



## **ARBORICULTURAL DEVELOPMENT IMPACT ASSESSMENT REPORT**

### **Artarmon Bulk Power Supply**

**V4**

**9<sup>th</sup> July 2021**

**Prepared for  
Systems Connect**

### **Prepared by**

Birds Tree Consultancy  
Glenn Bird Dip. Hort (Arboriculture) (AQF5)  
PO Box 6048 DURAL NSW 2158  
PH 0438 892 634  
glenn@birdstrees.com.au  
www.birdstrees.com.au  
ABN 31 105 006 657



## Executive Summary

This Arboricultural Development Impact Assessment Report has been commissioned by Systems Connect as a revision of the previous Arboricultural Development Impact Assessment Report for the site of Systems Connect Line Wide Works, Reserve Road Artarmon NSW. This revision is based on the previous report commissioned by AMBS Ecology & Heritage Pty Ltd. The site is the location of a 33-kilovolt electricity cable that will be part of the infrastructure for the Systems Connect Line Wide Artarmon works. Installation of the cable will generally involve trenching along the alignment. In some places this will require the clearing or trimming of trees or other vegetation. This Report outlines the health, condition and stability of all trees within areas that may be impacted by the proposed development as well as their viability for retention within the context of the proposed works.

The Tree Protection Zone (TPZ) of Trees 2, 15, 21, 22 and 23 are encroached by the proposed construction and required earthworks by a major encroachment as defined by *AS4970-2009 Protection of Trees on Development Sites*. The proposed excavation will encroach within the Structural Root Zone (SRZ) of trees 2, 15, 21, 22 and 23, impacting their stability. Trees 2, 15, 21, 22 and 23 will not be viable to be retained and will be required to be removed due to the proposed works.

The TPZ of Trees 4, 9, 10, 17 and 20 will be encroached by the proposed development by greater than the minor encroachment as defined by AS 4970-2009. Based on consideration of the impediment to root development posed by the compacted road base of the existing roadway and these species tolerance to root disturbance in accordance with clause 3.3.4 of *AS 4970-2009*, these trees will be viable to be retained under the proposed development with supervision and direction by the Site Arborist.

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

## Contents

<b>Executive Summary .....</b>	<b>2</b>
<b>Contents.....</b>	<b>3</b>
<b>1.0 Scope of Works .....</b>	<b>4</b>
1.1 Background.....	4
1.2 Methods .....	5
1.3 Structure .....	5
<b>2.0 Site Analysis.....</b>	<b>5</b>
2.1 Site.....	5
2.2 Topography.....	5
2.3 Identification.....	6
2.4 Soils .....	6
<b>3.0 Existing Trees.....</b>	<b>6</b>
<b>4.0 Landscape Significance of Trees .....</b>	<b>9</b>
4.1 Landscape Significance.....	9
4.2 Methodology of Determining Landscape Significance .....	9
4.3 Landscape Significance of Subject Trees .....	9
<b>5.0 Subject Tree Retention Value .....</b>	<b>10</b>
5.1 Tree Retention Value Methodology .....	10
5.2 Retention Value of Subject Trees.....	10
<b>6.0 Impact of Development.....</b>	<b>11</b>
6.1 Tree Protection Zone .....	11
6.2 Structural Root Zone .....	11
6.2 Development Impact.....	13
<b>7.0 Recommendations .....</b>	<b>15</b>
<b>8.0 Pre-Construction Tree Protection Measures.....</b>	<b>16</b>
8.1 General .....	16
8.2 Identification.....	16
8.3 Protective Fence.....	17
8.4 Mulching .....	17
8.5 Signage.....	18
<b>9.0 Site Management Issues .....</b>	<b>18</b>
9.1 Soil Compaction.....	18
9.2 Site Access.....	18
9.3 Excavation within Tree Protection Area .....	18
9.4 Possible Contamination / Storage of Materials .....	18
<b>10.0 Tree Protection Measures During Construction</b>	<b>18</b>
<b>11.0 Environmental / Heritage/ Legislative</b>	
<b>Considerations .....</b>	<b>20</b>
<b>12.0 References .....</b>	<b>20</b>
<b>13.0 Disclaimer .....</b>	<b>20</b>
<b>Appendix A Landscape Significance.....</b>	<b>21</b>
<b>Appendix B Tree Retention Values .....</b>	<b>23</b>
<b>Appendix C - Tree Inspection Data.....</b>	<b>24</b>
<b>Appendix D Tree Location Plans .....</b>	<b>25</b>

## 1.0 Scope of Works

### 1.1 Background

This Arboricultural Development Impact Assessment Report, Revision V4 has been commissioned by Systems Connect to report on trees within the site of Systems Connect Line Wide Works, Reserve Road Artarmon NSW and is a revision of the previous report revision V2 commissioned by AMBS Ecology & Heritage Pty Ltd. The site is the location of a 33-kilovolt electricity cable that will be part of the infrastructure for the Systems Connect Line Wide Artarmon works. Installation of the cable will generally involve trenching along the alignment. In some places this will require the clearing or trimming of trees or other vegetation. This Report outlines the health, condition and stability of all trees within areas that may be impacted by the proposed development as well as their viability for retention within the context of the proposed works.

This revision V4 has been revised to incorporate the revised services installation in the vicinity of Tree 23 as defined by diagram provided by Systems Connect and included in Appendix E.

