Client	Department of Education c/o FJMT
Project	Inner Sydney High School SSD, State Significant Development Application SSD16_7610
Location	249 Cleveland Street Surry Hills 2010
Document Type	Review of Environmental Factors
Date/Time	20th May 2017

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1. Contents

2 Introduction

2.1 On the 18th March 2017 FJMT Architects engaged The Ents Tree Consultancy on behalf of their client (DEC) to complete a Statement of Environmental Factors prior to the proposed development site for the Inner Sydney High School, 249 Cleveland Street Surry Hills. This report will assess the nominated trees that are proposed to be removed and on the site which may be impacted upon by the demolition works or the associated activities. The client stated that the trees have been nominated to be inspected in relation to the demolition works scheduled to occur prior to the State Significant Development Application (SSD16_7610). 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 10th April 2017. The client was not present for the site inspection, however has issued a brief providing background information in regards to the trees on and adjoining the site. This tree report will detail the condition of the nominated trees, observe the proposed plans and recommend tree protection measures for the trees on or adjoining the site. Recommendations for tree protection will be based on the proposed works and the requirements of the. The report will assess potential impacts for nominated trees 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 report will utilise some of the information from the Arboricultural Assessment Report completed by Earthscape Horticultural Services in July 2015. The purpose of this report is to assess the proposed demolition works as well as the required tree protection measures of the trees 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. 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 the existing numerical system provided by Earthscape Horticultural Services in July 2015, has been used to identify the trees 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 on and adjoining the property at the Cleveland Street Intensive English High School, 249 Cleveland Street Surry Hills. 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 shale soil that has been disturbed previously when the existing building and hardscapes were built and the site was cleared.

4.2 Based on the information provided by the client, the demolition works involve removing some of the existing buildings, services and trees in the landscape. Trees 2 – 16 are scheduled to be removed during the demolition phase. The trees 1 and trees 17 to 25 on and adjoining the site are proposed to be retained and protected for the duration of the works. The trees nominated to be retained, will be retained using sympathetic building activities to allow the demolition works to proceed. Options for the managing the tree nominated to be retained adjoining the proposed works site will be provided. Any tree that is nominated to be retained on or 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 **Tree 1** is a mature tree located on site in an area that is currently turfed. The client has stated that the area is a wet / boggy area due to the soil and topography. There are no plans for access through the trees projected tree protection zone, however there are plans for the removal of bitumen to the southern aspect of the tree. The removal of the bitumen will encroach on the tree protection zone and the structural root zone. All works within 5m radius of the tree will need to be completed under the supervision of the AQF level 5 Arborist. The works to remove the bitumen will start from the Northern edge and work back to the south so that the machine does not drive on the soil. All works within the Structural Root Zone are to be completed by hand to ensure roots 50mm+ are not wounded or damaged by the works.

4.4 **Tree Protection Specification for tree 1**. This tree will require 1.8m tree protection fencing to be installed prior to the works to isolate the tree from the vehicles and construction activities. Refer to the tree protection plan in appendix 4a. The southern section of the fence will be permitted to be moved to .5m from the edge of the bitumen during the demolition phase. The fence must be moved to within .5m of the bitumen at the end of each working day to ensure that there is no machinery operating on the soil once the bitumen is removed. All movement of the tree protection fencing must be completed under the supervision of the AQF level 5 Arborist remain in place for the duration of the works. No machinery is to operate within the tree protection area, with the exception of within the building footprint to the SW of the tree.

4.5 **Tree 17** is a mature tree located in asphalt on the existing site. The demolition works will have no impact on the trees projected Structural Root Zone, however there are works planned to impact upon the trees projected Tree Protection Zone to the north of the tree. The demolition works will require supervision by the AQF Level 5 Site Arborist within 5m of the tree. The purpose of the supervision is to prevent damage to any root 50mm+ or to ensure that all roots 50mm+ are cut cleanly. There may also be disturbances for the installation of services to the east of the tree. The services are to be installed as close to the existing building as possible, (maximum of .5m). Any roots 50mm+ will need to be retained if possible without damage or severed by the AQF level 5 site Arborist.

