



ARBORICULTURAL DEVELOPMENT IMPACT ASSESSMENT REPORT

**ESQ Stages 4 and 5, Panthers North Precinct
Mulgoa Road, Penrith NSW**

REVISION A

20th of September 2023

**Prepared for
Cabe**

Prepared by

Birds Tree Consultancy

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Executive Summary

This Arboricultural Development Impact Assessment Report has been commissioned by Cabe to report on trees within the site of ESQ Stages 4 and 5, Panthers North Precinct, Mulgoa Road, Penrith NSW. The subject trees are located within or adjacent to the boundaries of this site. This site is currently vacant land. The site is proposed for redevelopment including the demolition of the existing dwellings, construction of new residential buildings, entry roads, and associated landscape works. This report has been commissioned to outline the health, condition and stability of these trees as well as their viability for retention within the scope of the proposed development. The scope of this report includes all trees within areas that may be impacted by the proposed development.

The subject Trees are preserved under Part C2 of Penrith Development Control Plan 2014.

The subject trees are in good health and condition with the exception of Trees 224, and 225 which are in fair condition with chlorotic foliage as a result of significant mechanical damage to the root crown and surface roots.

All of the subject trees are totally encroached by the proposed construction and required earthworks 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.

Trees 207, 213, 219, 220, 221, 222, 223, 224 and 225 are species that are readily transplanted however due to the fact that these trees are not locally indigenous and grow to a very large size these trees are not high retention value trees. Trees 219, 220, 221, 222 have the highest viability for transplantation due to their smaller size and good health. Trees 207, 213 and 223 have reduced viability for transplantation due to their larger size and maturity. Trees 224 and 225 have low viability for transplantation due to their reduced health and condition and existing damage to the root crown and surface structural roots. The proposed location for the transplantation is in close proximity to the proposed pond barrier layer and *Ficus* roots are likely to impact this layer. This species whilst readily transplanted is not a suitable species for this site and replacement with advanced locally indigenous species would provide a better result.

Recommendations for tree retention or removal are summarised as follows:

Tree no.	Species	Recommendations	Comments
204	<i>Eucalyptus saligna</i>	Remove	Not viable to be retained due to the proposed development.
206	<i>Eucalyptus saligna</i>	Remove	Not viable to be retained due to the proposed development.
207	<i>Ficus benjamina</i>	Remove	Not viable to be retained due to the proposed development.
208	<i>Cupressus sempervirens</i>	Remove	Not viable to be retained due to the proposed development.
210	<i>Ficus benjamina</i>	Remove	Not viable to be retained due to the proposed development.

212	<i>Eucalyptus crebra</i>	Remove	Not viable to be retained due to the proposed development.
213	<i>Ficus benjamina</i>	Remove	Not viable to be retained due to the proposed development.
214	<i>Fraxinus oxycarpa</i> 'Raywood'	Remove	Not viable to be retained due to the proposed development.
215	<i>Fraxinus oxycarpa</i> 'Raywood'	Remove	Not viable to be retained due to the proposed development.
216	<i>Fraxinus oxycarpa</i> 'Raywood'	Remove	Not viable to be retained due to the proposed development.
219	<i>Ficus benjamina</i>	Remove	Not viable to be retained due to the proposed development.
220	<i>Ficus benjamina</i>	Remove	Not viable to be retained due to the proposed development.
221	<i>Ficus benjamina</i>	Remove	Not viable to be retained due to the proposed development.
222	<i>Ficus benjamina</i>	Remove	Not viable to be retained due to the proposed development.
223	<i>Ficus benjamina</i>	Remove	Not viable to be retained due to the proposed development.
224	<i>Ficus benjamina</i>	Remove	Not viable to be retained due to the proposed development.
225	<i>Ficus benjamina</i>	Remove	Not viable to be retained due to the proposed development.