This report has been prepared in response to Condition E6 of the Conditions of Approval, which requires that:

*The CSSI must be designed to retain as many trees as possible and provide replacement trees such that there a net increase in the number of trees. The Proponent must commission an independent, experienced and suitably qualified arborist to prepare a comprehensive **Tree Report** before removing any trees as detailed in the EIS, as amended by the PIR and the terms of this approval. The **Tree Report** must include:*

*(a) a visual assessment to note the condition of the tree(s) with inputs from the Design Review*

*Panel, landscape architect, and construction team;*

*(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 tree removal, minimise damage to, and ensure the health and stability of those trees to be retained and protected. This includes details of any proposed canopy or root pruning, root protection zone, excavation, site controls on waste disposal, vehicular access, materials storage and protection of public utilities.*

*In the event that tree removal cannot be avoided, then replacement trees are to be planted within, or in close proximity to the CSSI or other location in consultation with the Relevant Councils and agreed by the Secretary. Replacement trees will be no smaller than a 75 litre pot size. A copy of the Tree Report must be submitted to the Secretary before the removal, damage and/or pruning of any trees, including those affected by the site establishment works. All recommendations of the Tree Report must be implemented by the Proponent, unless otherwise agreed by the Secretary.*

*The Tree Report may be prepared for the entire CSSI or separate reports may be prepared for individual areas where tree removal and/or pruning is proposed.*

## 1.2 Methods

On the 12<sup>th</sup> March 2020, 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 Dean Kellet and Chris Riley. The entire length of the route was traversed on foot and 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 E6 (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 E6 (b). Options to avoid tree removal along the proposed route were discussed on-site during the inspection on 12 March 2020. Section 6.1 defines Tree Protection Zones (TPZs) for each tree and assesses the encroachment of the route 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 E6 (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 the Systems Connect Line Wide Works, Reserve Road Artarmon NSW. The subject trees are located within or adjacent to the boundaries of this site. The works include the installation of new electrical cables including trenching to the extent shown on drawings.

### 2.2 Topography

Refer to detail survey for greater detail of levels. All of the trees are in close proximity to the existing kerbs and roadways.

## 2.3 Identification

Trees were defined in accordance with the definition provided in the Conditions of Approval, i.e. "Long lived woody perennial plant greater than (or usually greater than) 3m in height with one of relatively few main stems or trunks". Trees are as identified in the attached inspection forms in Appendix C and shown in Tree location Plan A01 in Appendix D.

## 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. *Casuarina spp*

This mature tree is approximately 12m tall with a canopy spread of 7m. It has twin co-dominant trunks from the base with an aggregate of diameter at breast height (DBH) of 400mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

### 3.2. Tree 2. *Casuarina spp*

This mature tree is approximately 12m tall with a canopy spread of 8m. It has a single trunk with a DBH of 420mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

### 3.3. Tree 3. *Casuarina spp*

This mature tree is approximately 9m tall with a canopy spread of 7m. It has a single trunk with a DBH of 335mm. This tree is in poor health and condition with a sparse canopy, moderate deadwood and minimal epicormic growth.

### 3.4. Tree 4. *Casuarina spp*

This mature tree is approximately 8m tall with a canopy spread of 9m. It has a single trunk with a DBH of 375mm. This tree is in poor health and condition with a sparse canopy, significant deadwood and minimal epicormic growth.

### 3.5. Tree 5. *Casuarina spp*

This mature tree is approximately 10m tall with a canopy spread of 8m. It has a single trunk with a DBH of 280mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

### 3.6. Tree 6. *Casuarina spp*

This mature tree is approximately 10m tall with a canopy spread of 7m. It has a single trunk with a DBH of 310mm. This tree is in fair health and condition with a thinning canopy, moderate deadwood and minimal epicormic growth.

**3.7. Tree 7. *Casuarina spp***

This mature tree is approximately 12m tall with a canopy spread of 8m. It has a single trunk with a DBH of 365mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

**3.8. Tree 8. *Casuarina spp***

This mature tree is approximately 9m tall with a canopy spread of 7m. It has a single trunk with a DBH of 290mm. This tree is in poor health and condition with a sparse canopy, significant deadwood and minimal epicormic growth.

**3.9. Tree 9. *Casuarina spp***

This mature tree is approximately 10m tall with a canopy spread of 8m. It has a single trunk with a DBH of 420mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

**3.10. Tree 10. *Casuarina spp***

This mature tree is approximately 9m tall with a canopy spread of 8m. It has twin co-dominant trunks from the base with an aggregate DBH of 480mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

**3.11. Tree 11. *Agonis flexuosa***

This mature tree is approximately 6m tall with a canopy spread of 9m. It has twin co-dominant trunks from the base with an aggregate DBH of 735mm. This tree is in fair health and condition with a thinning canopy, moderate deadwood and minimal epicormic growth.

**3.12. Tree 12. *Agonis flexuosa***

This mature tree is approximately 6m tall with a canopy spread of 9m. It has a single trunk with a DBH of 720mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

**3.13. Tree 13. *Agonis flexuosa***

This mature tree is approximately 6m tall with a canopy spread of 10m. It has a single trunk with a DBH of 850mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

**3.14. Tree 14. *Tristaniopsis laurina***

This semi-mature tree is approximately 3m tall with a canopy spread of 2m. It has a single trunk with a DBH of 50mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

**3.15. Tree 15. *Corymbia maculata***

This mature tree is approximately 17m tall with a canopy spread of 12m. It has twin co-dominant trunks from 1.5m above the base with a DBH of 870mm. This tree is in good health and condition with minimal deadwood and epicormic growth.



- 3.16. Tree 16. *Jacaranda mimosifolia***  
This mature tree is approximately 7m tall with a canopy spread of 7m. It has a single trunk with a DBH of 170mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.17. Tree 17. *Brachychiton acerifolia***  
This mature tree is approximately 8m tall with a canopy spread of 4m. It has twin co-dominant trunks from the base with an aggregate DBH of 335mm. This tree is in poor health and condition with a thinning canopy, moderate deadwood and significant epicormic growth.
- 3.18. Tree 18. *Jacaranda mimosifolia***  
This mature tree is approximately 7m tall with a canopy spread of 6m. It has a single trunk with a DBH of 205mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.19. Tree 19. *Jacaranda mimosifolia***  
This mature tree is approximately 7m tall with a canopy spread of 5m. It has a single trunk with a DBH of 195mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.20. Tree 20. *Jacaranda mimosifolia***  
This mature tree is approximately 7m tall with a canopy spread of 10m. It has twin co-dominant trunks from the base with an aggregate DBH of 280mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.21. Tree 21. *Corymbia maculata***  
This mature tree is approximately 31m tall with a canopy spread of 16m. It has a single trunk with a DBH of 935mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.22. Tree 22. *Corymbia maculata***  
This mature tree is approximately 21m tall with a canopy spread of 11m. It has a single trunk with a DBH of 470mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.23. Tree 23. *Corymbia maculata***  
This mature tree is approximately 26m tall with a canopy spread of 14m. It has a single trunk with a DBH of 710mm. 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.

