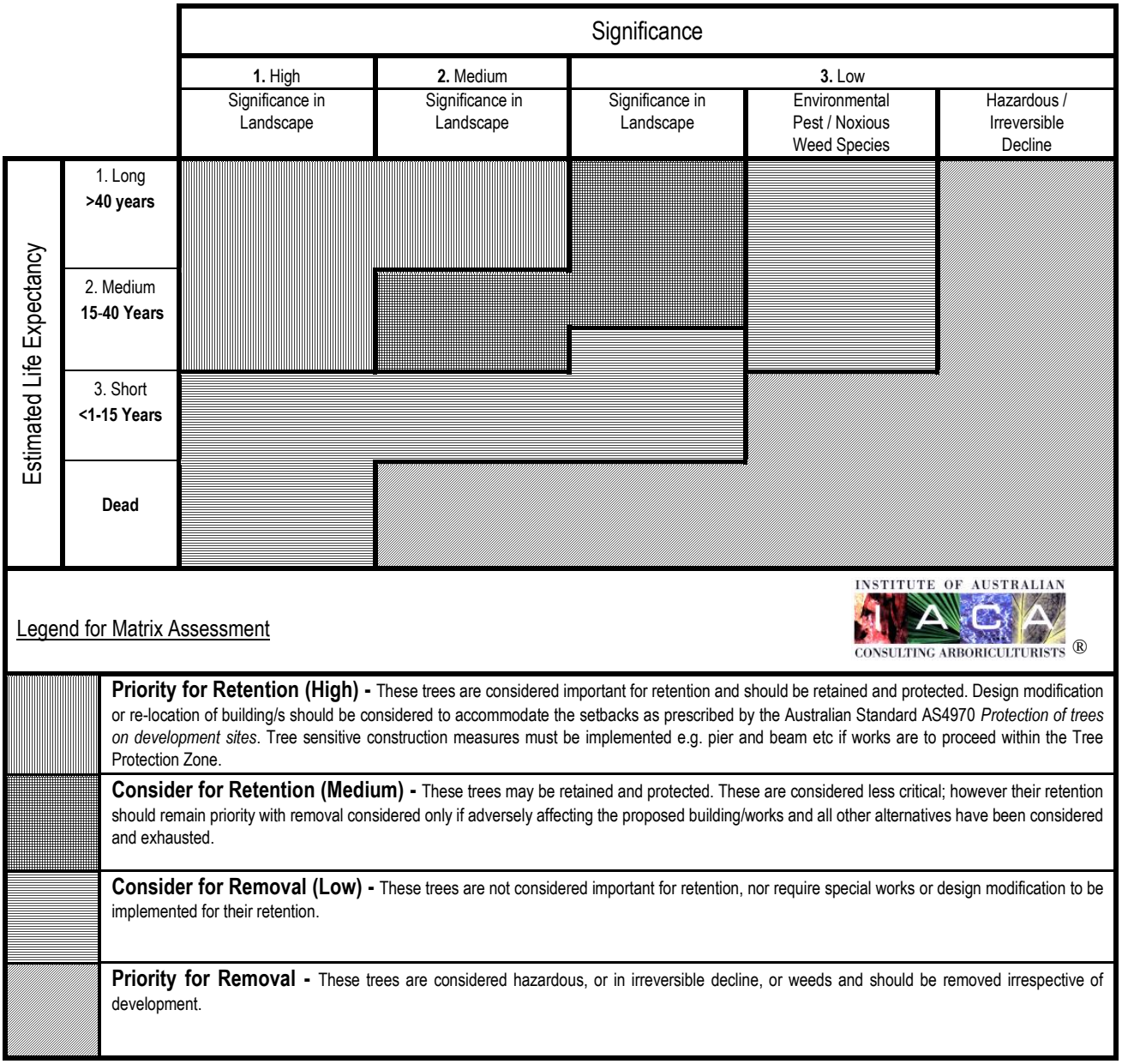
Hazardous/Irreversible Decline

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

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

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

Table 1.0 Tree Retention Value - Priority Matrix.