Contents

Executive Summary	2
Contents	4
1.0 Scope of Works.....	5
2.0 Site Analysis	5
2.1 Site.....	5
2.2 Documentation.....	5
2.3 Topography.....	5
2.4 Identification.....	5
2.5 Soils	5
3.0 Existing Trees	6
4.0 Landscape Significance of Trees.....	9
4.1 Landscape Significance.....	9
4.2 Methodology of Determining Landscape Significance	9
4.3 Landscape Significance of Subject Trees	9
5.0 Subject Tree Retention Value.....	9
5.1 Tree Retention Value Methodology.....	9
5.2 Retention Value of Subject Trees.....	10
6.0 Impact of Development	10
6.1 Tree Protection Zone.....	10
6.2 Structural Root Zone	11
7.0 Recommendations	11
7.1 General	11
8.0 Transplantation Specification	13
9.0 Pre-Construction Tree Protection Measures	13
9.1 General	13
9.2 Identification.....	13
9.3 Project Arborist	13
9.4 Protective Fence.....	13
9.5 Mulching	13
9.6 Signage.....	13
9.7 Trunk and Branch Protection.....	14
10.0 Site Management Issues	14
10.1 Soil Compaction.....	14
10.2 Site Access	15
10.3 Excavation within Tree Protection Area	15
10.4 Possible Contamination / Storage of Materials	15
11.0 Tree Protection Measures During Construction	15
11.1 Maintenance of Pre-Construction Tree Protection Measures	15
11.2 Possible Contaminants.....	15
11.3 Physical Damage.....	15
11.4 Compaction.....	15
11.5 Trenching.....	15
11.6 Irrigation/Watering	15
11.7 Site Sheds / Amenities/ Storage.....	16
12.0 Environmental / Heritage/ Legislative Considerations	16
13.0 References	16
14.0 Disclaimer.....	16
Appendix A Landscape Significance.....	17
Appendix B Tree Retention Values	19
Appendix C - Tree Inspection Data.....	20
Appendix D - Tree Location Plan	21

1.0 Scope of Works

This Arboricultural Development Impact Assessment Report has been commissioned by Cabe to report on trees within the site of ESQ Stages 4 and 5, Panthers North Precinct, Mulgoa Road, Penrith NSW. It has been commissioned to outline the health, condition and stability of these trees as well as their viability for retention within the scope of the proposed development. The scope of this report includes all trees within areas that may be impacted by the proposed development.

On the 4th of March 2023, 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.

2.0 Site Analysis

2.1 Site

The subject site is the proposed ESQ Stages 4 and 5, Panthers North Precinct, Mulgoa Road, Penrith NSW. The subject trees are located within or adjacent to the boundaries of this site. This site is currently vacant land. The site is proposed for redevelopment including the demolition of the existing dwellings, construction of new residential buildings, entry roads, and associated landscape works.

2.2 Documentation

This Development Impact Assessment Report has been compiled based on the following documentation provided:

1. Turner DA Ground Level Plan DA-110-008 Revision 04 dated 24/06/2022.

2.3 Topography

The site is relatively flat in the vicinity of all trees. Refer to survey for greater details of levels.

2.4 Identification

Trees are as identified in the attached inspection forms in Appendix C and shown in Tree location Plan A01 in Appendix D.

2.5 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 204 *Eucalyptus saligna***
This mature tree is approximately 21m tall with a canopy spread of 14m. It has a single trunk with a diameter at breast height (DBH) of 70mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.2. Tree 206 *Eucalyptus saligna***
This mature tree is approximately 17m tall with a canopy spread of 14m. It has a single trunk with a DBH of 67mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.3. Tree 207 *Ficus benjamina***
This mature tree is approximately m tall with a canopy spread of m. It has multiple co-dominant trunks from the base with an aggregate DBH of 57mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.4. Tree 208 *Cupressus sempervirens***
This mature tree is approximately 9m tall with a canopy spread of 2m. It has a single trunk with a DBH of 38mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.5. Tree 210 *Ficus benjamina***
This mature tree is approximately 12m tall with a canopy spread of 12m. It has multiple co-dominant trunks from the base with an aggregate DBH of 65mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.6. Tree 212 *Eucalyptus crebra***
This mature tree is approximately 21m tall with a canopy spread of 13m. It has a single trunk with a DBH of 55mm. This tree is in good health and condition with minimal deadwood and epicormic growth. There is evidence of bark inclusion in the primary junction. We recommend a TRAQ Level 2 risk assessment to determine viability of retention.
- 3.7. Tree 213 *Ficus benjamina***
This mature tree is approximately 12m tall with a canopy spread of 14m. It has multiple co-dominant trunks from the base with an aggregate DBH of 55mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