Tree no.	Species	Landscape Significance
1.	<i>Casuarina spp</i>	Medium
2.	<i>Casuarina spp</i>	Medium
3.	<i>Casuarina spp</i>	Medium
4.	<i>Casuarina spp</i>	Medium
5.	<i>Casuarina spp</i>	Medium
6.	<i>Casuarina spp</i>	Medium
7.	<i>Casuarina spp</i>	Medium
8.	<i>Casuarina spp</i>	Medium
9.	<i>Casuarina spp</i>	Medium
10.	<i>Casuarina spp</i>	Medium
11.	<i>Agonis flexuosa</i>	Medium
12.	<i>Agonis flexuosa</i>	Medium
13.	<i>Agonis flexuosa</i>	Medium
14.	<i>Tristaniopsis laurina</i>	Medium
15.	<i>Corymbia maculata</i>	Medium
16.	<i>Jacaranda mimosifolia</i>	Medium
17.	<i>Brachychiton acerifolia</i>	Medium
18.	<i>Jacaranda mimosifolia</i>	Medium
19.	<i>Jacaranda mimosifolia</i>	Medium
20.	<i>Jacaranda mimosifolia</i>	Medium
21.	<i>Corymbia maculata</i>	Medium
22.	<i>Corymbia maculata</i>	Medium
23.	<i>Corymbia maculata</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>Casuarina spp</i>	Medium
2.	<i>Casuarina spp</i>	Medium
3.	<i>Casuarina spp</i>	Medium
4.	<i>Casuarina spp</i>	Medium
5.	<i>Casuarina spp</i>	Medium
6.	<i>Casuarina spp</i>	Medium
7.	<i>Casuarina spp</i>	Medium
8.	<i>Casuarina spp</i>	Medium
9.	<i>Casuarina spp</i>	Medium
10.	<i>Casuarina spp</i>	Medium
11.	<i>Agonis flexuosa</i>	Medium
12.	<i>Agonis flexuosa</i>	Medium
13.	<i>Agonis flexuosa</i>	Medium
14.	<i>Tristaniopsis laurina</i>	High
15.	<i>Corymbia maculata</i>	Medium
16.	<i>Jacaranda mimosifolia</i>	Medium
17.	<i>Brachychiton acerifolia</i>	Medium
18.	<i>Jacaranda mimosifolia</i>	Medium
19.	<i>Jacaranda mimosifolia</i>	Medium
20.	<i>Jacaranda mimosifolia</i>	Medium
21.	<i>Corymbia maculata</i>	Medium
22.	<i>Corymbia maculata</i>	Medium
23.	<i>Corymbia maculata</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)	SRZ Encroached
1.	<i>Casuarina spp</i>	4.8	0	2.43	No
2.	<i>Casuarina spp</i>	5.04	30	2.41	No
3.	<i>Casuarina spp</i>	4.02	0	2.23	No
4.	<i>Casuarina spp</i>	4.5	15	2.30	No
5.	<i>Casuarina spp</i>	3.36	0	2.15	No
6.	<i>Casuarina spp</i>	3.72	0	2.30	No
7.	<i>Casuarina spp</i>	4.38	0	2.37	No
8.	<i>Casuarina spp</i>	3.48	10	2.10	No
9.	<i>Casuarina spp</i>	5.04	11	2.43	No
10.	<i>Casuarina spp</i>	5.76	11	2.55	No
11.	<i>Agonis flexuosa</i>	8.82	0	3.04	No
12.	<i>Agonis flexuosa</i>	8.64	0	3.09	No
13.	<i>Agonis flexuosa</i>	10.2	0	3.24	No
14.	<i>Tristanopsis laurina</i>	2	0	1.36	No
15.	<i>Corymbia maculata</i>	10.44	33	3.25	Yes
16.	<i>Jacaranda mimosifolia</i>	2.04	0	1.79	No
17.	<i>Brachychiton acerifolia</i>	4.02	15	2.20	No
18.	<i>Jacaranda mimosifolia</i>	2.46	0	1.88	No

19.	<i>Jacaranda mimosifolia</i>	2.34	0	1.94	No
20.	<i>Jacaranda mimosifolia</i>	3.36	12	2.10	No
21.	<i>Corymbia maculata</i>	11.22	40	3.47	Yes
22.	<i>Corymbia maculata</i>	5.64	40	2.53	Yes
23.	<i>Corymbia maculata</i>	8.52	40	3.00	Yes

## 6.2 Development Impact

Trees that have been identified in 6.1 as impacted by the proposed works are as follows:

### 6.2.1. Tree 2. *Casuarina spp*

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 30% which is significantly greater than the minor encroachment as defined by AS 4970-2009. Due to the proximity to a bend in the proposed cable trench, there is limited opportunity to realign the trench. This tree will not be viable to be retained under the proposed development.

### 6.2.2. Tree 4. *Casuarina spp*

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 15% which is slightly greater than the minor encroachment as defined by AS 4970-2009. Based on this species tolerance to root disturbance and the impediment to root development of the existing structures, in accordance with clause 3.3.4 of AS 4970-2009, this tree will be viable to be retained under the proposed development.

