



## **ARBORICULTURAL DEVELOPMENT IMPACT ASSESSMENT REPORT**

**Sydney Metro City and SouthWest Line Wide –  
Dulwich Hill NSW**

**REVISION B  
3rd of August 2021**

**Prepared for  
Systems Connect**

### **Prepared by**

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## Executive Summary

This Arboricultural Development Impact Assessment Report has been commissioned by Hassell to report on trees within the site of Sydney Metro City and SouthWest Line Wide site at Dulwich Hill NSW. It has been commissioned to outline the health, condition and stability of these trees as well as their viability for retention in the context of the proposed development. The scope of this report includes all trees within areas that may be impacted by the proposed development.

The subject site is Sydney Metro City and SouthWest Line Wide - Dulwich Hill NSW. The subject trees are located within or adjacent to the boundaries of this site. The site is currently an undeveloped site adjacent to the Railway Corridor at the end of Randall Street Dulwich Hill.

The subject trees are in good health and condition with no apparent structural defects.

The Tree Protection Zones of Trees 1, 2, 3, 4, 5, 6 are encroached by the proposed construction and required earthworks by a major encroachment as defined by *AS4970-2009 Protection of Trees on Development Sites*. These trees will not be viable to be retained and will be required to be removed due to the proposed development.

The canopies of Trees 9 and 10 are impacted by the required construction traffic to transport the pre-fabricated buildings onto site. These trees will require crown reduction pruning in accordance with *AS4373-2007 Pruning of Amenity Trees* in accordance with the Pruning Specification 8.0.

All other trees are viable to be retained and are to be protected as defined below.

Recommendations for tree retention or removal are summarised as follows:

Tree no.	Species	Recommendations	Comments
1.	<i>Cinnamomum camphora</i>	Remove	Not viable to be retained due to proposed development.
2.	<i>Banksia integrifolia</i>	Remove	Not viable to be retained due to proposed development.
3.	<i>Cinnamomum camphora</i>	Remove	Not viable to be retained due to proposed development.
4.	<i>Cinnamomum camphora</i>	Remove	Not viable to be retained due to proposed development.
5.	<i>Cinnamomum camphora</i>	Remove	Not viable to be retained due to proposed development.
6.	<i>Cinnamomum camphora</i>	Remove	Not viable to be retained due to proposed development.
7.	<i>Cinnamomum camphora</i>	Retain	Viable to be retained and protected in accordance with 8.0.
8.	<i>Cinnamomum camphora</i>	Retain	Viable to be retained and protected in accordance with 8.0.
9.	<i>Cinnamomum camphora</i>	Retain	Viable to be retained and protected in accordance with 8.0. Crown reduction pruning required in order to allow construction transport access.

10.	<i>Cinnamomum camphora</i>	Retain	Viable to be retained and protected in accordance with 8.0. Crown reduction pruning required in order to allow construction transport access.
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## 1.0 Scope of Works

### 1.1 Background

This Arboricultural Development Impact Assessment Report has been commissioned by Hassell to report on trees within the site of Sydney Metro City and SouthWest Line Wide site at Dulwich Hill NSW. It has been commissioned to outline the health, condition and stability of these trees as well as their viability for retention. It has been commissioned to outline the health, condition and stability of these trees as well as their viability for retention in the context of the proposed development. The scope of this report includes all trees within areas that may be impacted by the proposed development.

This report has been prepared in response to CSSI 8256 Conditions of Approval E4 and E5 of the Conditions of Approval, which requires that:

*“The Proponent must commission an independent experienced and suitably qualified arborist, to prepare a comprehensive Tree Report(s) before removing any trees as detailed in the documents listed in Condition A1. The Tree Report may be prepared for the entire CSSI, or separate reports may be prepared for individual areas where trees are required to be removed.*

*The report(s) must identify the impacts of the CSSI on trees and vegetation within and adjacent to the Construction footprint. The report(s) must include:*

- (a) a description of the conditions of the tree(s) and its amenity and visual value;*
- (b) consideration of all options to avoid tree removal, including relocation of services, redesign or relocation of ancillary components (such as substations, fencing etc.) and reduction of standard offsets to underground services; and*
- (c) measures to avoid the removal of trees or minimise damage to existing trees and ensure the health and stability of those trees to be protected. This includes details of any proposed canopy or root pruning, root protection zone, excavation, site controls on waste disposal, vehicular access, storage of materials and protection of public utilities.”*

