

Summary of Trees Impacted by Sydney CBD/SE Light Rail Project

Arborist Report (Stage 1)



Prepared by Kathlene Hennessy
For #SavingSydneyTrees

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Introduction

All the data is derived or taken directly from the Arborist Report:

URBAN TREE MANAGEMENT © 2015, 23/10/2015 CBD and South East Light Rail (CSELR):
Arboricultural Impact Assessment (AIA) - Stage 1

The above document will be referred to as the 'Tree Report'.

The purpose of this report is to present the vast amount of data from the Tree Report in meaningful formats and to highlight the impact of the project on Significant Trees.

The information presented here was obtained by importing the data for 1,506 trees from the table in Appendix H of the Tree Report into a spreadsheet. For your own analysis a copy of the spreadsheet in Excel format can be obtained from: <http://bit.ly/1P8Lb7g>

Summary of Tree Impacts – Light Rail Project (Stage 1)

The following information, in this section, is copied directly from the Tree Report (page 20):

Category	Full Alignment	Stage 1*
Trees Assessed	1532	1400
Trees to be Retained	-	695
Trees to be Removed with potential to be Translocated	-	134
Trees to be Removed for construction	-	448
Number of Trees not Present (previously removed and not found during survey)	238	229

* The numbers in this column refer to this Report.

The 1,506 trees in the Tree Report (vs 1,400 shown above) fall into four possible groups based on what will happen to them: Retain, Remove/Translocate, Remove or Not Present.

The "Not Present" group, are trees that had been identified in earlier reports, but were not found to exist in the detailed survey. Removing these non-existent trees from the list leaves 1,277 trees impacted by the light rail project.

Significant Trees

For each affected tree, the Tree Report shows a 'STARS' rating. In summary, the STARS rating system refers to the Significance of a tree in the landscape; with a rating from 1 to 3 reflecting the trees Significance; and 1 to 4, the assigned Retention Value with 1/1 being the highest rating.

The Retention Value of a tree is determined as a function of its Significance and Estimated Life Expectancy.

For the detailed 'STARS' rating definitions, please see Appendix 1 of this document, which is a copy of information from Appendix B of the Tree Report.

The tree's heritage listing is not necessarily reflected by the rating. However a heritage listing will contribute to a high rating of tree significance.

A Significant Tree is a tree with a high significance STARS rating, i.e. ratings of 1/1 or 1/2.

Number of Trees to be Removed according to their STARS Rating

The breakdown of the 448 trees listed for removal according to their STARS rating is:

STARS Rating 1/1 (highest rating)	389
STARS Rating 1/2	6
STARS Rating 2/1	1
STARS Rating 2/2	48
STARS Rating 2/3	4
Total Number of Significant Trees to be Removed (1/1 and 1/2)	395

Number of Trees to be Removed or Translocated according to their STARS Rating

In addition to the loss of 448 trees that are being removed, an additional 134 trees will be removed or, if possible, translocated. Many are large mature trees. Consequently it is unlikely many can be successfully relocated.

A breakdown of the 134 trees listed for removal or translocation is:

STARS Rating 1/1	48
STARS Rating 1/2	1
STARS Rating 2/2	85
Total Number of Significant Trees Removed or Translocated (1/1 and 1/2)	49

Note:

Irrespective, the loss of the concentration of significant trees along Anzac Parade and Alison Road has major consequences in terms of the environmental, historic and social impact. It is worth noting that the City of Sydney has the Anzac Parade Trees listed on its Significant Tree Register <http://trees.cityofsydney.nsw.gov.au/location/centennial-park-moore-park-anzac-parade/>

While a re-vegetation program is required as part of the consent approval, more than 50% of the new plantings will be away from the immediate route, and are limited in species and height. The loss of canopy will be extreme, and is something that can be approximately calculated from the data.

Number of Trees to be Pruned according to their STARS Rating

Of the remaining trees, 510 are listed for pruning. Some will be crown pruned and some will be both crown and root pruned.

A breakdown of the 510 trees listed for pruning is:

Crown Pruned STARS 1/1	293
Crown Pruned STARS 1/2	15
Crown Pruned STARS 2/1	3
Crown Pruned STARS 2/2	73
Crown Pruned STARS 2/3	2
Crown & Root Pruned STARS 1/1	119
Crown & Root Pruned STARS 2/2	5
Total Number of Significant Trees to be Pruned (1/1 and 1/2)	427

Note:

'Pruning' Significant Trees is likely to reduce their amenity, form and character. In turn this may reduce their significance and retention value and lead to their demise.

Summary: Number of Significant Trees to be impacted

Number of Significant Trees to be Removed	395
Number of Significant Trees to be Removed & Translocated where possible	49
Number of Significant Trees to be Pruned	427
Total Number of Significant Trees Impacted	871

The Number of each Tree Species to be Impacted by the Light Rail Project

The table below is list of 1,277 trees itemised in the Tree Report grouped by species name. Common names and origins have been added.