### 6.2.3. Tree 9. *Casuarina spp*

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 11% which is slightly greater than the minor encroachment as defined by AS 4970-2009. Based on this species tolerance to root disturbance and the impediment to root development of the existing structures, in accordance with clause 3.3.4 of AS 4970-2009, this tree will be viable to be retained under the proposed development.

### 6.2.4. Tree 10. *Casuarina spp*

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 11% which is slightly greater than the minor encroachment as defined by AS 4970-2009. Based on this species tolerance to root disturbance and the impediment to root development of the existing structures, in accordance with clause 3.3.4 of AS 4970-2009, this tree will be viable to be retained under the proposed development.

### 6.2.5. Tree 15. *Corymbia maculata*

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 33% which is significantly greater than the minor encroachment as defined by AS 4970-2009. The proposed excavation will encroach within the Structural Root Zone (SRZ) of this tree, impacting the stability of this

tree. This tree will not be viable to be retained under the proposed development without design and construction method revisions.

**6.2.6. Tree 17. *Brachychiton acerifolia***

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 15% which is slightly greater than the minor encroachment as defined by AS 4970-2009. Based on this species tolerance to root disturbance and the impediment to root development of the existing structures, in accordance with clause 3.3.4 of AS 4970-2009, this tree will be viable to be retained under the proposed development.

**6.2.7. Tree 20. *Corymbia maculata***

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 12% which is slightly greater than the minor encroachment as defined by AS 4970-2009. Based on this species tolerance to root disturbance and the impediment to root development of the existing structures, in accordance with clause 3.3.4 of AS 4970-2009, this tree will be viable to be retained under the proposed development.

**6.2.8. Tree 21. *Corymbia maculata***

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 40% which is significantly greater than the minor encroachment as defined by AS 4970-2009. The proposed excavation will encroach within the Structural Root Zone (SRZ) of this tree, impacting the stability of this tree. This tree will not be viable to be retained under the proposed development without design and construction method revisions.

**6.2.9. Tree 22. *Corymbia maculata***

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 40% which is significantly greater than the minor encroachment as defined by AS 4970-2009. The proposed excavation will encroach within the Structural Root Zone (SRZ) of this tree, impacting the stability of this tree. This tree will not be viable to be retained under the proposed development without design and construction method revisions.

**6.2.10. Tree 23. *Corymbia maculata***

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 40% which is significantly greater than the minor encroachment as defined by AS 4970-2009. The proposed excavation will encroach within the Structural Root Zone (SRZ) of this tree, impacting the stability of this

tree. This tree will not be viable to be retained under the proposed development without design and construction method revisions.

## 7.0 Recommendations

The Tree Protection Zone (TPZ) of Trees 2, 15, 21, 22 and 23 are encroached by the proposed construction and required earthworks by a major encroachment as defined by *AS4970-2009 Protection of Trees on Development Sites*. The proposed excavation will encroach within the Structural Root Zone (SRZ) of trees 15, 21 and 22, impacting their stability. Trees 2, 15, 21, 22 and 23 will not be viable to be retained and will be required to be removed due to the proposed works.

The TPZ of Trees 4, 9, 10, 17, and 20 will be encroached by the proposed development by greater than the minor encroachment as defined by AS 4970-2009. Based on consideration of the impediment to root development posed by the compacted road base of the existing roadway and these species tolerance to root disturbance in accordance with clause 3.3.4 of *AS 4970-2009*, these trees will be viable to be retained under the proposed development with supervision and direction by the Site Arborist.

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>Casuarina spp</i>	Retain	Viable to be retained and protected in accordance with 8.0.
2.	<i>Casuarina spp</i>	Remove	Not viable to be retained due to encroachment by the proposed works.
3.	<i>Casuarina spp</i>	Retain	Viable to be retained and protected in accordance with 8.0.
4.	<i>Casuarina spp</i>	Retain	Viable to be retained and protected in accordance with 8.0.
5.	<i>Casuarina spp</i>	Retain	Viable to be retained and protected in accordance with 8.0.
6.	<i>Casuarina spp</i>	Retain	Viable to be retained and protected in accordance with 8.0.
7.	<i>Casuarina spp</i>	Retain	Viable to be retained and protected in accordance with 8.0.
8.	<i>Casuarina spp</i>	Retain	Viable to be retained and protected in accordance with 8.0.
9.	<i>Casuarina spp</i>	Retain	Excavation within the TPZ to be carried out under the direction and supervision of the Site Arborist. Tree Protection Fencing to be installed in accordance with 8.3.
10.	<i>Casuarina spp</i>	Retain	Excavation within the TPZ to be carried out under the direction and supervision of the Site Arborist. Tree



			Protection Fencing to be installed in accordance with 8.3.
11.	<i>Agonis flexuosa</i>	Retain	Viable to be retained and protected in accordance with 8.0.
12.	<i>Agonis flexuosa</i>	Retain	Viable to be retained and protected in accordance with 8.0.
13.	<i>Agonis flexuosa</i>	Retain	Viable to be retained and protected in accordance with 8.0.
14.	<i>Tristaniopsis laurina</i>	Retain	Viable to be retained and protected in accordance with 8.0.
15.	<i>Corymbia maculata</i>	Remove	Not viable to be retained due to encroachment by the proposed works.
16.	<i>Jacaranda mimosifolia</i>	Retain	Viable to be retained and protected in accordance with 8.0.
17.	<i>Brachychiton acerifolia</i>	Retain	Viable to be retained and protected in accordance with 8.0.
18.	<i>Jacaranda mimosifolia</i>	Retain	Viable to be retained and protected in accordance with 8.0.
19.	<i>Jacaranda mimosifolia</i>	Retain	Viable to be retained and protected in accordance with 8.0.
20.	<i>Jacaranda mimosifolia</i>	Retain	Viable to be retained and protected in accordance with 8.0.
21.	<i>Corymbia maculata</i>	Remove	Not viable to be retained due to encroachment by the proposed works.
22.	<i>Corymbia maculata</i>	Remove	Not viable to be retained due to encroachment by the proposed works.
23.	<i>Corymbia maculata</i>	Remove	Not viable to be retained due to encroachment by the proposed works.

