# Newcastle Airport Arborist Report

Prepared for Cox Architecture
May 2022

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# Newcastle Airport Arborist Report

**Report Number**

E220242 RP1

**Client**

Cox Architecture

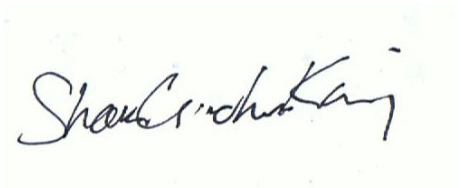
**Date**

25 May 2022

**Version**

v3 Final

**Prepared by**



**Shaun King**
Consulting Arborist
19-05-2022

**Approved by**

**Tadd Andersen**
Landscape Architect
19-05-2022

This report has been prepared in accordance with the brief provided by the client and has relied upon the information collected at the time and under the conditions specified in the report. All findings, conclusions or recommendations contained in the report are based on the aforementioned circumstances. The report is for the use of the client and no responsibility will be taken for its use by other parties. The client may, at its discretion, use the report to inform regulators and the public.

# Table of Contents

# 1 Introduction

EMM Consulting have been engaged by Cox Architecture to undertake an assessment of trees located around the perimeter of an existing car park located adjacent to the airport terminal building. This report is in relation to proposed upgrades and reconfiguration of the existing car park and the impacts the proposal may have on existing trees.

## 1.1 Assessing Arborist


| | |
|---|---|
| Name: | Shaun King |
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| Address: | Level 3, 175 Scott Street, Newcastle 2300. |
| Phone: | 02 4907 4800 |
| Email: | shaun@emmconsulting.com.au |
| Qualifications: | Diploma of Horticulture (Landscape Design) |
| | Diploma of Horticulture (Arboriculture) AQF 5 |
| | Certificate No: C0045006 |

# 2 Methodology

The site was visited on the 12th April 2022. During the visit each tree was inspected and assessed using the following tools and criteria.

- **Visual Tree Assessment (VTA):** The VTA method developed by Matheck and Broeler, 1994 was used for each tree. Trees located on the site were inspected and assessed from the ground. The visual tree assessment included all visible above ground parts of the tree including exposed roots, Trunk, branches, and foliage. No below ground inspections or analyses was undertaken in the root zone. No internal inspections or tissue analyses were undertaken on the subject trees. No aerial inspections were undertaken.

- **Tree Retention Value (TRV):** The TRV calculation method developed by Couston, Mark and Howden, Melanie 2001 was used to assess each tree. This method determines the significance of each tree in the landscape. The significance is then measured against the ULE.

- **Useful Life Expectancy (ULE):** ULE is a measure of the tree's sustainability. It is an indication of how long a tree is expected to live under specific conditions. Appendix C provides an in-depth description of ULE.

- **Tree Protection Zone (TPZ):** The TPZ is an area around the tree that may cause damage to the tree if the soil is disturbed and/or roots are injured or severed. The method of determining the TPZ follows AS 4970 Protection of trees on development sites. Refer to Appendix D for more detail.

# 3 Site

The study area comprises of an existing car park located immediately to the south of the airport terminal building. Currently the existing car park is surrounded by a garden bed that contains mature trees, shrubs and groundcovers

**Figure 3.1 Study areas outlined red**

# 4 Proposed Development

The proposed car park upgrade involves reconfiguring the car park layout, entry and exit points, pedestrian pathway layout, a roof over the car park and new landscaping. This will require the removal of some of the existing garden beds.

# 5 Tree Assessment

Sixty one trees were assessed. All of the assessed trees have been planted as part of previous landscape works around the existing car park and access road. Twenty nine of the trees are of moderate retention value. Twenty trees of Low retention value and ten trees of Very Low retention value. Two trees noted within the Existing Tree Inventory prepared by Cox Architecture are missing. Numbering of the trees is in line with numbering shown on the Existing Tree Inventory. Refer to Appendix B Tree Assessment Sheet for further detail on individual trees.

**Table 4.1 Tree Retention Value Matrix**

| | **Landscape Significance Reading** | | | | | | |
|---|---|---|---|---|---|---|---|
| **Tree Sustainability (ULE)** | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| **Greater than 40 years** | High Retention Value | | | | | | |
| **15-40 years** | | | Moderate | | | | |
| **5-15 years** | | | | Low | | | |
| **Less than 5 years** | | | | | Very Low Retention Value | | |
| **Dead or hazardous** | | | | | | | |

Ref:- Modified by A Morton from Couston, Mark & Howden, Melanie (2001) Tree Retention Values Table Footprint Green Pty Ltd, Sydney Australia.