- 3.8. Tree 214 *Fraxinus oxycarpa* 'Raywood'**
This mature tree is approximately 10m tall with a canopy spread of 7m. It has a single trunk with a DBH of 33mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.9. Tree 215 *Fraxinus oxycarpa* 'Raywood'**
This mature tree is approximately 8m tall with a canopy spread of 5m. It has a single trunk with a DBH of 24mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.10. Tree 216 *Fraxinus oxycarpa* 'Raywood'**
This mature tree is approximately 7m tall with a canopy spread of 6m. It has a single trunk with a DBH of 24mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.11. Tree 219 *Ficus benjamina***
This mature tree is approximately 9m tall with a canopy spread of 8m. It has multiple co-dominant trunks from the base with an aggregate DBH of 32mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.12. Tree 220 *Ficus benjamina***
This mature tree is approximately 8m tall with a canopy spread of 7m. It has multiple co-dominant trunks from the base with an aggregate DBH of 40mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.13. Tree 221 *Ficus benjamina***
This mature tree is approximately 10m tall with a canopy spread of 11m. It has a single trunk with a DBH of 47mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.14. Tree 222 *Ficus benjamina***
This mature tree is approximately 10m tall with a canopy spread of 11m. It has multiple co-dominant trunks from the base with an aggregate DBH of 50mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.15. Tree 223 *Ficus benjamina***
This mature tree is approximately 11m tall with a canopy spread of 11m. It has multiple co-dominant trunks from the base with an aggregate DBH of 52mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.16. Tree 224 *Ficus benjamina***
This mature tree is approximately 9m tall with a canopy spread of 8m. It has multiple co-dominant trunks from the base with an aggregate DBH of 45mm. This tree is in fair health and condition with chlorotic foliage. There is evidence of damage to the root crown and significant damage to surface structural roots.



Figure 1 - Tree 224 damage to root crown and surface roots

3.17. Tree 225

Ficus benjamina

This mature tree is approximately 10m tall with a canopy spread of 8m. It has multiple co-dominant trunks from the base with an aggregate DBH of 45mm. This tree is in fair health and condition with chlorotic foliage. There is evidence of damage to the root crown and significant damage to surface structural roots.



Figure 2 - Damage to root crown and surface roots Tree 225

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
204	<i>Eucalyptus saligna</i>	High
206	<i>Eucalyptus saligna</i>	High
207	<i>Ficus benjamina</i>	Medium
208	<i>Cupressus sempervirens</i>	Medium
210	<i>Ficus benjamina</i>	Medium
212	<i>Eucalyptus crebra</i>	High
213	<i>Ficus benjamina</i>	Medium
214	<i>Fraxinus oxycarpa</i> 'Raywood'	Medium
215	<i>Fraxinus oxycarpa</i> 'Raywood'	Medium
216	<i>Fraxinus oxycarpa</i> 'Raywood'	Medium
219	<i>Ficus benjamina</i>	Medium
220	<i>Ficus benjamina</i>	Medium
221	<i>Ficus benjamina</i>	Medium
222	<i>Ficus benjamina</i>	Medium
223	<i>Ficus benjamina</i>	Medium
224	<i>Ficus benjamina</i>	Medium
225	<i>Ficus benjamina</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
204	<i>Eucalyptus saligna</i>	High
206	<i>Eucalyptus saligna</i>	High
207	<i>Ficus benjamina</i>	Medium
208	<i>Cupressus sempervirens</i>	Medium
210	<i>Ficus benjamina</i>	Medium
212	<i>Eucalyptus crebra</i>	High
213	<i>Ficus benjamina</i>	Medium
214	<i>Fraxinus oxycarpa</i> 'Raywood'	Medium
215	<i>Fraxinus oxycarpa</i> 'Raywood'	Medium
216	<i>Fraxinus oxycarpa</i> 'Raywood'	Medium
219	<i>Ficus benjamina</i>	Medium
220	<i>Ficus benjamina</i>	Medium
221	<i>Ficus benjamina</i>	Medium
222	<i>Ficus benjamina</i>	Medium
223	<i>Ficus benjamina</i>	Medium
224	<i>Ficus benjamina</i>	Medium
225	<i>Ficus benjamina</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 only when an encroachment greater than 10% is considered.