### 1.2 Methods

On the 12 May 2021, Glenn Bird of Birds Tree Consultancy attended site and inspected the subject trees from the ground. There was no aerial inspection carried out. A Visual Tree Assessment was undertaken in accordance with Visual Tree Assessment (VTA) guidelines (Mattheck and Breloer, 1994). Tree heights were measured using a Nikon Forestry 550 Heightmeter. Glenn was accompanied by Systems Connect personnel including Peter Hennessy, Chris Riley, Bogdan Garwacki and Errol Pather. Input was provided regarding minimising adverse impacts on trees and other flora.

## 1.3 Structure

The structure of this report is as follows:

- Sections 3, 4 and 5 respond to Condition E5 (a). Section 3 provides a brief description of each tree assessed. Section 4 provides an assessment of the Landscape Significance of each tree, based on the standardised rating system developed by the Institute of Australian Consulting Arborists, and is a factor of the health and condition of the tree, vitality, the form of the tree, environmental, cultural, amenity and heritage value. Section 5 provides the Tree Retention Value of each tree.
- Sections 6 and 7 respond to Condition E5 (b). Options to avoid tree removal were discussed on-site during the inspection on 12 May. Section 6.1 defines Tree Protection Zones (TPZs) for each tree and assesses the encroachment of the works on the TPZs. Section 6.2 considers the likely impact on each tree and makes recommendations on which trees can be retained and which trees will need to be removed. Section 7 summarises the outcome and makes recommendations regarding revised design and construction methods that may be able to be implemented to protect trees of high retention value.

Section 8 responds to Condition E5 (c) and provides a range of tree protection measures to be implemented prior to and during construction.

## 2.0 Site Analysis

### 2.1 Site

The subject site is Sydney Metro City and SouthWest Line Wide - Dulwich Hill NSW. The subject trees are located within or adjacent to the boundaries of this site. The site is currently an undeveloped site adjacent to the Railway Corridor at the end of Randall Street Dulwich Hill. Refer to Drawing SMCSWSWM-MTM-WEC-CE-DWG-623421 Rev 00 for greater detail of the proposed development.

### 2.2 Topography

The site is flat. The area in the vicinity of all trees is flat. Trees 1, 3, 4, 5, 6, 7, 8, 9 and 10 are adjacent to the existing roadway. Refer to survey for greater details of the levels.

### 2.3 Identification

Trees are as identified in the attached inspection forms in Appendix C and shown in Tree location Plan A01 in Appendix D. Note that the location of the subject trees has been determined from the survey provided where possible and where trees are present that have not been identified on the survey, the location of these trees has been shown based on approximation relative to survey details. This report is a revision of the previous report dated 20 August 2020 and Tree numbers 1 and have been retained from this report. As a result, the row of trees along Randall Street are not sequential.

### 2.4 Soils

Soil material and horizons were not tested for this report.

## 3.0 Existing Trees

The following trees were inspected from the ground and the following items identified. Please refer also to the attached inspection data in Appendix C.

**3.1. Tree 1. *Cinnamomum camphora***

This mature tree is approximately 16m tall with a canopy spread of 9m. It has a single trunk with a diameter at breast height (DBH) of 530mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

**3.2. Tree 2. *Banksia integrifolia***

This mature tree is approximately 9m tall with a canopy spread of 4m. It has a single trunk with a DBH of 130mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

**3.3. Tree 3. *Cinnamomum camphora***

This mature tree is approximately 16m tall with a canopy spread of 9m. It has a single trunk with a diameter at breast height (DBH) of 600mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

**3.4. Tree 4. *Cinnamomum camphora***

This mature tree is approximately 16m tall with a canopy spread of 9m. It has a single trunk with a diameter at breast height (DBH) of 500mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

**3.5. Tree 5. *Cinnamomum camphora***

This mature tree is approximately 16m tall with a canopy spread of 9m. It has a single trunk with a diameter at breast height (DBH) of 450mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

**3.6. Tree 6. *Cinnamomum camphora***

This mature tree is approximately 16m tall with a canopy spread of 9m. It has twin codominant trunks from 1m above the base of the trunk with an aggregate diameter at breast height (DBH) of 500mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

**3.7. Tree 7. *Cinnamomum camphora***

This mature tree is approximately 16m tall with a canopy spread of 9m. It has a single trunk with a diameter at breast height (DBH) of 500mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

**3.8. Tree 8. *Cinnamomum camphora***

This mature tree is approximately 16m tall with a canopy spread of 9m. It has a single trunk with a diameter at breast height (DBH) of 460mm. This

tree is in good health and condition with minimal deadwood and epicormic growth.