**Table 4.2 Retention Value of Trees**

| **Retention Value of Trees** | | | | |
|---|---|---|---|---|
| Tree No. | Species | Sustainability Period (Years) | Landscape Significance Rating | Retention Value |
| 1 | *Eucalyptus microcorys* | >40 | 4 Moderate | Moderate |
| 2 | *Corymbia maculata* | >40 | 4 Moderate | Moderate |
| 3 | *Corymbia maculata* | >40 | 4 Moderate | Moderate |
| 4 | *Corymbia maculata* | >40 | 4 Moderate | Moderate |
| 5 | *Corymbia maculata* | <5 | 6 Very Low | Very Low |
| 6 | *Corymbia maculata* | >40 | 4 Moderate | Moderate |
| 7 | *Corymbia maculata* | 5-15 | 4 Moderate | Low |
| 8 | *Corymbia maculata* | >40 | 4 Moderate | Moderate |
| 9 | *Corymbia maculata* | >40 | 4 Moderate | Moderate |
| 10 | *Corymbia maculata* | >40 | 4 Moderate | Moderate |
| 11 | *Corymbia maculata* | >40 | 4 Moderate | Moderate |
| 12 | *Corymbia maculata* | >40 | 4 Moderate | Moderate |

| | | | | |
|---|---|---|---|---|
| 13 | *Corymbia maculata* | 15-40 | 4 Moderate | Moderate |
| 14 | *Corymbia maculata* | >40 | 4 Moderate | Moderate |
| 15 | *Acacia binerva* | <5 | 6 Very Low | Very Low |
| 16 | *Acacia binerva* | 15-40 | 5 Low | Low |
| 17 | *Acacia binerva* | 15-40 | 5 Low | Low |
| 18 | *Acacia binerva* | 15-40 | 5 Low | Low |
| 19 | *Acacia binerva* | 15-40 | 5 Low | Low |
| 20 | *Acacia binerva* | 15-40 | 5 Low | Low |
| 21 | *Acacia binerva* | 15-40 | 5 Low | Low |
| 22 | *Acacia binerva* | 15-40 | 5 Low | Low |
| 23 | *Callistemon species* | <5 | 5 Low | Low |
| 24 | *Callistemon species* | 15-40 | 5 Low | Low |
| 25 | *Callistemon species* | 15-40 | 5 Low | Low |
| 26 | *Callistemon species* | 15-40 | 5 Low | Low |
| 27 | *Callistemon species* | 15-40 | 5 Low | Low |
| 28 | *Callistemon species* | 15-40 | 5 Low | Low |
| 32 | *Eucalyptus species* | <5 | 6 Very Low | Very Low |
| 33 | *Removed* | | | |
| 34 | *Eucalyptus species* | 15-40 | 4 Moderate | Moderate |
| 35 | *Eucalyptus microcorys* | >40 | 4 Moderate | Moderate |
| 36 | *Eucalyptus microcorys* | <5 | 6 Very Low | Very Low |
| 37 | *Acacia binerva* | 15-40 | 5 Low | Low |
| 38 | *Callistemon species* | 15-40 | 5 Low | Low |
| 39 | *Callistemon species* | 15-40 | 5 Low | Low |
| 39B | *Callistemon species* | 15-40 | 5 Low | Low |
| 39C | *Callistemon species* | 15-40 | 5 Low | Low |
| 40 | *Banksia integrifolia* | >40 | 5 Low | Moderate |
| 41 | *Eucalyptus species* | 15-40 | 4 Moderate | Moderate |
| 42 | *Eucalyptus species* | >40 | 4 Moderate | Moderate |
| 43 | *Eucalyptus species* | <5 | 6 Very Low | Very Low |
| 44 | *Eucalyptus species* | >40 | 4 Moderate | Moderate |
| 45 | *Eucalyptus species* | <5 | 6 Very Low | Very Low |
| 46 | *Eucalyptus species* | <5 | 6 Very Low | Very Low |
| 47 | *Banksia integrifolia* | >40 | 5 Low | Moderate |
| 48 | *Eucalyptus species* | 15-40 | 5 Low | Low |
| 49 | *Eucalyptus species* | <5 | 6 Very Low | Very Low |
| 50 | *Banksia integrifolia* | >40 | 5 Low | Moderate |
| 51 | *Banksia integrifolia* | >40 | 5 Low | Moderate |
| 52 | *Banksia integrifolia* | >40 | 5 Low | Moderate |
| 53 | *Eucalyptus species* | <5 | 6 Very Low | Very Low |
| 54 | *Removed* | | | |
| 55 | *Eucalyptus species* | <5 | 6 Very Low | Very Low |
| 56 | *Banksia integrifolia* | >40 | 5 Low | Moderate |
| 57 | *Banksia integrifolia* | >40 | 5 Low | Moderate |