4.6 **Tree Protection Specification for tree 17.** A 1.8m chain mesh fencing is required to be installed prior to the works to separate the tree from the demolition works as shown in the tree protection plan, appendix 4a. The existing asphalt will protect the tree protection zone of tree 17 if the services to the east of the tree are not installed. If required ground protection will be installed to the east of the tree when the service trench is in operation to prevent the machinery operating on the soil. The ground protection will need to be installed to protect the area of the nominated tree protection zone that will be part of the demolition works. This can be achieved by placing a layer of geo-textile fabric down, adding a 100mm layer of mulch and placing rumble boards 100mm x 200mm planks down, protecting the soil from the machinery.

4.7 **Tree 18** is a mature tree located on the edge of the site with the southern portion of the root zone covered in asphalt. The works will have no impact on the trees projected Structural Root Zone and limited works are planned to occur within the trees projected Tree Protection Zone. The tree protection zone will be established to the north and the east with the existing boundary fences protection the trees to the west and the south, with no works planned in those areas.

4.8 **Tree Protection Specification for tree 18.** The existing asphalt will protect the tree protection zone of tree 18. A 1.8m chain mesh fencing can be installed to separate the tree from the works as shown in the tree protection plan, appendix 4a.

4.9 **Trees 19 & 20** are semi mature trees located on the Cleveland Street frontage on the council footpath. The works will have no impact on the trees projected Structural Root Zone or Tree Protection Zone. The works will be completed on site with access to the site a significant distance away from the trees.

4.10 **Tree Protection Specification for trees 19 & 20**The existing footpath will protect the trees tree protection zones. To prevent damage to the trees vascular tissue, trunk wraps will be required. The trunk wraps are to be installed around trees trunk from ground level to 1.8m on the trunk. The trunk wraps should consist of a layer of padded material to protect the trees tissue from vascular damage. Vertical timber slats will be fastened to the padding using an adjustable strap or tightening mechanism. The timber slats must be approximately 1.8m in height for the trunk, custom made for the branch and approximately 50mm x 70mm and cover the trunk with a maximum spacing of 25mm. At no time should the timber slats or wire come in contact with the tree and no fixtures are permitted on the tree. At no time should the tree protection material be removed during the works period. Refer to the tree protection plan in appendix 4a.

4.11 **Trees 21, 22 and 23** are mature trees located to the west of the site in the adjoining park. These tree will have no disturbances to their projected structural root zones and no disturbances to their projected tree protection zones. These tree will not require tree protection fencing unless works extend into the park area. If this is the case a 1.8m chainmesh fence will need to be installed along the western side of the existing footpath for the entirety of the tree protection zone for each tree. Refer to the tree protection plan in appendix 4a for the placement of the tree protection fencing.

4.12 **Tree 24** is a mature Queensland Kauri tree located to the north of the site in the adjoining park. This tree will have no disturbance to its projected structural root zone and no disturbance to its projected tree protection zone. This tree will require tree protection fencing for the entirety of the tree protection zone for the duration of the works. The tree protection zone should be installed prior to the works. At no time should the tree protection material be removed during the works period. Refer to the tree protection plan in appendix 4a for the position of the fences.

4.13 **Tree 25** is a mature Fig tree located to the north of the site in the adjoining park. This tree will have no disturbance to its projected structural root zone and no disturbance to its projected tree protection zone if the machinery use the existing path to access the site. This tree will require tree protection fencing for the entirety of the tree protection zone. Refer to the tree protection plan in appendix 4a for the position of the fences. If the path does not over the route of the machinery for access, ground protection will need to be installed. The ground protection will need to be installed to protect the area of the nominated tree protection zone that will be part of the demolition works. This can be achieved by placing a layer of geo-textile fabric down, adding a 100mm layer of mulch and placing rumble boards 100mm x 200mm planks down, protecting the soil from the machinery.