**3.9. Tree 9. *Cinnamomum camphora***

This mature tree is approximately 16m tall with a canopy spread of 9m. It has a single trunk with a diameter at breast height (DBH) of 610mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

**3.10. Tree 10. *Cinnamomum camphora***

This mature tree is approximately 16m tall with a canopy spread of 9m. It has a single trunk with a diameter at breast height (DBH) of 1270mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

## **4.0 Landscape Significance of Trees**

### **4.1 Landscape Significance**

The significance of a tree within the landscape is a factor of the health and condition of the tree, vitality, the form of the tree, environmental, cultural, amenity and heritage value.

### **4.2 Methodology of Determining Landscape Significance**

For the purpose of this report, the Significance of a Tree, Assessment Rating System (STARS) as developed by the Institute of Australian Consulting Arborists (IACA) has been implemented. Please refer to Appendix A for greater detail of this assessment system. This system defines Landscape Significance for individual trees as High, Medium or Low Significance.

### **4.3 Landscape Significance of Subject Trees**

Based on our assessment of the subject trees and implementation of the IACA Significance of a Tree, Assessment Rating System, the Landscape Significance of the Subject Trees was determined as shown in Table 1.

<b>Tree no.</b>	<b>Species</b>	<b>Landscape Significance</b>
1.	<i>Cinnamomum camphora</i>	Medium
2.	<i>Banksia integrifolia</i>	Medium
3.	<i>Cinnamomum camphora</i>	Medium
4.	<i>Cinnamomum camphora</i>	Medium
5.	<i>Cinnamomum camphora</i>	Medium
6.	<i>Cinnamomum camphora</i>	Medium
7.	<i>Cinnamomum camphora</i>	Medium
8.	<i>Cinnamomum camphora</i>	Medium
9.	<i>Cinnamomum camphora</i>	Medium
10.	<i>Cinnamomum camphora</i>	Medium

**Table 1 - Landscape Significance**

## 5.0 Subject Tree Retention Value

### 5.1 Tree Retention Value Methodology

For the purpose of this report, the Tree Retention Values have been assessed by incorporating Landscape Significance Values as determined in 4.0 with the Useful Life Expectancy of the subject trees and assessing the retention values based on the Tree Retention Value Priority Matrix as developed by the Institute of Australian Consulting Arborists (IACA). Please refer to Appendix B for greater detail of this Tree Retention Value Priority Matrix. This matrix defines Landscape Significance for individual trees as High, Medium or Low Retention Value as well as Priority for Removal.

### 5.2 Retention Value of Subject Trees

Based on our assessment of the subject trees and implementation of the IACA Tree Retention Value Priority Matrix, the Retention Values of the Subject Trees were determined as shown in Table 2.

Tree no.	Species	Retention Value
1.	<i>Cinnamomum camphora</i>	Medium
2.	<i>Banksia integrifolia</i>	Medium
3.	<i>Cinnamomum camphora</i>	Medium
4.	<i>Cinnamomum camphora</i>	Medium
5.	<i>Cinnamomum camphora</i>	Medium
6.	<i>Cinnamomum camphora</i>	Medium
7.	<i>Cinnamomum camphora</i>	Medium
8.	<i>Cinnamomum camphora</i>	Medium
9.	<i>Cinnamomum camphora</i>	Medium
10.	<i>Cinnamomum camphora</i>	Medium

Table 2 – Tree Retention Value

## 6.0 Impact of Development

### 6.1 Tree Protection Zone

Tree Protection Zones (TPZs) have been defined for the subject trees in order to define the encroachment of the proposed development in accordance with AS4970-2009. The TPZs required have been taken as a circular area with a radius 12 x the diameter at breast height of the tree. This requirement is in line with Australian Standard AS 4970-2009 Protection of Trees on Development Sites. This standard defines a maximum of 10% encroachment to be minimal encroachment. Any encroachment over 10% requires the site arborist to give consideration as to the viability of the tree due to the proposed development.