| | | | | |
|---|---|---|---|---|
| 58 | *Banksia integrifolia* | >40 | 5 Low | Moderate |
| 59 | *Banksia integrifolia* | >40 | 5 Low | Moderate |
| 60 | *Banksia integrifolia* | >40 | 5 Low | Moderate |
| 61 | *Banksia integrifolia* | >40 | 5 Low | Moderate |
| 97 | *Casuarina cunninhamiana* | 15-40 | 4 Moderate | Moderate |

# 6 Impacts of Development

The proposed works will require the removal of 41 trees. 18 of moderate retention value, 13 of low retention value and 10 of very low retention value. Trees located along the southern side of the car park will be impacted upon by the proposed canopy over the car park as will eight trees along the northern side of the car park. A further 3 trees are impacted by road realignments. A further 4 trees while not being impacted by the proposed works are proposed for removal due to their poor health. One tree in particular, Tree 32 has a fungal fruiting bracket located on its trunk. The tree is in decline and it is likely that there is a large area of associated decay. This tree poses a significant risk to pedestrians and a car parking area and should be removed ASAP.

# 7 Recommendations

- Remove trees noted for removal on Appendix A Site Plan
- Undertake replacement planting within the new landscape design
- Any retainable trees to be protected in accordance with AS 4970 Protection of trees on development sites. This includes but not limited to,

  (a) machine excavation including trenching;
  (b) excavation for silt fencing;
  (c) cultivation;
  (d) storage;
  (e) preparation of chemicals, including preparation of cement products;
  (f) parking of vehicles and plant;
  (g) refuelling;
  (h) dumping of waste;
  (i) wash down and cleaning of equipment;
  (j) placement of fill;
  (k) lighting of fires;
  (l) soil level changes;
  (m) temporary or permanent installation of utilities and signs, and
  n) physical damage to the tree.

# 8 Photographs

**Photograph 7.1** **Corymbia and Eucalypt species along the southern side of the car park.**

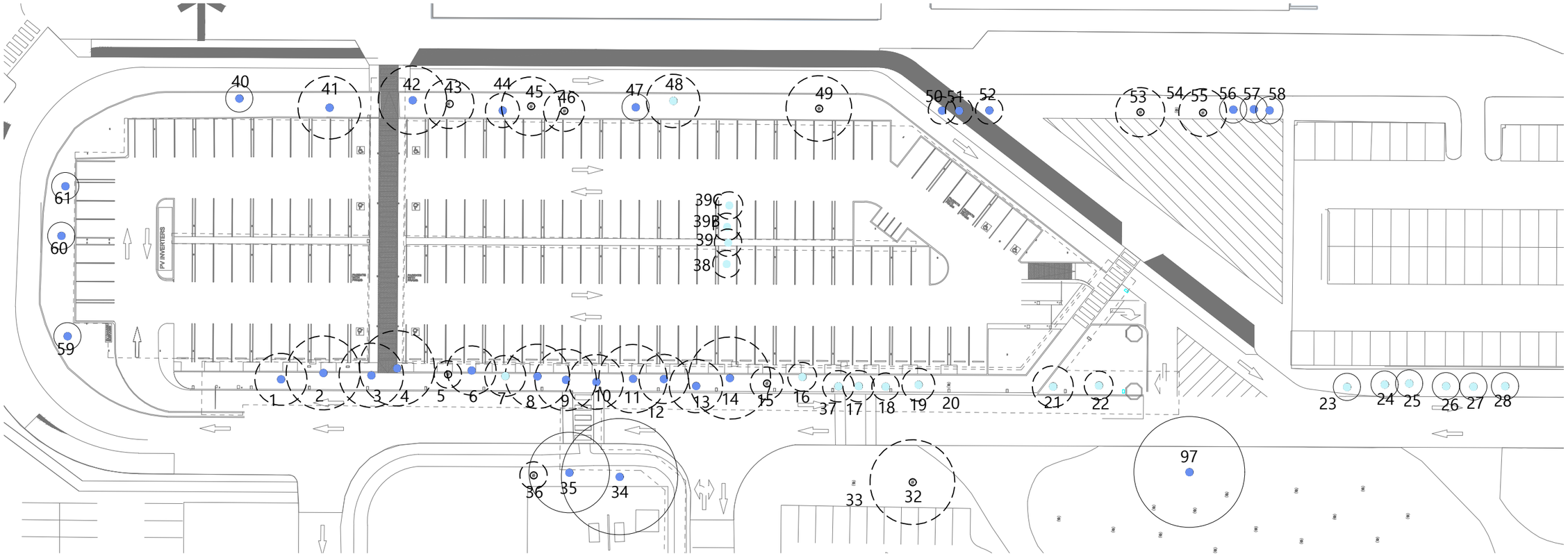
**Photograph 7.2** ***Phelllinus species*** **on Tree 32.**