## 8.0 Pre-Construction Tree Protection Measures

### 8.1 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.

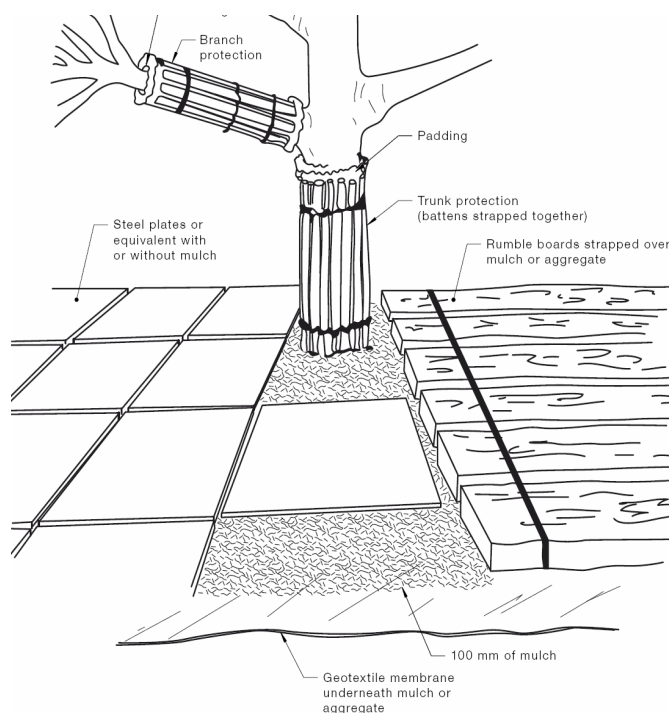
### 8.2 Identification

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

### 8.3 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 such as the case of Trees 1, 2 and 3, 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 3 Examples of Trunk, Branch and ground protection).



**Figure 1 - Trunk Protection**

### 8.4 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.

## **8.5 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.

## **9.0 Site Management Issues**

### **9.1 Soil Compaction**

Plant and pedestrian traffic during the construction period has the potential to cause soil compaction. 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 and water percolation. No pedestrian or plant access is permissible to the TPZ.

### **9.2 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. All construction traffic, both vehicular and pedestrian will be diverted outside of the Tree Protection Zones by Tree Protection Fencing to the trees defined in 8.3.

### **9.3 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)

### **9.4 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 Environmental Plan shall be provided, and this specific risk identified and addressed.

## **10.0 Tree Protection Measures During Construction**

### **10.1 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.

## **10.2 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.

## **10.3 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.

## **10.5 Trenching**

Trenching is necessary within the TPZs of trees as defined in 6.1. All trenching works within TPZ's is to be carried out under the supervision of the AQF Level 5 qualified Site Arborist.

## **10.6 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.

## 11.0 Environmental / Heritage/ Legislative Considerations

None of the subject trees are identified as threatened species or elements of endangered ecological communities within the NSW Biodiversity Conservation Act 2016.