Tree No.	Species	TPZ Radius (m)	Encroachment (%)	SRZ Radius (m)
204	<i>Eucalyptus saligna</i>	8.4	100	3.08
206	<i>Eucalyptus saligna</i>	8.04		2.88
207	<i>Ficus benjamina</i>	6.73	100	2.63
208	<i>Cupressus sempervirens</i>	4.56	100	2.37
210	<i>Ficus benjamina</i>	7.83	100	2.63
212	<i>Eucalyptus crebra</i>	6.6	100	2.76
213	<i>Ficus benjamina</i>	6.64	100	2.47
214	<i>Fraxinus oxycarpa</i> 'Raywood'	3.93	100	2.3
215	<i>Fraxinus oxycarpa</i> 'Raywood'	2.88	100	2.05
216	<i>Fraxinus oxycarpa</i> 'Raywood'	2.88	100	2.13
219	<i>Ficus benjamina</i>	3.89	100	2.08
220	<i>Ficus benjamina</i>	4.77	100	2.15
221	<i>Ficus benjamina</i>	5.68	100	2.43
222	<i>Ficus benjamina</i>	5.97	100	2.43
223	<i>Ficus benjamina</i>	6.23	100	2.43
224	<i>Ficus benjamina</i>	5.44	100	2.13
225	<i>Ficus benjamina</i>	5.35	100	2.15

7.0 Recommendations

7.1 General

The subject Trees are preserved under Part C2 of Penrith Development Control Plan 2014.

The subject trees are in good health and condition with the exception of Trees 224, and 225 which are in fair condition with chlorotic foliage as a result of significant mechanical damage to the root crown and surface roots.

All of the subject trees are totally encroached by the proposed construction and required earthworks 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.

Trees 207, 213, 219, 220, 221, 222, 223, 224 and 225 are species that are readily transplanted however due to the fact that these trees are not locally indigenous and

grow to a very large size these trees are not high retention value trees. Trees 219, 220, 221, 222 have the highest viability for transplantation due to their smaller size and good health. Trees 207, 213 and 223 have reduced viability for transplantation due to their larger size and maturity. Trees 224 and 225 have low viability for transplantation due to their reduced health and condition and existing damage to the root crown and surface structural roots. The proposed location for the transplantation is in close proximity to the proposed pond barrier layer and *Ficus* roots are likely to impact this layer. This species whilst readily transplanted is not a suitable species for this site and replacement with advanced locally indigenous species would provide a better result.

Recommendations for tree retention or removal are summarised as follows:

Tree no.	Species	Recommendations	Comments
204	<i>Eucalyptus saligna</i>	Remove	Not viable to be retained due to the proposed development.
206	<i>Eucalyptus saligna</i>	Remove	Not viable to be retained due to the proposed development.
207	<i>Ficus benjamina</i>	Remove	Not viable to be retained due to the proposed development.
208	<i>Cupressus sempervirens</i>	Remove	Not viable to be retained due to the proposed development.
210	<i>Ficus benjamina</i>	Remove	Not viable to be retained due to the proposed development.
212	<i>Eucalyptus crebra</i>	Remove	Not viable to be retained due to the proposed development.
213	<i>Ficus benjamina</i>	Remove	Not viable to be retained due to the proposed development.
214	<i>Fraxinus oxycarpa</i> 'Raywood'	Remove	Not viable to be retained due to the proposed development.
215	<i>Fraxinus oxycarpa</i> 'Raywood'	Remove	Not viable to be retained due to the proposed development.
216	<i>Fraxinus oxycarpa</i> 'Raywood'	Remove	Not viable to be retained due to the proposed development.
219	<i>Ficus benjamina</i>	Remove	Not viable to be retained due to the proposed development.
220	<i>Ficus benjamina</i>	Remove	Not viable to be retained due to the proposed development.
221	<i>Ficus benjamina</i>	Remove	Not viable to be retained due to the proposed development.
222	<i>Ficus benjamina</i>	Remove	Not viable to be retained due to the proposed development.
223	<i>Ficus benjamina</i>	Remove	Not viable to be retained due to the proposed development.
224	<i>Ficus benjamina</i>	Remove	Not viable to be retained due to the proposed development.
225	<i>Ficus benjamina</i>	Remove	Not viable to be retained due to the proposed development.