No. of Trees	Species	Common Name	Origin
66	<i>Agathis robusta</i>	Kauri Pine	Native
6	<i>Agonis flexuosa</i>	WA Peppermint Tree	Native
1	<i>Allocasuarina torulosa</i>	Forest Oak	Native
19	<i>Araucaria cunninghamii</i>	Hoop Pine	Native
15	<i>Araucaria heterophylla</i>	Norfolk Pine	Native
2	<i>Banksia integrifolia</i>	Coastal Banksia	Native
1	<i>Betula pendula</i>	Silver Birch	Exotic
6	<i>Callistemon citrinus</i>	Crimson Bottle Brush	Native
1	<i>Callistemon salignus</i>	Willow Bottle Brush	Native
15	<i>Callistemon viminalis</i>	Weeping Bottle Brush	Native

No. of Trees	Species	Common Name	Origin
1	<i>Camelia sasanqua</i>	Sasanqua Camelia	Exotic
24	<i>Casuarina glauca</i>	Swamp She Oak	Native
5	<i>Chamaecyparis funebris</i>	Chinese Weeping Cypress	Exotic
1	<i>Cinnamomum camphora</i>	Camphor Laural	Exotic
2	<i>Citharexylum spinosum</i>	Fiddle Wood	Exotic
1	<i>Citrus Limon</i>	Lemon Tree	Exotic
19	<i>Corymbia citriodora</i>	Lemon Scented Gum	Native
3	<i>Corymbia ficifolia</i>	Albany Red Flowering Gum	Native
17	<i>Corymbia maculata</i>	Spotted Gum	Native
2	<i>Dypsis lutescens</i>	Golden Cane Palm	Exotic
1	<i>Elaeocarpus reticulatus</i>	Blueberry Ash	Native
1	<i>Eriobotrya japonica</i>	Loquat	Exotic
1	<i>Eucalyptus cinerea</i>	Silver Dollar Tree	Native
12	<i>Eucalyptus botryoides</i>	Bangalay	Native
2	<i>Eucalyptus globulus</i>	Southern Bluegum	Native
1	<i>Eucalyptus leucoxydon</i>	White Iron Bark	Native
1	<i>Eucalyptus microcorys</i>	Tallowwood	Native
1	<i>Eucalyptus nicholii</i>	Willow Peppermint	Native
1	<i>Eucalyptus pilularis</i>	Blackbutt	Native
1	<i>Eucalyptus punctata</i>	Grey Gum	Native
2	<i>Eucalyptus regnans</i>	Mountain Ash	Native
3	<i>Eucalyptus resinifera</i>	Red Mahogany	Native
3	<i>Eucalyptus robusta</i>	Swamp Mahogany	Native
6	<i>Eucalyptus saligna</i>	Sydney Blue Gum	Native
3	<i>Eucalyptus scoparia</i>	Wallangarra White Gum	Native
1	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	Native
1	<i>Eucalyptus viminalis</i>	Manna Gum	Native
1	<i>Ficus benjamina</i>	Weeping Fig	Native
112	<i>Ficus macrophylla</i>	Moreton Bay Fig	Native
3	<i>Ficus microcarpa</i>	Chinese Banyan	Exotic
84	<i>Ficus microcarpa var. hillii</i>	Hills Weeping Fig	Native
19	<i>Ficus oblique</i>	Small Leafed Fig	Native
21	<i>Ficus rubiginosa</i>	Port Jackson Fig	Native
1	<i>Ficus species</i>	Fig	?
1	<i>Ficus superba var. henneana</i>	Strangler Fig	Native
23	<i>Ficus watkinsiana</i>	Nipple Fig	Native
2	<i>Flindersia australis</i>	Australia Teak	Native
12	<i>Franxinus angustifolia</i> <i>subsp.oxycarpa 'Raywoodi'</i>	Raywood	Exotic
9	<i>Gleditsia triacanthos 'Sunburst'</i>	Honey Locust	Exotic
7	<i>Grevillea robusta</i>	Silky Oak	Native
4	<i>Grevillea shrub</i>	Grevillea	Native
15	<i>Harpephyllum caffrum</i>	Kaffir Plum	Exotic
7	<i>Jacaranda mimosifolia</i>	Jacaranda	Exotic
2	<i>Koelreutaria bipinnata</i>	Chinese Flame Tree	Exotic