## 12.0 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

## 13.0 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

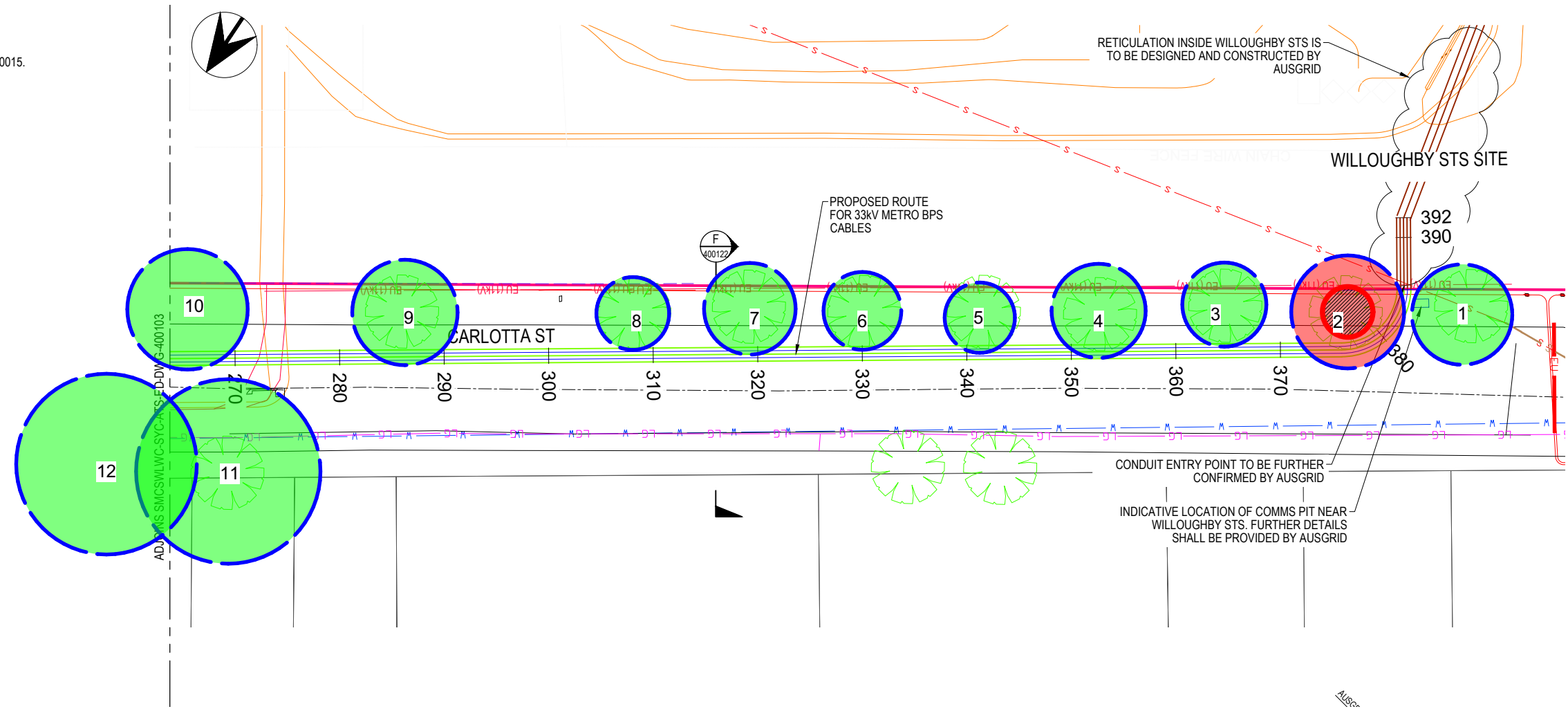
Inspection Data  
Reserve Road Artarmon

23-Mar-20

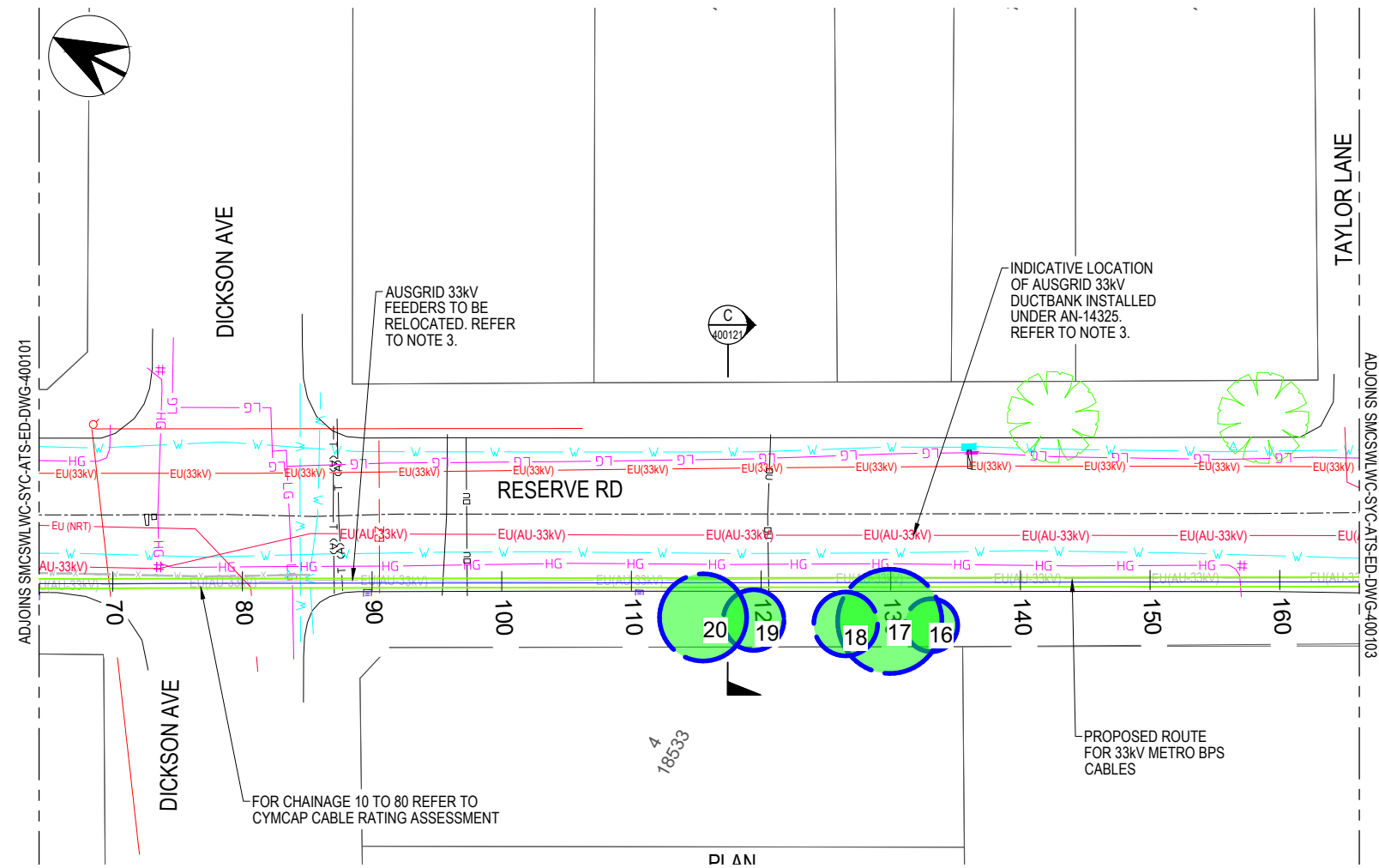
Tree no.	Species	Height (m)	Spread(m)	DBH (mm)	TPZ Radius (m)	DAB (mm)	SRZ Radius (m)	Maturity	Trunk (single, twin, multiple @)	Trunk lean	Form/Crown shape	Branching Habit	Crown Distribution	Stability	Branching Structure	Pruning History	Defects	Damage	Overall Health & Vigour	Canopy Density	Foliage	Deadwood	Epicormic Growth	Pest Infestation	Disease	Life expectancy	Env. & Landscape significance	Retention Value
1	Casuarina spp	12	7	400	4.8	480	2.43	Mature	Twin @ base	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	Medium	Medium
2	Casuarina spp	12	8	420	5.04	470	2.41	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	Casuarina spp	9	7	335	4.02	390	2.23	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Poor	Sparse	Normal	30%	<5%	No evidence	No evidence	5-15y	Medium	Medium
4	Casuarina spp	8	9	375	4.5	420	2.30	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Poor	Sparse	Normal	50%	<5%	No evidence	No evidence	5-15y	Medium	Medium
5	Casuarina spp	10	8	280	3.36	360	2.15	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
6	Casuarina spp	10	7	310	3.72	420	2.30	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Fair	Thinning	Normal	15%	<5%	No evidence	No evidence	5-15y	Medium	Medium
7	Casuarina spp	12	8	365	4.38	450	2.37	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
8	Casuarina spp	9	7	290	3.48	340	2.10	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Poor	Sparse	Normal	40%	<5%	No evidence	No evidence	5-15y	Medium	Medium
9	Casuarina spp	10	8	420	5.04	480	2.43	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
10	Casuarina spp	9	8	480	5.76	540	2.55	Mature	Twin @ base	NIL	Normal	Normal	Balanced	Stable	Suspect, Bark inclusion	No evidence	Bark inclusion	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	Medium	Medium
11	Agonis flexuosa	6	9	735	8.82	820	3.04	Mature	Twin @ base	NIL	Normal	Normal	Balanced	Stable	Stable	Line clearance	Nil	Nil	Fair	Thinning	Normal	20%	<5%	No evidence	No evidence	15-40y	Medium	Medium
12	Agonis flexuosa	6	9	720	8.64	850	3.09	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	Line clearance	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	Medium	Medium
13	Agonis flexuosa	6	10	850	10.2	950	3.24	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	Line clearance	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	Medium	Medium
14	Tristaniopsis laurina	3	2	50	2	120	1.36	Semi-mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	40y+	Medium	High
15	Corymbia maculata	17	12	870	10.44	960	3.25	Mature	Twin @ 1500	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	Medium	Medium
16	Jacaranda mimosifolia	7	7	170	2.04	230	1.79	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
17	Brachychiton acerifolia	8	4	335	4.02	380	2.20	Mature	Twin @ base	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Poor	Thinning	Normal	20%	60%	No evidence	No evidence	5-15y	Medium	Medium
18	Jacaranda mimosifolia	7	6	205	2.46	260	1.88	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
19	Jacaranda mimosifolia	7	5	195	2.34	280	1.94	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
20	Jacaranda mimosifolia	7	10	280	3.36	340	2.10	Mature	Twin @ base	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	Medium	Medium
21	Corymbia maculata	31	16	935	11.22	1120	3.47	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
22	Corymbia maculata	21	11	470	5.64	530	2.53	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
23	Corymbia maculata	26	14	710	8.52	790	3.00	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