**Photograph 7.3** **A number of trees on the northern side of the car park are of poor health.**

# 9 Bibliography


| | |
|---|---|
| Barrell, J.<br>[Modified] | Pre-Development Tree Assessment, (in Watson/Neely 1995) |
| Couston, Mark & Howden, Melanie<br>Australia 2001. | Tree Retention Values Table. Footprint Green Pty Ltd, Sydney |
| Link Tree System Ltd. Barrell, J. | Arboricultural Journal 1993, Vol. 17pp. 33-46, 01/03/98 |
| Standards Australia | Australian Standard AS 4970 Protection of Trees on Development Sites. (September 2009) |

# Appendix A Site Plan




TREE RETENTION VALUE

- High Retention Value
- Moderate Retention Value
- Low Retention Value
- Very Low Retention Value
- Tree to be removed

Note: radius of trees indicates the Tree Protection Zone calculated in accordance with AS4970 Protection of trees on development sites.

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Scale 1 : 600 @ A3

| Revisions | | |
|---|---|---|
| Issue | Details | Date |
| A | DA Issue | 19.04.22 |
| | | |
| | | |
| | | |
| | | |

Client:
Cox Architecture

Project:
Newcastle Airport Terminal

Title:

# Site Plan

Site: Williamtown Drive, Williamtown
Date: 19 April 2022
Job No: E220242
Revision: A
Sheet: 01

Appendix B

# Tree Assessment Sheet

Tree Assessment Data Sheet – Newcastle Airport

| Tree No. | Species | Common Name | DBH (mm) | TPZ (M) | Height (M) | Crown Spread (M) N | E | S | W | Health | Structure | Age Class | LS | ULE | RV | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | *Eucalyptus microcorys* | Tallowwood | 320 | 3.8 | 13 | 6 | 3 | 5 | 6 | A | A | M | M | 1A | M | Minor dead wood |
| 2 | *Corymbia maculata* | Spotted Gum | 450 | 5.4 | 15 | 7 | 5 | 8 | 6 | A | F | M | M | 1A | M | Minor dead wood |
| 3 | *Corymbia maculata* | Spotted Gum | 390 | 4.7 | 15 | 7 | 6 | 8 | 6 | A | A | M | M | 1A | M | |
| 4 | *Corymbia maculata* | Spotted Gum | 460 | 5.5 | 16 | 8 | 8 | 8 | 5 | A | A | M | M | 1A | M | Minor dead wood |
| 5 | *Corymbia maculata* | Spotted Gum | 75 | 2 | 7 | 1 | 1 | 1 | 1 | P | P | SM | VL | 4B | VL | Suppressed small sapling |
| 6 | *Corymbia maculata* | Spotted Gum | 300 | 3.6 | 12 | 5 | 4 | 4 | 4 | A | A | M | M | 1A | M | Minor dead wood |
| 7 | *Corymbia maculata* | Spotted Gum | 250 | 3 | 12 | 4 | 4 | 5 | 4 | F | A | M | M | 3A | L | Sparse canopy. |
| 8 | *Corymbia maculata* | Spotted Gum | 390 | 4.7 | 16 | 6 | 5 | 6 | 3 | A | A | M | M | 1A | M | |
| 9 | *Corymbia maculata* | Spotted Gum | 380 | 4.5 | 16 | 8 | 5 | 6 | 3 | A | A | M | M | 1A | M | |
| 10 | *Corymbia maculata* | Spotted Gum | 340 | 4 | 15 | 6 | 6 | 7 | 6 | A | A | M | M | 1A | M | Minor dead wood |
| 11 | *Corymbia maculata* | Spotted Gum | 420 | 5 | 15 | 7 | 4 | 7 | 3 | A | A | M | M | 1A | M | Minor dead wood |
| 12 | *Corymbia maculata* | Spotted Gum | 300 | 3.6 | 15 | 5 | 4 | 5 | 3 | A | A | M | M | 1A | M | |
| 13 | *Corymbia maculata* | Spotted Gum | 320<br>220 | 3.9 | 16 | 7 | 6 | 7 | 5 | F | F | M | M | 2D | M | Sparsely foliaged and minor dead wood |
| 14 | *Corymbia maculata* | Spotted Gum | 500 | 6 | 16 | 7 | 6 | 8 | 7 | A | A | M | M | 1A | M | Minor dead wood |
| 15 | *Acacia binervia* | Coastal Myall | 170<br>170 | 2.4 | 4 | 2 | 3 | 3 | 3 | P | P | OM | VL | 4D | VL | Almost dead. |
| 16 | *Acacia binervia* | Coastal Myall | 180 | 2.1 | 4 | 3 | 4 | 2 | 3 | F | F | M | L | 3A | L | Twiggy dead wood |
| 17 | *Acacia binervia* | Coastal Myall | 150<br>180 | 2.3 | 4 | 4 | 4 | 4 | 4 | F | F | M | L | 3A | L | Twiggy dead wood |
| 18 | *Acacia binervia* | Coastal Myall | 75<br>90 | 2 | 3 | 3 | 3 | 2 | 0 | F | F | M | L | 3A | L | Twiggy dead wood |
| 19 | *Acacia binervia* | Coastal Myall | 200 | 2.4 | 4 | 1 | 1 | 2 | 4 | F | F | M | L | 3A | L | Twiggy dead wood |
| 20 | *Removed* | | | | | | | | | | | | | | | |
| 21 | *Acacia binervia* | Coastal Myall | 210<br>220 | 3 | 4 | 2 | 0 | 2 | 3 | F | F | M | L | 3A | L | Dead leader |
| 22 | *Acacia binervia* | Coastal Myall | 180 | 2.1 | 3 | 2 | 4 | 1 | 0 | F | F | M | L | 3A | L | |