## 6.2 Structural Root Zone

Structural Root Zone (SRZs) are defined by AS4970-2009 as the area of root development required for the structural stability of the tree. The SRZ is required to be assessed when an encroachment greater than 10% is considered.

Tree no.	Species	TPZ Radius (m)	Encroachment (%)	SRZ Radius (m)
1.	<i>Cinnamomum camphora</i>	6.36	30	2.76
2.	<i>Banksia integrifolia</i>	2	45	1.68
3.	<i>Cinnamomum camphora</i>	7.2	30	2.85
4.	<i>Cinnamomum camphora</i>	6	30	2.67
5.	<i>Cinnamomum camphora</i>	5.4	30	2.67
6.	<i>Cinnamomum camphora</i>	6	20	2.67
7.	<i>Cinnamomum camphora</i>	6	6	2.67
8.	<i>Cinnamomum camphora</i>	5.52	0	2.67
9.	<i>Cinnamomum camphora</i>	7.32	0	2.85
10.	<i>Cinnamomum camphora</i>	15	0	3.81

## 6.3 Development Impact

**6.3.1. Tree 1.** The TPZ of this tree in accordance with AS 4970-2009 Protection of Trees on Development Sites will be encroached by the proposed conduit trench excavation by 30% which is significantly greater than the minor encroachment as defined by AS 4970-2009. Additionally, this trench excavation will encroach the SRZ of this tree and therefore impact the stability of this tree. This tree will not be viable to be retained under the proposed development.

**6.3.2. Tree 2. *Banksia integrifolia***  
The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 Protection of Trees on Development Sites will be encroached by the proposed development by 45% which is significantly greater than the minor encroachment as defined by AS 4970-2009. This tree will not be viable to be retained under the proposed development.

- 6.3.3. Tree 3. *Cinnamomum camphora***  
The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 Protection of Trees on Development Sites will be encroached by the proposed conduit trench excavation by 30% which is significantly greater than the minor encroachment as defined by AS 4970-2009. Additionally, this trench excavation will encroach within the Structural Root Zone (SRZ) of this tree and therefore impact the stability of this tree. This tree will not be viable to be retained under the proposed development.
- 6.3.4. Tree 4. *Cinnamomum camphora***  
The TPZ of this tree in accordance with AS 4970-2009 Protection of Trees on Development Sites will be encroached by the proposed conduit trench excavation by 30% which is significantly greater than the minor encroachment as defined by AS 4970-2009. Additionally, this trench excavation will encroach the SRZ of this tree and therefore impact the stability of this tree. This tree will not be viable to be retained under the proposed development.
- 6.3.5. Tree 5.** The TPZ of this tree in accordance with AS 4970-2009 Protection of Trees on Development Sites will be encroached by the proposed conduit trench excavation by 30% which is significantly greater than the minor encroachment as defined by AS 4970-2009. Additionally, this trench excavation will encroach the SRZ of this tree and therefore impact the stability of this tree. This tree will not be viable to be retained under the proposed development.
- 6.3.6. Tree 6.** The TPZ of this tree in accordance with AS 4970-2009 Protection of Trees on Development Sites will be encroached by the proposed conduit trench excavation by 20% which is significantly greater than the minor encroachment as defined by AS 4970-2009. Additionally, this trench excavation will encroach the SRZ of this tree and therefore impact the stability of this tree. This tree will not be viable to be retained under the proposed development.
- 6.3.7. Tree 7.** The TPZ of this tree in accordance with AS 4970-2009 Protection of Trees on Development Sites will be encroached by the proposed conduit trench excavation by 6% which is a minor encroachment as defined by AS 4970-2009. This tree will remain viable to be retained under the proposed development.
- 6.3.8. Tree 8. *Cinnamomum camphora***  
The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 Protection of Trees on Development Sites will not be further encroached by the proposed development. This tree will remain viable to be retained under the proposed development.
- 6.3.9. Tree 9. *Cinnamomum camphora***  
The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 Protection of Trees on Development Sites will not be encroached by the proposed trench excavation however the canopy will be impacted by the required transport access required for

construction. This tree will require canopy reduction pruning to provide transport access. This tree remain viable to be retained under the proposed development.