DNS.  
4 AND 400015.







#### Legend

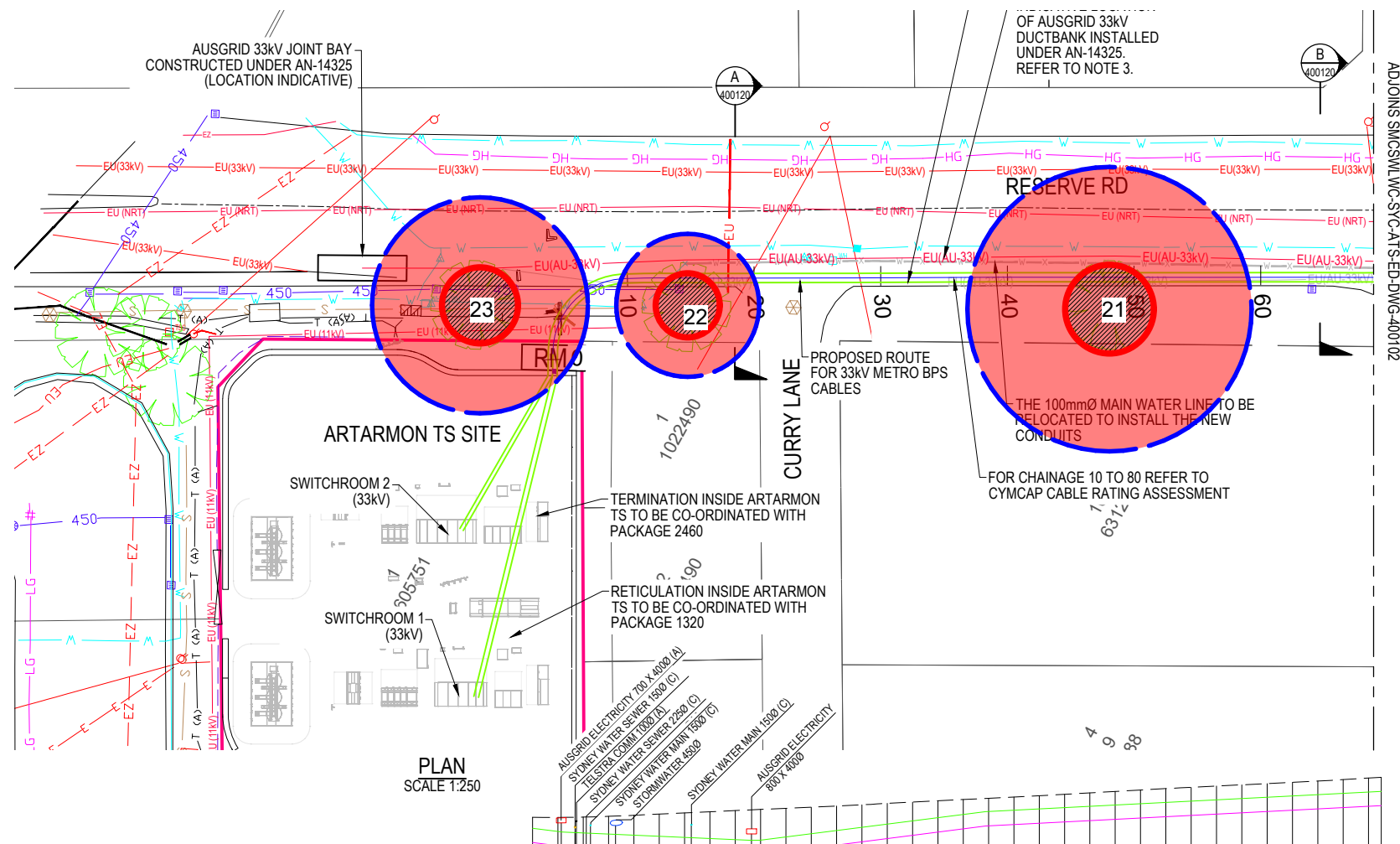
- Tree to be Retained and Protected
- Tree viable to be retained with design/construction amendments
- Tree to be Removed/Not Viable to be retained
- Tree Protection Zone (TPZ) in accordance with AS4970-2009
- Structural Root Zone (SRZ) in accordance with AS4970-2009