LEGEND

**DBH – Diameter at Breast Height** (1.4m)

**DRB– Diameter Above Root Buttress**

**TPZ - Tree Protection Zone** 12xDBH

**SRZ – Structural Root Zone** $(DRB \times 50)^{0.42} \times 0.64$

**Health**
**P**-Poor
**F**-Fair
**A**-Average
**E**-Excellent

**Structure**
**P**-Poor
**F**-Fair
**A**-Average
**E**-Excellent

**Age Class**
**I**-Immature – Recently Planted or Sapling Growth
**SM**-Semi Mature - <20% life expectancy
**M**-Mature – 20-80% life expectancy
**OM**-Over Mature/Senescent >80% life expectancy

**LS – Landscape Significance**
**S**-Significant
**VH**-Very High
**H**-High
**M**-Moderate
**L**-Low
**VL**-Very Low
**I**-Insignificant

**ULE – Useful Life Expectancy** (Sustainability in years)
Refer to appendices for more detailed explanation
**1**->40
**2**-15-40
**3**-5-15
**4**-<5

**RV – Retention Value**
**H-**High
**M-**Moderate
**L-**Low
**VL-**Very Low

Tree Assessment Data Sheet – Newcastle Airport

| Tree No. | Species | Common Name | DBH (mm) | | TPZ (M) | | Height (M) | Crown Spread (M) N | E | S | W | Health | Structure | Age Class | LS | ULE | RV | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 23 | *Callistemon species* | Bottlebrush | 3x90 | | 2 | | 3 | 1 | 1 | 1 | 1 | P | P | M | L | 4D | L | Small stunted tree with dead leader |
| 24 | *Callistemon species* | Bottlebrush | 100<br>160 | | 2 | | 4 | 1 | 1 | 1 | 1 | F | F | M | L | 3A | L | |
| 25 | *Callistemon species* | Bottlebrush | 4X80 | | 2 | | 2.5 | 1 | 2 | 1 | 1 | F | F | M | L | 3A | L | |
| 26 | *Callistemon species* | Bottlebrush | 90<br>90<br>70 | | 2 | | 3 | 1 | 2 | 1 | 1 | F | F | M | L | 3A | L | |
| 27 | *Callistemon species* | Bottlebrush | 150 | | 2 | | 4 | 0 | 1 | 2 | 1 | F | F | M | L | 3A | L | . |
| 28 | *Callistemon species* | Bottlebrush | 140 | | 2 | | 4 | 1 | 1 | 2 | 1 | F | F | M | L | 3A | L | |
| 32 | *Eucalyptus species* | Gum Tree | 520<br>340 | | 6.2 | | 19 | 4 | 6 | 7 | 7 | P | P | M | L | 4B | VL | Declining tree with fungal fruiting bracket (*Phellinus* species) on main trunk. Large dead wood and die back |
| 33 | *Removed* | | | | | | | | | | | | | | | | | |
| 34 | *Eucalyptus species* | Gum Tree | 710 | | 8.5 | | 19 | 13 | 7 | 8 | 10 | A | A | M | M | 2A | M | Minor dead wood |
| 35 | *Eucalyptus microcorys* | Tallowwood | 490 | | 5.9 | | 16 | 5 | 5 | 5 | 5 | A | A | M | M | 1A | M | Minor dead wood |
| 36 | *Eucalyptus microcorys* | Tallowwood | 150 | | 2 | | 6 | 1 | 1 | 1 | 1 | P | P | SM | VL | 4B | VL | Almost dead. Foliage consists of epicormic growth |
| 37 | *Acacia binervia* | Coastal Myall | 150<br>180 | | 2.3 | | 4 | 4 | 4 | 4 | 4 | F | F | M | L | 3A | L | Twiggy dead wood |
| 38 | *Callistemon species* | Bottlebrush | 3x100 | | 2 | | 5 | 3 | 3 | 3 | 3 | F | F | M | L | 2A | L | |
| 39 | *Callistemon species* | Bottlebrush | 2X80 | | 2 | | 5 | 3 | 3 | 3 | 3 | F | F | M | L | 2A | L | |
| 39B | *Callistemon species* | Bottlebrush | 4X80 | | 2 | | 5 | 3 | 3 | 3 | 3 | F | F | M | L | 2A | L | |
| 39C | *Callistemon species* | Bottlebrush | 140<br>2X90 | | 2 | | 5 | 3 | 3 | 3 | 3 | F | F | M | L | 2A | L | |
| 40 | *Banksia integrifolia* | Coastal Banksia | 90 | | 2 | | 4 | 1 | 1 | 1 | 1 | A | A | M | L | 1A | M | |
| 41 | *Eucalyptus species* | Gum Tree | 390 | | 4.6 | | 13 | 5 | 3 | 5 | 5 | F | A | M | M | 2A | M | Dead tree. |
| 42 | *Eucalyptus species* | Gum Tree | 420 | | 5 | | 13 | 4 | 4 | 6 | 4 | A | A | M | M | 1A | M | Minor dead wood |

## LEGEND

**DBH – Diameter at Breast Height** (1.4m)

**DRB– Diameter Above Root Buttress**

**TPZ - Tree Protection Zone** 12xDBH

**SRZ – Structural Root Zone** $(DRB \times 50)^{0.42} \times 0.64$

**Health**
**P**-Poor
**F**-Fair
**A**-Average
**E**-Excellent

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**I**-Insignificant

**ULE – Useful Life Expectancy** (Sustainability in years)
Refer to appendices for more detailed explanation
**1**->40
**2**-15-40
**3**-5-15
**4**-<5