#### 6.3.10. Tree 10. *Cinnamomum camphora*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be encroached by the proposed trench excavation however the canopy will be impacted by the required transport access required for construction. This tree will require canopy reduction pruning to provide transport access. This tree remain viable to be retained under the proposed development.

## 7.0 Recommendations

The subject trees are in good health and condition with no apparent structural defects.

The Tree Protection Zones of Trees 1, 2, 3, 4, 5, 6 are encroached by the proposed construction and required earthworks by a major encroachment as defined by AS4970-2009 *Protection of Trees on Development Sites*. These trees will not be viable to be retained and will be required to be removed due to the proposed development.

The canopies of Trees 9 and 10 are impacted by the required construction traffic to transport the pre-fabricated buildings onto site. These trees will require crown reduction pruning in accordance with AS4373-2007 *Pruning of Amenity Trees* in accordance with the Pruning Specification 8.0.

All other trees are viable to be retained and are to be protected as defined below.

Recommendations for tree retention or removal are summarised as follows:

Tree no.	Species	Recommendations	Comments
1.	<i>Cinnamomum camphora</i>	Remove	Not viable to be retained due to proposed development.
2.	<i>Banksia integrifolia</i>	Remove	Not viable to be retained due to proposed development.
3.	<i>Cinnamomum camphora</i>	Remove	Not viable to be retained due to proposed development.
4.	<i>Cinnamomum camphora</i>	Remove	Not viable to be retained due to proposed development.
5.	<i>Cinnamomum camphora</i>	Remove	Not viable to be retained due to proposed development.
6.	<i>Cinnamomum camphora</i>	Remove	Not viable to be retained due to proposed development.
7.	<i>Cinnamomum camphora</i>	Retain	Viable to be retained and protected in accordance with 8.0.
8.	<i>Cinnamomum camphora</i>	Retain	Viable to be retained and protected in accordance with 8.0.



9.	<i>Cinnamomum camphora</i>	Retain	Viable to be retained and protected in accordance with 8.0. Crown reduction pruning required in order to allow construction transport access.
10.	<i>Cinnamomum camphora</i>	Retain	Viable to be retained and protected in accordance with 8.0. Crown reduction pruning required in order to allow construction transport access.

## 8.0 Pruning Specification

### 8.1 General

All pruning is to be carried out under the supervision of the Site Arborist (AQF Level 5) by an arborist with qualifications of AQF Level 3 or higher. All pruning is to be in accordance with *AS4373-2007 Pruning of Amenity Trees*. All pruning is to be carried out under the supervision of the Site Arborist.

Trees 9 and 10 require crown reduction pruning to allow safe construction transport access for the delivery of the prefabricated structures.

Pruning locations are to be selected in order to minimise the amount of canopy removed to provide clearance and leave the remaining canopy balanced with even weight distribution and to maintain the natural habit for this species. Tree 31 currently has an unbalanced crown due to line clearance pruning. The first order branch that extends north over the site is the only remaining natural growth in the crown and is to be retained.

Pruning is to be restricted to the extent that is required to allow construction and vehicular access to the site. This pruning is not to exceed 10% of the crown of each tree and branches pruned are not to exceed 40mm diameter.

### 8.2 Tree 9

Selective pruning is required to provide canopy clearance for construction transport access. One second order branch is required to be removed as shown in Figures 1. All pruning is to be carried out under the supervision of the Site Arborist (AQF Level 5) by an arborist with qualifications of AQF Level 3 or higher. All pruning is to be in accordance with *AS4373-2007 Pruning of Amenity Trees*.

Pruning Location A is a second order branch with a diameter at the pruning location of approximately 300mm. This branch extends in a southwesterly direction. This branch is to be pruned at the secondary branch junction at the branch collar at the location shown in figure 2.





**Figure 1 - Pruning Location A**

### 8.3 Tree 10

Selective pruning is required to provide canopy clearance for construction transport access. One first order branch is required to be removed at Pruning Location B as shown in Figure 2 and one third order branch is required to be removed at Pruning Location C as shown in Figure X. All pruning is to be carried out under the supervision of the Site Arborist (AQF Level 5) by an arborist with qualifications of AQF Level 3 or higher. All pruning is to be in accordance with *AS4373-2007 Pruning of Amenity Trees*.