REFERENCES

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

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

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

Appendix 6 References

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

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

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

Harris, R. W; Clark, J.R; & Matheny, N.P (2004). *Arboriculture:* Integrated Management of Landscape Trees, Shrubs & Vines 4th Edition, Prentice Hall, New Jersey

Shigo, A.L. (1986). *A New Tree Biology*. Shigo & Trees, Associates, Durham, New Hampshire

Hadlington, P. & Johnston, J. (1988). *Australian Trees: Their Care & Repair. University of NSW Press, Kensington*

Lonsdale, D. (1999). *Principles of Tree Hazard Assessment & Management.* Forestry Commission, The Stationery Office, London

Mattheck, C. & Breloer, H. (1994). *The Body Language of Trees.* Research for Amenity Trees No.4. The Stationery Office, London

Appendix 7 Glossary of Terms

Abiotic	Nonliving
Anthracnose	a fungal disease causing dead areas on the leaves, buds, stems.
Arboriculture	The science and art of caring for trees, shrubs and other woody plants in landscape settings.
Barrier Zone	Protective boundary formed in new wood in response to wounding or other injury.
Biotic	Alive, pertaining to living organisms.
Branch attachment	The structural union of a lateral branch.
Callus	Undifferentiated tissue produced in response to wounding.
Canker	A dead spot or necrotic lesion that is caused by a bark inhabiting organism/pathogen.
Cavity	an open wound characterized by the presence of decay resulting in a hollow.
Collar	the ring of tissue that surrounds the lateral branch at its point of attachment.
Compartmentalization	A physiological process that creates the chemical and physical boundaries that act to limit the spread of disease and decay organisms.
Compression wood	A type of reaction wood that forms on the underside of branches which tends to maintain a branch angle of growth.
Crown	The above ground parts of the tree, including the trunk.
DBH	The diameter of a trees trunk measured at 1.4m.
Decay	Process of degradation of woody tissues by fungi and bacteria through the decomposition of cellulose and lignin.
Decline	Progressive decrease in health of organs or the entire plant usually caused by a series of interacting factors.
Drip line	The width of the crown, as measured by the lateral extent of the foliage.
Epicormic shoot	a shoot that arises from latent or adventitious buds that occur on stems, branches or the bases of trees.
Included bark	Pattern of development at branch junctions where bark is turned inward, rather than pushed out; contrast with the branch nark ridge.
Mortality Spiral	The sequence of events describing a change in the trees health from vigorous to declining to death.
Photosynthesis	The transformation in the presence of chlorophyll and light, of carbon dioxide from (the air) and water (primarily from soil) into a simple carbohydrate and oxygen.
Pruning	systematic removal of branches of a plant usually a woody perennial.
Reaction wood	Specialized secondary xylem that develops in response to a lean or similar mechanical stress to restore the stem to vertical.
Taper	The change in diameter over the length of trunks and branches. Important to mechanical support.
Tension wood	A type of reaction wood that trees form on the upper side of branches and stems and roots.
VTA	Visual Tree Assessment is a method of evaluating structural defects and stability in trees.
Wound	Any injury that induces a compartmentalization response.

Appendix 8, The Ents Tree Consultancy Tree Protection Guidelines

Definitions

A. **Tree Protection Zone (TPZ),** The TPZ is divided into 2 areas. 1 The Structural Root Zone delineated by an area nominated in table section 4 of the report and is assumed to contain most structural roots. The Tree Protection Zone that is twelve times the diameter of the tree trunk which is used to gauge the amount of feeder roots. No machinery works are permitted in these areas unless specified in this report or without written approval from the Council or the Arborist employed for this job site.

B. **Qualified Arborist**, for supervision of works and reports level 5. For carrying out tree works level 3 Levels are as recognised by the Australian training framework.

Standards, AS4970 2009, Protection of Trees on development sites. AS 4373: 1996, The pruning of amenity trees.

Tree Protection Generally

1. Prior to works commencing erect a 1800mm chain mesh fence to protect the trees trunk at 12x Dbh or as specified in this report. The Tree Protection Zones as nominated should be marked with line marking paint and observed as an area free from machinery for the duration of the works unless stated otherwise in the accompanying report. Do not remove, alter or relocate without the approval of the Council or the Arborist employed for this site.

2. Trees to be protected in the works contract are items entrusted to the Contractor /owner by the Council for the purpose of carrying out the work under the Contract. The Contractor/owner has obligations to protect these trees as part of the care of the work in the contract conditions.