**RV – Retention Value**
**H-**High
**M-**Moderate
**L-**Low
**VL-**Very Low

Tree Assessment Data Sheet – Newcastle Airport

| Tree No. | Species | Common Name | DBH (mm) | | TPZ (M) | | Height (M) | Crown Spread (M) N | E | S | W | Health | Structure | Age Class | LS | ULE | RV | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | *Eucalyptus species* | Gum Tree | 300 | | 3.6 | | 10 | 1 | 1 | 0 | 0 | P | P | M | VL | 4B | VL | Almost dead, epicormic growth only |
| 44 | *Eucalyptus species* | Gum Tree | 210 | | 2.5 | | 6 | 3 | 2 | 3 | 2 | A | A | M | M | 1A | M | |
| 45 | *Eucalyptus species* | Gum Tree | 350<br>250 | | 4.3 | | 8 | 2 | 2 | 3 | 2 | P | P | M | VL | 4B | VL | Poorly pruned, die back and epicormic growth |
| 46 | *Eucalyptus species* | Gum Tree | 250 | | 3 | | 7 | 1 | 2 | 1 | 1 | P | P | M | VL | 4B | VL | Die back and epicormic growth |
| 47 | *Banksia integrifolia* | Coastal Banksia | 150 | | 2 | | 6 | 2 | 2 | 1 | 2 | A | A | SM | L | 1A | M | |
| 48 | *Eucalyptus species* | Gum Tree | 320 | | 3.8 | | 5 | 5 | 4 | 3 | 3 | F | A | M | L | 2D | L | Some canopy die back |
| 49 | *Eucalyptus species* | Gum Tree | 400 | | 4.8 | | 8 | 2 | 2 | 2 | 2 | P | P | M | VL | 4B | VL | All foliage consists of epicormic growth. Large dead wood |
| 50 | *Banksia integrifolia* | Coastal Banksia | 100<br>80 | | 2 | | 8 | 1 | 1 | 1 | 1 | A | A | SM | L | 1A | M | |
| 51 | *Banksia integrifolia* | Coastal Banksia | 150 | | 2 | | 7 | 1 | 1 | 1 | 1 | A | A | SM | L | 1A | M | |
| 52 | *Banksia integrifolia* | Coastal Banksia | 3X90 | | 2 | | 4 | 1 | 1 | 1 | 1 | A | A | SM | L | 1A | M | |
| 53 | *Eucalyptus species* | Gum Tree | 300 | | 3.6 | | 8 | 1 | 2 | 2 | 2 | P | P | M | VL | 4B | VL | All foliage consists of epicormic growth |
| 54 | *Removed* | | | | | | | | | | | | | | | | | |
| 55 | *Eucalyptus species* | Gum Tree | 2x250 | | 3.5 | | 7 | 1 | 1 | 1 | 1 | P | P | M | VL | 4B | VL | All foliage consists of epicormic growth. Almost dead |
| 56 | *Banksia integrifolia* | Coastal Banksia | 90 | | 2 | | 4 | 1 | 1 | 1 | 1 | A | A | SM | L | 1A | M | |
| 57 | *Banksia integrifolia* | Coastal Banksia | 2x70 | | 2 | | 5 | 1 | 1 | 1 | 1 | A | A | SM | L | 1A | M | |
| 58 | *Banksia integrifolia* | Coastal Banksia | 2x100 | | 2 | | 6 | 1 | 1 | 1 | 1 | A | A | SM | L | 1A | M | |
| 59 | *Banksia integrifolia* | Coastal Banksia | 90<br>150 | | 2 | | 6 | 3 | 1 | 3 | 1 | A | A | SM | L | 1A | M | |
| 60 | *Banksia integrifolia* | Coastal Banksia | 100<br>180 | | 2 | | 6 | 3 | 3 | 3 | 3 | A | A | SM | L | 1A | M | |
| 61 | *Banksia integrifolia* | Coastal Banksia | 90<br>70<br>140 | | 2 | | 6 | 3 | 2 | 3 | 2 | A | A | SM | L | 1A | M | |