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 Project Arborist

Prior to all site works commencing, a Project Arborist is to be appointed with the responsibility of implementing all Tree Protection Measures in this report as well as compliance with AS4970-2009 Protection of Trees on Development Sites. The Site Arborist is to hold qualifications equivalent to AQF Level 5.

8.4 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.

8.5 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.

8.6 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.

8.7 Trunk and Branch Protection

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 3 Examples of Trunk, Branch and ground protection).

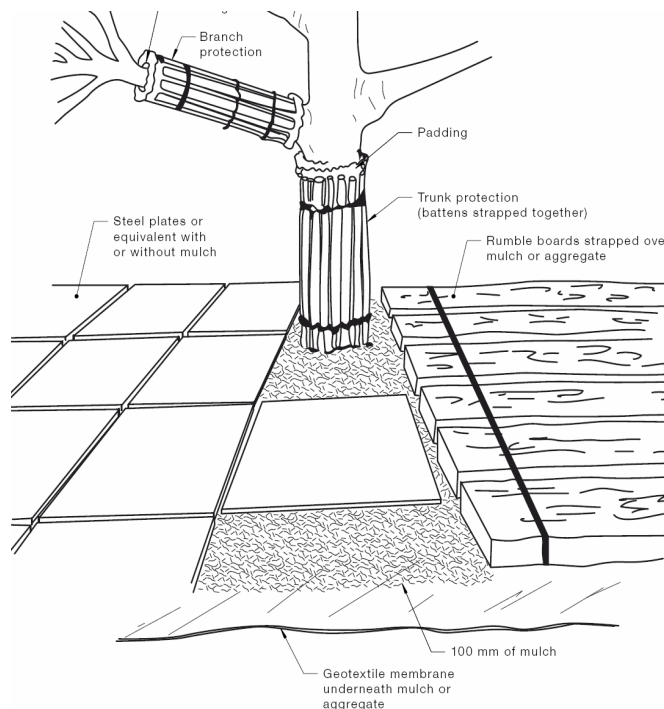


Figure 3 - Trunk Protection

9.0 Site Management Issues

9.1 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. 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.

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-specific Environmental Management Plan shall be provided, and this specific risk identified and addressed.

10.0 Tree Protection Measures During Construction

10.1 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.

10.2 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.

10.3 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.

10.4 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.

10.5 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 Site Arborist. 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.

10.6 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.

10.7 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.

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					
<u>Legend for Matrix Assessment</u> 						
		Priority for Retention (High) - These trees are considered important for retention and should be retained and protected. Design modification or re-location of building/s should be considered to accommodate the setbacks as prescribed by the Australian Standard AS4970 <i>Protection of trees on development sites</i> . Tree sensitive construction measures must be implemented e.g. pier and beam etc if works are to proceed within the Tree Protection Zone.				
		Consider for Retention (Medium) - These trees may be retained and protected. These are considered less critical; however their retention should remain priority with removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted.				
		Consider for Removal (Low) - These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.				
		Priority for Removal - 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

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

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

Appendix C - Tree Inspection Data

Birds Tree Consultancy

Consulting Arborist • Project Management • Horticultural Consultancy • Landscape Management