3. Prior to commencing work on Site confirm with the Council all trees to be protected for the duration of the Works. Confirm also all access and haulage routes, storage areas, tree protection measures and work procedures. Ensure that the protection measures are in place prior to commencing work.

4. Use suitably qualified Arborist (level 5) to supervise earthworks or activities within the Structural Root Zone of tree, Do not severe roots 50mm or greater, which may cause damage to or affect the health of trees. Pruning of trees by the contractor is not permitted. If pruning works are required a suitably qualified (Minimum level 3) arborist will complete all works in the crown. All root pruning must be completed and documented by the level 5 site arborist.

5. Ensure construction trailers, vehicles and equipment do not come in contact with any tree at any time. Do not locate storage areas within the nominated Tree Protection Zone. Do not deposit or store materials, spoil, contaminants, and waste or washout water within Tree Protection Zone.

6. Take all reasonable precautions to protect trees to be retained on site from damage and decline, maintaining their health during the Contract. Implement recognised best practice industry standards to satisfy horticultural requirements for tree care.

7. Assess and monitor water stress in relation to trees on site. This is of particular importance if earthworks have occurred. Apply sufficient water to the trees on site as required to keep the trees healthy. Immediately report to the Council and site arborist, any trees on site that are injured, damaged or are in decline.

NOTE: Failure to comply with any part of these tree protection guidelines or the Australian standard AS4970 or AS4373 will result in the party breaching the Tree Protection Guidelines taking responsibility for all associated consequences.

Appendix 9 Curriculum Vitae

Education and Qualifications

- 2005 Diploma of Arboriculture (AQF Cert 5), Ryde TAFE. Distinction.
- 2000 Tree Climbing Course (AQF Cert 2), Ryde TAFE.
- 1999 Advanced Certificate in Urban Horticulture, (AQF Cert 4), Ryde TAFE. Distinction.
- 1995 Greenkeepers Trade Certificate (AQF 3) Ryde TAFE. Credit.
- 1991 Higher School Certificate.
-

Conference Attendance/presentation of Scientific Papers

- **Barrell Tree Care Workshop- Trees on Construction Sites (Brisbane 2005)**
- **Tree Logic seminar- Urban Tree Risk Management (Sydney 2005)**
- **Tree Pathology and Wood Decay Seminar Sydney (2004)**
- **Excelsior Training Claus Mattheck (Sydney 2001)**
- **Managing Mature Trees NAAA(Sydney 2000), Presented a Paper "Habitat Value of Mature Trees"**

Industry Experience

- **2004 to Date, Sole Trader The Ents Tree Consultancy.** Consultant for the Royal Botanic Gardens, Consultant Parramatta Park Trust, Consultant/ Expert Witness Woollahra Council. Master plan works for Sydney University, Taronga Zoo and University of NSW. Writing of tree reports for development applications for Energy Australia, Numerous Architectural Firms and builders. Provision of master plans, hazard evaluations, tree management plans and expert witness reports. Hazard assessments, tree surveys and consultations.
- **2003 to 2008, Arborist University of New South Wales**. Survey all trees on site, developed a Tree Management Database. Minimise hazard potential of all trees on site through evaluation and works. Generate and prioritise works and tree assessment based areas usage, tree conditions and staff required. Development of UNSW Tree Protection Guidelines for master planning works. Acting Supervisor December 2006 to May 2007.
- **2003 Tree management Officer Randwick Council**. Liaise with public to explain and enforce the councils Tree Preservation order. Management of internal staff and contractors. Project management and co-ordination of street tree planting and maintenance.
- **1999 to 2003 Animal Food Production Manager and Arborist.** Management of Koala food Plantation, Management of animal food supply registry for herbivores/omnivores. Coordination of staff contractors and volunteers. Maintain and manage tree management database, complete tree works within zoo grounds and at zoo owned plantations. Acting supervisor 6 month period 2002 for grounds dept and asset management trade team (60 Staff).
- **1998 to 1999 Sole Trader Techniques Lawn & Garden Consultancy.** Lawn, garden and Tree care. Garden design and maintenance. Tree works and tree removal. Installation of irrigation equipment.
- **1997 to 1998 Greenkeeper / Horticulturist Muirfield Golf Course.** General grounds duties, machinery maintenance, horticultural works, tree works

1992 to 1997 Greenkeeper / Horticulturist Ashlar Golf Course. General grounds duties, machinery maintenance, horticultural works, tree works