Pruning Location B is a first order branch with a diameter at the pruning location of approximately 300mm. This branch extends in a southwesterly direction. This branch is to be pruned at the primary branch junction at the branch collar at the location shown in figure 2.



**Figure 2 - Pruning Location B**

Pruning Location C is a third order branch with a diameter at the pruning location of approximately 100mm. This branch extends in a southwesterly direction. This branch is to be pruned at the primary branch junction at the branch collar at the location shown in figure 3.





**Figure 3 - Pruning Location C**

## **9.0 Pre-Construction Tree Protection Measures**

### **9.1 General**

All tree protection works shall be carried out before excavation, grading and site works commence. Tree protection works shall be inspected and approved by a Consulting Arborist meeting AQF Level 5 prior to construction works commencing.

Storage of materials, mixing of materials, vehicle parking, disposal of liquids, machinery repairs and refueling, site office and sheds, and the lighting of fires, stockpiling of soil, rubble or any debris shall not be carried out within the TPZ of existing trees. No backfilling shall occur within the TPZ of existing trees. Trees shall not be removed or lopped unless specific instruction is given in writing by the Superintendent.

### **9.2 Identification**

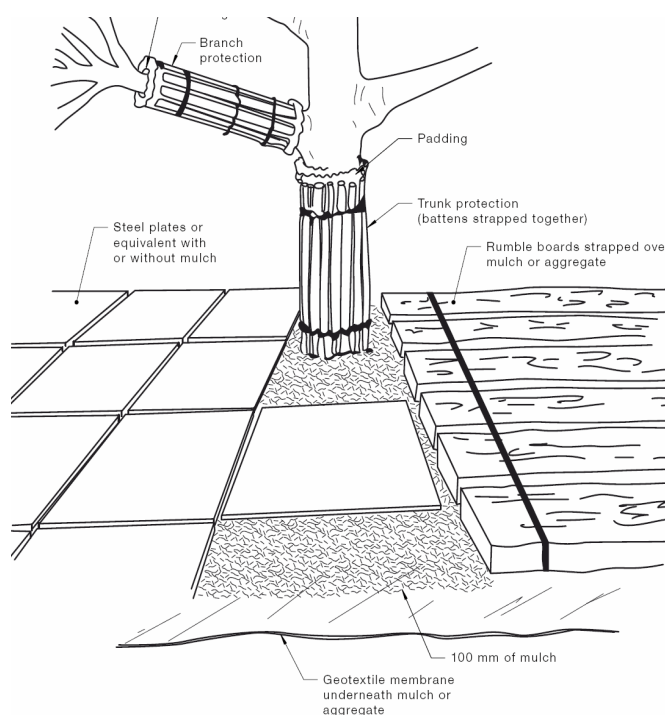
All trees to be protected shall be clearly identified and all TPZs surveyed.

### **9.3 Protective Fence**

Fencing is to be erected around existing trees to be retained. In addition to this protective fencing within the site, Protective Fencing is to be installed to the full extent of the TPZs within the site. This fencing is to be erected prior to any materials being brought on site or before any site, civil works or construction works commence. The fence shall enclose a sufficient area so as to prevent damage to the TPZ as defined on Appendix D Tree Protection Plan and as defined in 5.1 above. Fence to comprise 1800mm high chain wire mesh fixed to 50mm diameter Galvanised steel posts. Panels

should be securely fixed top and bottom to avoid separation. No storage of building materials, tools, paint, fuel or contaminants and the like shall occur within the fenced area.

Where a tree is to be retained and a Tree Protection Zone cannot be adequately established due to restricted access, the trunk and branches in the lower crown will be protected by wrapping 2 layers of hessian or carpet underfelt around the trunk and branches for a minimum of 2 m or as lower branches permit, then metal strapping secures 38x50 x2000 mm timber battens together around the trunk (do not nail or screw to the trunk or branches). The number of battens to be used is as required to encircle the trunk and the battens are to extend to the base of the tree (AS4970 2009 Protection of trees on development sites, Figure 1 Examples of Trunk, Branch and ground protection).