4.14 It is recommended that the demolition works 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.

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 actions,

5.2 To allow the works to proceed trees 2 to 16 are proposed to be removed. Tree 1 and trees 17 to 25 are proposed to be retained and protected for the duration of the works. The installation of the tree protection measures in section 4 of the report will assist in reducing the disturbance to the trees nominated to be retained.

5.3 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 works. The AQF level 5 site Arborist will need to sign off on the tree protection measures prior to works commencing. Please note that tree 1 will require ongoing attention in regards to tree protection on the southern aspect. All works within 5m of any tree will need to be supervised and recorded by the AQF level 5 site Arborist. It is the client's responsibility to arrange site inspections and co-ordinate the works with the AQF level 5 site Arborist.

5.4 Monthly inspections and reporting is required to ensure the trees are adequately protected. At the end of the works period the tree will be inspected by an AQF 5 Arborist to determine if the tree has 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.

5.5 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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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:	Category rating:
1	> 40 Years	High
2	15 to 40 Years	Medium
3	10-20 Years	Low
4	0 Years	Dead

Appendix 2 Assessment of Trees

Tree No	Species	Height (m)	DBH* & DAC**	Canopy Spread (m)	TPZ ***	Health #	Structure #	ULE Rating ****	Landscape Rating +	Stars Rating +	Observations and comments
1	*Agathis robusta*	20	.91 DAC .95	16	11 SRZ 3.25	A	A	4	H	H	A mature tree located on the site in a low point of a turfed area.
17	*Ficus macrophylla* Moreton Bay Fig	22	1.1 DAC 1.15	24	12.2 SRZ 3.5	A	A	3	H	H	A mature tree that is surrounded by asphalt. This tree has some wounds on its trunk from past vehicular impacts. This tree has evidence of Fig Psyllid activity
18	*Ficus macrophylla* Moreton Bay Fig	20	2.0 SRZ 2.2	28	15 SRZ 4.4	A	A	4	H	H	A mature tree that is surrounded by asphalt to the southern aspect. This tree has evidence of Fig Psyllid activity.
19	*Ficus microcarpa "hillii"* Hills Fig	10	.29 DAC .35	9	4.5 SRZ 2.15	A	A	4	M	M	Council Street Tree. This tree has a large wound on its trunk from a vehicular impact.
20	*Ficus microcarpa "hillii"* Hills Fig	11	.31 DAC .35	9	4.5 SRZ 2.15	A	A	4	M	M	Council Street Tree.
23	*Ficus macrophylla* Moreton Bay Fig	17	1.3 DAC 1.5	22	15 SRZ 3.95	A	A	3	H	H	A mature tree that is located in the adjoining park. This tree has evidence of Fig Psyllid activity.
24	*Agathis robusta*	22	.73 DAC .80	9	8.8 SRZ 3	A	A	4	H	H	A mature tree located on the adjoining site.
25	*Ficus macrophylla* Moreton Bay Fig	19	1.4 DAC 1.5	20	15 SRZ 3.95	A	A	2	M	M	A mature tree that is located in the adjoining park. This tree has a sparse crown and fungal activity at the base.

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 Landscape value and S.T.A.R.S Rating system. Refer to Appendix 5
- # Health and Structure values represented above are P = poor, BA = Below Average, A = Average, G = Good