Inspection Data
ESQ 4 & 5 Panthers Penrith

4-Mar-23

Tree no.	Species	Common Name	Height	Spread(m)	Trunk (single, twin, multiple @)	DBH (mm)	TPZ Radius (m)	Diameter at Root Flare (DRF) (mm)	SRZ radius (m)	Trunk lean	Tree Age	Overall Health & Vigour	Crown Distribution	Structure	Pruning History	Defects	Pest Infestation	Canopy Density	Deadwood	Epicormic Growth	Life expectancy	Env. & Landcape significance	Retention Value	Notes/Comments
204	Eucalyptus saligna	Sydney Blue Gum	21	14	1	700	8.4	840	3.08	Nil	Mature	Good (70-79)	Symmetrical	Good	No evidence	No evidence	No evidence	Normal	<5%	<5%	21-40 years	High	High	
206	Eucalyptus saligna	Sydney Blue Gum	17	14	1	670	8.04	720	2.88	Nil	Mature	Good (70-79)	Symmetrical	Good	No evidence	No evidence	No evidence	Normal	<5%	<5%	21-40 years	High	High	
207	Ficus benjamina	Weeping Fig	10		Multiple Stems	561	6.73	580	2.63	Nil	Mature	Good (70-79)	Symmetrical	Good	No evidence	No evidence	No evidence	Normal	<5%	<5%	21-40 years	Medium	Medium	
208	Cupressus sempervirens	Mediterranean Cypress	9	2	1	380	4.56	450	2.37	Nil	Mature	Good (70-79)	Symmetrical	Good	No evidence	No evidence	No evidence	Normal	<5%	<5%	21-40 years	Medium	Medium	
210	Ficus benjamina	Weeping Fig	12	12	Multiple Stems	652	7.83	580	2.63	Nil	Mature	Good (70-79)	Symmetrical	Good	No evidence	No evidence	No evidence	Normal	<5%	<5%	21-40 years	Medium	Medium	
212	Eucalyptus crebra	Narrow-leaved Ironbark	21	13	1	550	6.6	650	2.76	Nil	Mature	Good (70-79)	Symmetrical	Good	No evidence	Bark Inclusion	No evidence	Normal	<5%	<5%	21-40 years	High	High	Evidence of bark inclusion in primary inclusion. Recommend TRAQ Level 2 risk assessment
213	Ficus benjamina	Weeping Fig	12	14	Multiple Stems	553	6.64	500	2.47	Nil	Mature	Good (70-79)	Symmetrical	Good	No evidence	No evidence	No evidence	Normal	<5%	<5%	21-40 years	Medium	Medium	
214	Fraxinus excelsior raywood	Claret ash	10		Multiple Stems	328	3.93	420	2.3	Nil	Mature	Good (70-79)	Symmetrical	Good	No evidence	No evidence	No evidence	Normal	<5%	<5%	40+ years	Medium	Medium	
215	Fraxinus excelsior raywood	Claret ash	8	5	1	240	2.88	320	2.05	Nil	Mature	Good (70-79)	Symmetrical	Good	No evidence	No evidence	No evidence	Normal	<5%	<5%	40+ years	Medium	Medium	
216	Fraxinus excelsior raywood	Claret ash	7	6	1	240	2.88	350	2.13	Nil	Mature	Fair (60-69)	Symmetrical	Good	No evidence	No evidence	No evidence	Normal	<5%	<5%	40+ years	Medium	Medium	
219	Ficus benjamina	Weeping Fig	9		Multiple Stems	324	3.89	330	2.08	Nil	Mature	Good (70-79)	Symmetrical	Good	No evidence	No evidence	No evidence	Normal	<5%	<5%	40+ years	Medium	Medium	
220	Ficus benjamina	Weeping Fig	8		Multiple Stems	397	4.77	360	2.15	Nil	Mature	Good (70-79)	Symmetrical	Good	No evidence	No evidence	No evidence	Normal	<5%	<5%	40+ years	Medium	Medium	
221	Ficus benjamina	Weeping Fig	10		Multiple Stems	473	5.68	480	2.43	Nil	Mature	Good (70-79)	Symmetrical	Good	No evidence	No evidence	No evidence	Normal	<5%	<5%	40+ years	Medium	Medium	
222	Ficus benjamina	Weeping Fig	10		Multiple Stems	498	5.97	480	2.43	Nil	Mature	Good (70-79)	Symmetrical	Good	No evidence	No evidence	No evidence	Normal	<5%	<5%	40+ years	Medium	Medium	
223	Ficus benjamina	Weeping Fig	11		Multiple Stems	520	6.23	480	2.43	Nil	Mature	Good (70-79)	Symmetrical	Good	No evidence	No evidence	No evidence	Normal	<5%	<5%	21-40 years	Medium	Medium	
224	Ficus benjamina	Weeping Fig	9		Multiple Stems	453	5.44	350	2.13	Nil	Mature	Fair (60-69)	Symmetrical	Fair	No evidence	No evidence	No evidence	Normal	<5%	<5%	40+ years	Medium	Medium	Damage to root crown. Significant damage to surface structural roots. Chlorotic foliage
225	Ficus benjamina	Weeping Fig	10		Multiple Stems	446	5.35	360	2.15	Nil	Mature	Fair (60-69)	Symmetrical	Fair	No evidence	No evidence	No evidence	Normal	<5%	<5%	40+ years	Medium	Medium	Chlorotic foliage. Significant damage to root crown and surface structural roots

Appendix D - Tree Location Plan