No. of Trees	Species	Common Name	Origin
3	<i>Lagerstroemia indica</i>	Crepe Myrtle	Exotic
13	<i>Liquidambar styraciflua</i>	Liquidamber	Exotic
16	<i>Liriodendron tulipifera</i>	Tulip Tree	Exotic
4	<i>Livistona australis</i>	Cabbage Tree Palm	Native
178	<i>Lophostemon confertus</i>	Brushbox	Native
1	<i>Magnolia grandiflora</i>	Magnolia	Exotic
20	<i>Magnolia grandiflora</i> 'Little Gem'	Little Gem	Exotic
1	<i>Melaleuca linariifolia</i>	Narrow leaf Paperbark	Native
13	<i>Melaleuca quinquenervia</i>	Broad Leaf Paperbark	Native
3	<i>Melia azedarach</i>	White Cedar	Native
1	<i>Metrosideros excels</i>	Pohutukawa	Exotic
11	<i>Nerium oleander</i>	Oleander	Exotic
6	<i>Olea europaea</i>	European Olive or African?	Exotic
19	<i>Phoenix canariensis</i>	Canary Island Palm	Exotic
2	<i>Phoenix dactylifera</i>	Date Palm	Exotic
2	<i>Phoenix roebelinii</i>	Pygmy Date Palm	Exotic
6	<i>Pistacia chinensis</i>	Chinese Pistache	Exotic
2	<i>Platanus orientalis</i> 'Digitata'	Oriental Plane	Exotic
307	<i>Platanus x hispanica</i>	London Plane	Exotic
2	<i>Platanus x hybrid</i>	London Plane	Exotic
4	<i>Podocarpus elatus</i>	Plum Pine	Native
12	<i>Populus deltoids</i>	Cottonwood Poplar	Exotic
6	<i>Populus nigra</i> 'Italica'	Black Poplar	Exotic
1	<i>Populus nigra</i> 'Italica'	Poplar	Exotic
1	<i>Prunus persica</i>	Peach	Exotic
14	<i>Pyrus calleryana</i>	Callery Pear	Exotic
4	<i>Quercus ilex</i>	Holly Oak	Exotic
9	<i>Quercus virginiana</i>	Live Oak	Exotic
1	<i>Robinia pseudoacacia</i> 'Frisia'	Gold Robinia	Exotic
5	<i>Schinus areira</i>	Pepper Tree	Exotic
6	<i>Syagrua romanzoffianum</i>	Cocos Palm	Exotic
5	<i>Trachycarpus fortune</i>	Windmill Palm	Exotic
7	<i>Triadica sebifera</i>	Chinese Tallow	Exotic
3	<i>Ulmus glabra</i> 'Lutescens'	Golden Wych Elm	Exotic
1	<i>Ulmus parvifolia</i>	Chinese Elm	Exotic
4	<i>Unidentified spp.</i>		?
5	<i>Washingtonia filifera</i>	Californian Palm	Exotic
12	<i>Washingtonia robusta</i>	Mexican Fan Palm	Exotic

Other Data Available from the Tree Report:

- Age of Trees: Young, Semi Mature, Mature, Over Mature (senescent)
- Height (m)
- Spread (m)
- DBH, Diameter of Trunk at Breast Height, (mm)

- DARB, Diameter of Trunk Above Root Buttress, (mm)
- TPZ, Tree Protection Zone, as per Australian Standard: AS 4970 (2009)
- SRZ, Structural Root Zone, as per Australian Standard: AS 4970 (2009)
- SRIV, Sustainable Retention Index Value (SRIV). An index developed by the IACA – Institute of Australian Consulting Arboriculturists.

More data can be derived from the Tree Report and added to this report at request:

- Approximate canopy area of each tree
- Approximate total canopy lost by removals
- Number of Native Trees lost

This data can be compared with:

- Lists of Animal Forage Trees
- Lists of Bat Forage Trees
- Lists of trees that are Indigenous Species

Conclusion

The data obtained from the Tree Report shows there is a substantial impact on Significant Trees affected by the CBD and South East Light Rail Project.

The majority of trees to be 'Removed' are Significant Trees and the majority of trees to be 'Pruned' are Significant Trees.

Appendix 1

IACA Significance of a Tree: 'Stars' Rating System: This is taken from Appendix B of the 'Tree Report':

Appendix B

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.

		Significance				
		1. High	2. Medium	3. Low		
		Significance in Landscape	Significance in Landscape	Significance in Landscape	Environmental Pest / Noxious Weed Species	Hazardous / Irreversible Decline
Estimated Life Expectancy	1. Long >40 years					
	2. Medium 15-40 Years					
	3. Short <1-15 Years					
	Dead					
<p><u>Legend for Matrix Assessment</u></p> <div style="text-align: right;">  <p>INSTITUTE OF AUSTRALIAN A C A CONSULTING ARBORICULTURISTS®</p> </div>						
	<p>Priority for Retention (High) - These trees are considered important for retention and should be retained and protected. Design modification or re-location of building/s should be considered to accommodate the setbacks as prescribed by the Australian Standard AS4970 <i>Protection of trees on development sites</i>. Tree sensitive construction measures must be implemented e.g. pier and beam etc if works are to proceed within the Tree Protection Zone.</p>					
	<p>Consider for Retention (Medium) - These trees may be retained and protected. These are considered less critical; however their retention should remain priority with removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted.</p>					
	<p>Consider for Removal (Low) - These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.</p>					
	<p>Priority for Removal - These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.</p>					

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