LEGEND

**DBH – Diameter at Breast Height** (1.4m)

**DRB– Diameter Above Root Buttress**

**TPZ - Tree Protection Zone** 12xDBH

**SRZ – Structural Root Zone** $(DRB \times 50)^{0.42} \times 0.64$

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**P**-Poor
**F**-Fair
**A**-Average
**E**-Excellent

**Structure**
**P**-Poor
**F**-Fair
**A**-Average
**E**-Excellent

**Age Class**
**I**-Immature – Recently Planted or Sapling Growth
**SM**-Semi Mature - <20% life expectancy
**M**-Mature – 20-80% life expectancy
**OM**-Over Mature/Senescent >80% life expectancy

**LS – Landscape Significance**
**S**-Significant
**VH**-Very High
**H**-High
**M**-Moderate
**L**-Low
**VL**-Very Low
**I**-Insignificant

**ULE – Useful Life Expectancy** (Sustainability in years)
Refer to appendices for more detailed explanation
**1**->40
**2**-15-40
**3**-5-15
**4**-<5

**RV – Retention Value**
**H-**High
**M-**Moderate
**L-**Low
**VL-**Very Low

Tree Assessment Data Sheet – Newcastle Airport

| Tree No. | Species | Common Name | DBH (mm) | | TPZ (M) | | Height (M) | Crown Spread (M) N | E | S | W | Health | Structure | Age Class | LS | ULE | RV | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 97 | *Casuarina cunninghamiana* | River She-Oak | 680 | | 8.1 | | 17 | 9 | 6 | 1 | 7 | A | A | M | M | 2A | M | |

LEGEND

**DBH – Diameter at Breast Height** (1.4m)

**DRB– Diameter Above Root Buttress**

**TPZ - Tree Protection Zone** 12xDBH

**SRZ – Structural Root Zone** $(DRB \times 50)^{0.42} \times 0.64$

**Health**
**P**-Poor
**F**-Fair
**A**-Average
**E**-Excellent

**Structure**
**P**-Poor
**F**-Fair
**A**-Average
**E**-Excellent

**Age Class**
**I**-Immature – Recently Planted or Sapling Growth
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**ULE – Useful Life Expectancy** (Sustainability in years)
Refer to appendices for more detailed explanation
**1**->40
**2**-15-40
**3**-5-15
**4**-<5

**RV – Retention Value**
**H-**High
**M-**Moderate
**L-**Low
**VL-**Very Low

# Appendix C Useful Life Expectancy (ULE)

## ULE CLASSIFICATIONS

**1 LONG ULE : GREATER THAN 40 YEARS [>40]**

TREES THAT APPEAR TO BE RETAINABLE WITH AN ACCEPTABLE LEVEL OF RISK FOR MORE THAN 40 YEARS

**A** Structurally sound trees located in positions that can accommodate future growth.

**B** Storm damaged or defective trees that could be made suitable for retention by remedial tree surgery.

**C** Trees of special significance for historical, commemorative or rarity reasons that would warrant extraordinary efforts to secure their long-term retention.