## Birds Tree Consultancy

0438 892 634  
 glenn@birdstrees.com.au  
[www.birdstrees.com.au](http://www.birdstrees.com.au)

Project: Artarmon - Systems Connect  
 Client: AMBS  
 DWG: A03 V3  
 Plan: Tree Location Plan 03  
 Date: 9 July 2021 2020 Scale : 1:500 @ A3





#### Legend

- Tree to be Retained and Protected
- Tree viable to be retained with design/construction amendments
- Tree to be Removed/Not Viable to be retained
- Tree Protection Zone (TPZ) in accordance with AS4970-2009
- Structural Root Zone (SRZ) in accordance with AS4970-2009

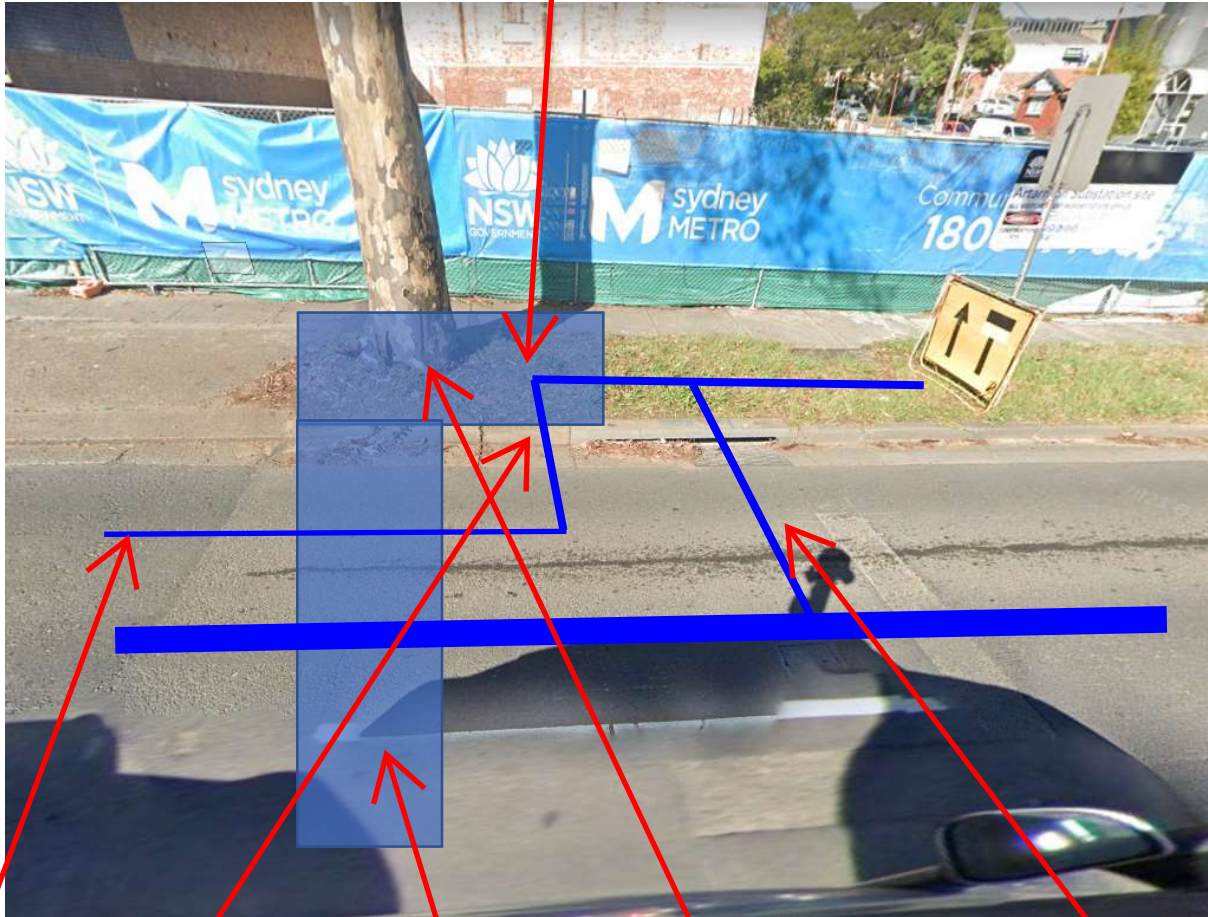
## Birds Tree Consultancy

0438 892 634  
glenn@birdstrees.com.au  
[www.birdstrees.com.au](http://www.birdstrees.com.au)

Project: Artarmon - Systems Connect  
Client: AMBS  
DWG: A04 V3  
Plan: Tree Location Plan 04  
Date: 9 July 2021 2020 Scale : 1:500 @ A3



90 Degree Bend 900mm off Tree Base - Connection Point



100mm Watermain

500mm Watermain

500mm/100mm Cross Connection

1.2m Wide x 3.0m Deep Trench in Verge  
(3.8m Long Shoring Box)

1.2m Wide x 3.0m Deep Trench in Road