Appendix 3 Images of Trees to be retained

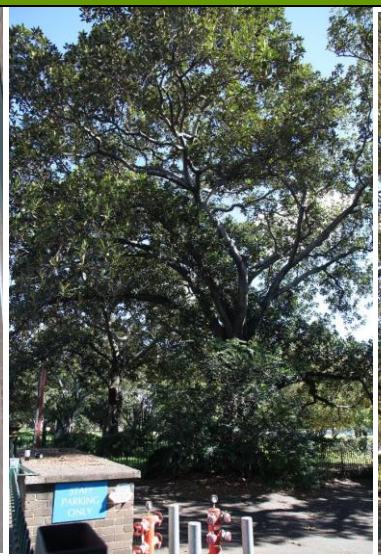
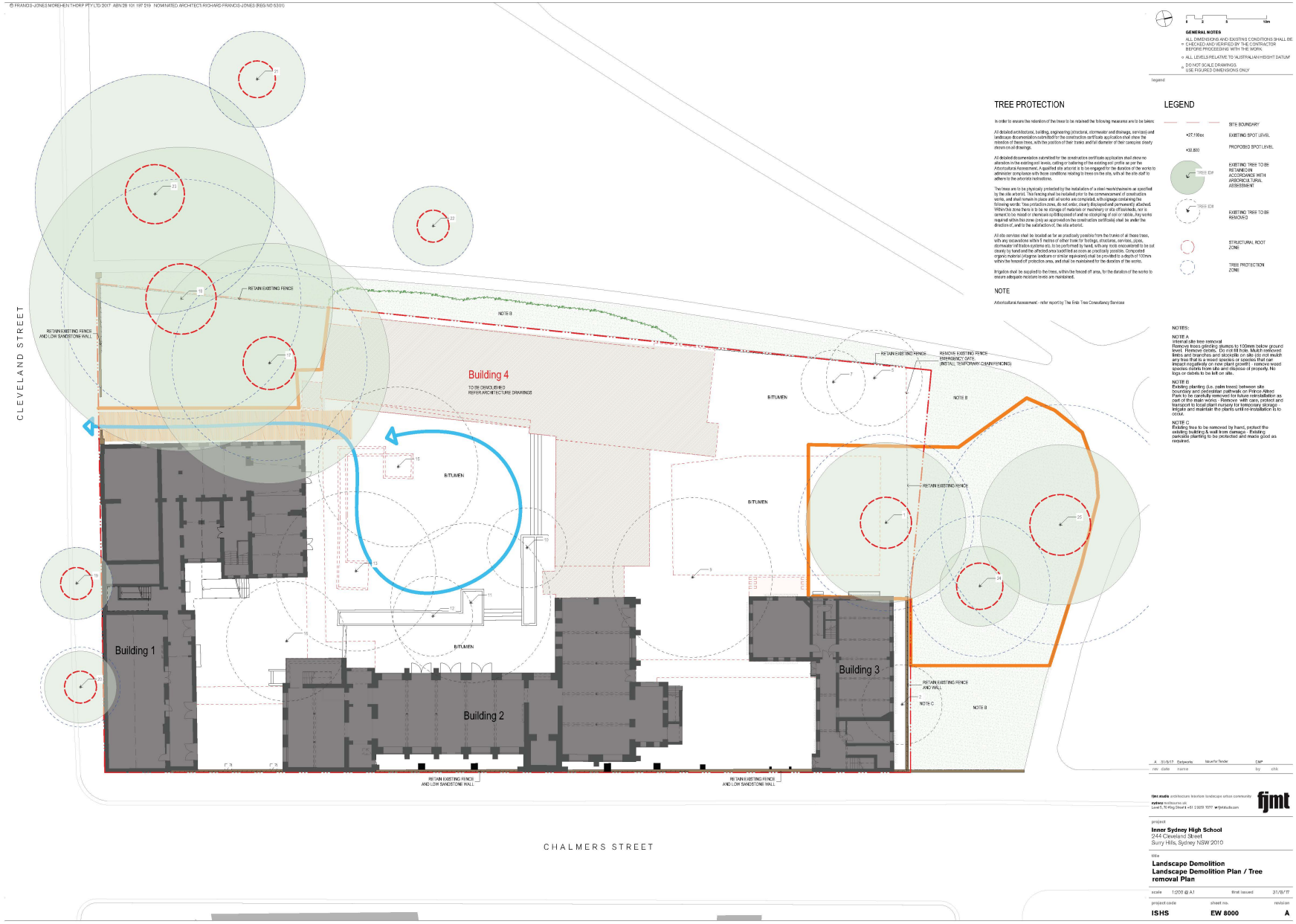



Image 1 above left shows trees 19 & 20 on the Cleveland Street frontage. Image 2 above left centre show fig trees 18 & 23. Image 3 above right shows tree 17 on site. Image 4 above right shows tree 17 on site. Image 5 below left shows tree 25 adjoining the site. Image 6 below right shows tree 24 on site.