**Figure 4 - Trunk Protection**

## 9.4 Mulching

Install mulch to the extent of all tree protection fencing. Use a leaf mulch conforming to AS 4454 which is free of deleterious and extraneous matter such as soil, weeds, sticks and stones and consisting of a minimum of 90% recycled content compliant with AS 4454 (1999) and AS 4419 (1998). All trees marked as to be removed on the proposed development are to be chipped and reused for this purpose. Place mulch evenly and to a depth of 100mm.

## 9.5 Signage

Prior to works commencing, tree protection signage is to be attached to each tree protection zone, displayed in a prominent position and the sign repeated at 10 metres intervals or closer where the fence changes direction. Each sign shall contain in a clearly legible form, the following information:

Tree protection zone.

- This fence has been installed to prevent damage to the trees and their growing environment both above and below ground and access is restricted.
- No Access within Tree Protection Zone
- The name, address, and telephone number of the developer.

The name and telephone number of the Site Arborist.

## **10.0 Site Management Issues**

### **10.1 Soil Compaction**

Plant and pedestrian traffic during the construction period will cause significant soil compaction. This will be exacerbated by increased water expected on these soils as result of adjacent construction and weather. Compaction of the soil within the TPZ will reduce the voids between soil peds or particles therefore will reduce the gaseous exchange capacity of the root system which will slow critical metabolic processes such as respiration which produces Adenosine Triphosphate (ATP) which provides energy for the photosynthesis, which in turn provides photosynthates such as glucose. These photosynthates provide the carbohydrates required for tree extension growth, girth expansion, reproduction and pest and disease resistance. No pedestrian or plant access is permissible to the TPZ.

### **10.2 Site Access**

Sufficient access is required to enable efficient construction. It is essential to delineate access zones or corridors which will provide suitable access without damaging the existing trees to be retained or causing compaction to the root zone.

### **10.3 Excavation within Tree Protection Area**

No excavation is to be carried out within the TPZs of retained trees without the permission and supervision of the site arborist (AQF5)

### **10.4 Possible Contamination / Storage of Materials**

The construction site will require the use of many chemicals and materials that are possible contaminants which if not managed will pose a risk to the existing trees. These possible contaminants include fuels, herbicides, solvents and the like. A site specific Environmental Management Plan shall be provided, and this specific risk identified and addressed.

## **11.0 Tree Protection Measures During Construction**

### **11.1 Maintenance of Pre-Construction Tree Protection Measures**

The Pre-Construction Tree Protection Measures identified in 5.0 above are to be maintained in good and serviceable condition throughout the construction period.

### **11.2 Possible Contaminants**

Do not store or otherwise place bulk materials and harmful materials under or near trees. Do not place spoil from excavations within the TPZs. Prevent wind-blown materials such as cement from harming trees. All possible contaminants are to be

stored in a designated and appropriate area with secure chemical spill measures such as a bund in place.

### **11.3 Physical Damage**

Prevent damage to tree. Do not attach stays, guys and the like to trees. No personnel, plant, machinery or materials are to be allowed within the tree protection fencing.

### **11.4 Compaction**

No filling or compaction shall occur over tree roots zones within tree protection fenced areas. Where construction occurs close to or the TPZ of trees to be retained it shall be necessary to install protection to avoid compaction of the ground surface. This protection is to be planks supported clear of the ground fixed to scaffolding.

### **11.5 Trenching**

No Trenching should be necessary within the TPZs or within tree protection fencing. No further trenching is to be carried out without the approval of the Superintendent. Should any further trenching be required within the TPZs identified, this work is to be carried out by hand and under the supervision of a qualified Arborist.

### **11.6 Irrigation/Watering**

Contractor is to ensure that soil moisture levels are adequately maintained. Apply water at an appropriate rate suitable for the species during periods of little or no rainfall.

### **11.7 Site Sheds / Amenities/ Storage**

Site sheds, site amenities, ablutions and site storage shall be in the area clear of all TPZ. Chemicals and potential contaminants are to be stored appropriately and this storage area is to be enclosed by a chemical spill bund to prevent the potential run off of contaminants in the event of a spillage or accident.

## **12.0 Environmental / Heritage/ Legislative Considerations**

None of the subject trees are identified as threatened species or elements of endangered ecological communities within the Threatened Species Conservation Act 1995.