Appendix 4a Tree Protection Plan



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.

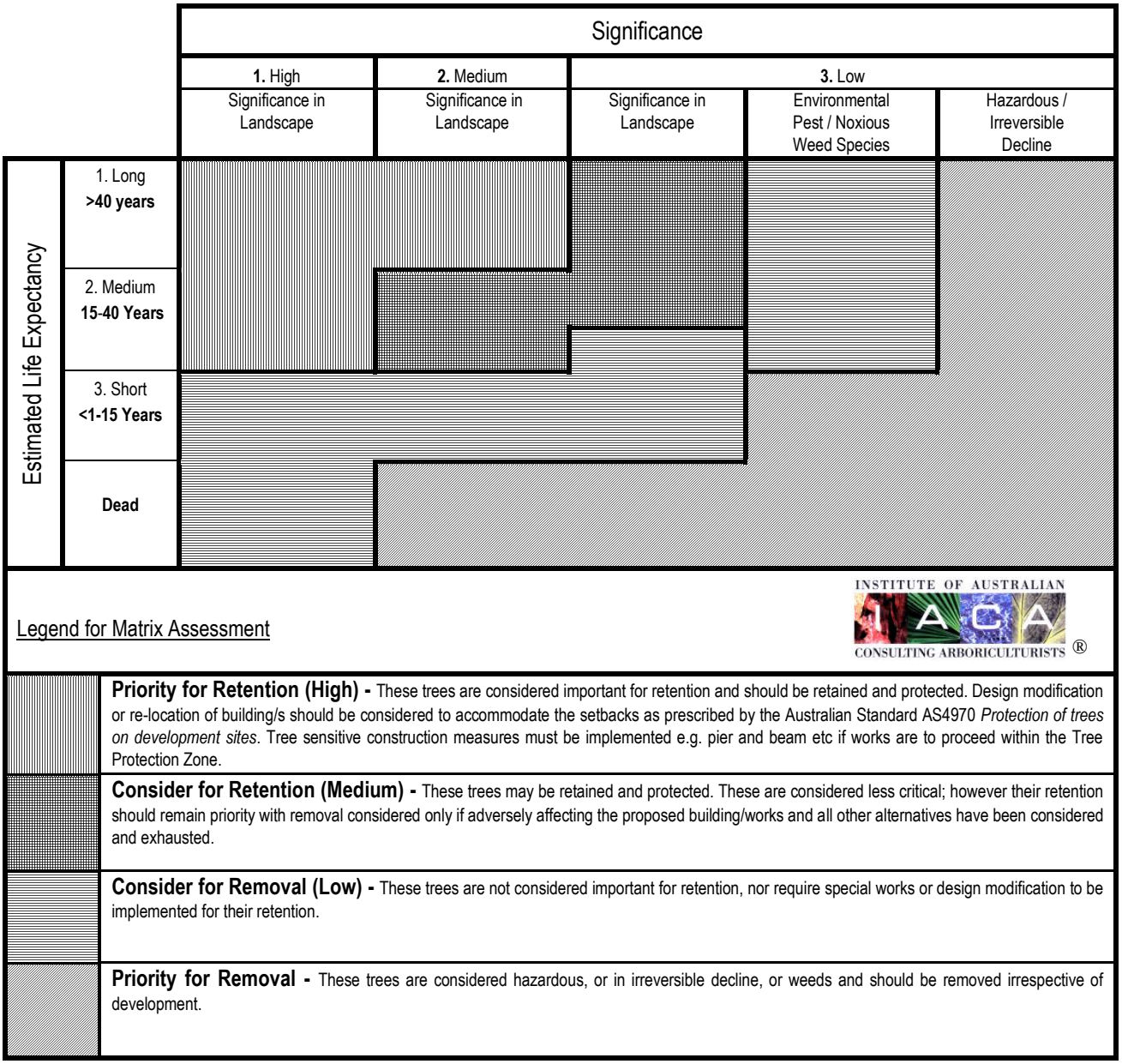
Hazardous/Irreversible Decline

- 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.



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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

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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.