## **13.0 References**

Mattheck, C. Breloer, K. 1993, The Body Language of Trees: A Handbook for Failure Analysis, 12th Impression 2010 The Stationery Office.  
AS4970-2009 Protection of Trees on Development Sites: Standards Australia

## **14.0 Disclaimer**

This Appraisal has been prepared for the exclusive use of the Client and Birds Tree Consultancy.

Birds Tree Consultancy accepts no responsibility for its use by other persons. The Client acknowledges that this Appraisal, and any opinions, advice or recommendations expressed or given in it, are based on the information supplied by the Client and on



the data inspections, measurements and analysis carried out or obtained Birds Tree Consultancy and referred to in the Appraisal. The Client should rely on the Appraisal, and on its contents, only to that extent.

Every effort has been made in this report to include, assess and address all defects, structural weaknesses, instabilities and the like of the subject trees. All inspections were made from ground level using only visual means and no intrusive or destructive means of inspection were used. For many structural defects such as decay and inclusions, internal inspection is required by means of Resistograph or similar. No such investigation has been made in this case. Trees are living organisms and are subject to failure through a variety of causes not able to be identified by means of this inspection and report.



### 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.

## Appendix B Tree Retention Values

		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					
<b>Legend for Matrix Assessment</b> 						
		<b>Priority for Retention (High)</b> - 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.				
		<b>Consider for Retention (Medium)</b> - 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.				
		<b>Consider for Removal (Low)</b> - These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.				
		<b>Priority for Removal</b> - These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.				

### 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](http://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](http://www.footprintgreen.com.au)

## Appendix C - Tree Inspection Data



# Birds Tree Consultancy

Consulting Arborist • Project Management • Horticultural Consultancy • Landscape Management

Inspection Data  
Dulwich Hill

12-May-21

Tree no.	Species	Height (m)	Spread(m)	DBH (mm)	TPZ Radius (m)	DAB Radius (mm)	SRZ Radius (m)	Maturity	Trunk (single, twin, multiple @)	Trunk lean	Form/Crown shape	Branching Habit	Crown Distribution	Stability	Branching Structure	Pruning History	Defects	Damage	Overall Health & Vigour	Canopy Density	Foliage	Deadwood	Epicormic Growth	Pest Infestation	Disease	Life expectancy	Env. & Landcape significance	Retention Value	Notes/Comments
1	Cinnamomum camphora	16	9	530	6.36	650	2.76	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	Medium	Medium	
2	Banksia integrifolia	9	4	130	2	200	1.68	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	Medium	Medium	
3	Cinnamomum camphora	17	8	600	7.2	700	2.85	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	Line clearance	Nil	Nil	Good	Normal	Normal	<5%	0.2	No evidence	No evidence	15-40y	Medium	Medium	
4	Cinnamomum camphora	18	7	500	6	600	2.67	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	Line clearance	Nil	Nil	Good	Normal	Normal	<5%	0.2	No evidence	No evidence	15-40y	Medium	Medium	
5	Cinnamomum camphora	16	8	450	5.4	600	2.67	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	Line clearance	Nil	Nil	Good	Normal	Normal	<5%	0.2	No evidence	No evidence	15-40y	Medium	Medium	
6	Cinnamomum camphora	16	7	500	6	600	2.67	Mature	Twin @ 1m	NIL	Normal	Normal	Balanced	Stable	Stable	Line clearance	Nil	Nil	Good	Normal	Normal	<5%	0.2	No evidence	No evidence	15-40y	Medium	Medium	
7	Cinnamomum camphora	15	4	500	6	600	2.67	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	Line clearance	Nil	Nil	Good	Normal	Normal	<5%	0.2	No evidence	No evidence	15-40y	Medium	Medium	
8	Cinnamomum camphora	13	6	460	5.52	600	2.67	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	Line clearance	Nil	Nil	Good	Normal	Normal	<5%	0.2	No evidence	No evidence	15-40y	Medium	Medium	
9	Cinnamomum camphora	12	10	610	7.32	700	2.85	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	Line clearance	Nil	Nil	Good	Normal	Normal	<5%	0.2	No evidence	No evidence	15-40y	Medium	Medium	
10	Cinnamomum camphora	16	18	1270	15	1400	3.81	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	Line clearance	Nil	Nil	Good	Normal	Normal	<5%	0.2	No evidence	No evidence	15-40y	Medium	Medium	