**2 MEDIUM ULE : MORE THAN 15 YEARS, LESS THAN 40 YEARS [15 - 40]** TREES THAT APPEAR TO BE RETAINABLE WITH AN ACCEPTABLE LEVEL OF RISK FOR 15 TO 40 YEARS

**A** Trees that may only live between 15 and 40 more years

**B** Trees that may live for more than 40 years but would be removed during the course of normal management for safety or nuisance reasons

**C** Trees which may live for more than 40 years but would be removed to prevent interference with more suitable individuals or to provide space for new planting

**D** Storm damaged or defective trees that can be made suitable for retention in the medium term by remedial work

**3 SHORT ULE : MORE THAN 5 YEARS, LESS THAN 15 YEARS [5 -15]**

TREES THAT APPEAR TO BE RETAINABLE WITH AN ACCEPTABLE LEVEL OF RISK FOR 5 TO 15 YEARS

**A** Trees that may only live between 5 and 15 more years

**B** Trees that may live for more than 15 years but would be removed during the course of normal management for safety or nuisance reasons

**C** Trees which may live for more than 15 years but would be removed to prevent interference with more suitable individuals or to provide space for new planting

**D** Storm damaged or defective trees that require substantial remedial work to make safe, and are only suitable for retention in the short term

**4 REMOVE : LESS THAN 5 YEARS [<5]**

TREES WITH A HIGH LEVEL OF RISK THAT WOULD NEED REMOVING WITHIN THE NEXT 5 YEARS

**A** Dead, dying, suppressed or declining trees because of disease or inhospitable conditions

**B** Dangerous trees through instability or recent loss of adjacent trees

**C** Dangerous trees through structural defects, including cavities, decay, included bark, wounds or poor form

**D** Damaged trees that are clearly not safe to retain

**E** Trees which may live for more than 5 years but would be removed to prevent interference with more suitable individuals or to provide space for new planting

**F** Trees which are damaging or may cause damage to existing structures within the next 5 years

**G** Trees that will become dangerous after removal of others for the reasons given in A to F

**H** Trees in categories (a) to (g) that have high wildlife habitat value and, with appropriate treatment, could be retained subject to regular review

**5 SMALL YOUNG OR REGULARLY PRUNED**

TREES THAT CAN BE RELIABLY MOVED OR REPLACED

**A** Small trees less than 5m in height

**B** Young trees less than 15 years old but over 15m in height

**C** Formal hedges and trees intended for regular pruning to artificially control growth

Barrell, J (1996, updated 2001)

# Appendix D Extract from AS 4970

# Extract from AS 4970

**3.1 Tree Protection Zone (TPZ)**

The tree protection zone is the principal means of protecting trees on development sites. The TPZ is a combination of root area and crown area requiring protection. It is an area isolated from construction disturbance, so that the tree remains viable.

**3.2 Determining the TPZ**

The radius of the TPZ is calculated for each tree by multiplying its Diameter at Breast Height (DBH) x 12

TPZ=DBH x 12

DBH= Trunk diameter measured at 1.4m above ground.

Radius is measured from the centre of the stem at ground level.

A TPZ should not be less than 2m nor greater than 15m (Except where crown protection is required).

The TPZ of palms and other monocots, cycads and tree ferns should not be less than 1m outside of the crown projection.

**3.3 Variations to the TPZ**

**3.3.1 General**

It may be possible to encroach into or make variations to the standard TPZ. Encroachment includes excavation, compacted fill and machine trenching.

**3.3.2 Minor Encroachment**

If the proposed encroachment is less than 10% of the area of the TPZ and is outside the SRZ, detailed root investigations should not be required. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ. Variations must be made by the project arborist considering relevant factors listed in clause 3.3.4.

**3.3.2 Major Encroachment**

If the proposed encroachment is greater than 10% of the TPZ or inside the SRZ, the project arborist must demonstrate that the tree would remain viable. The area lost to the encroachment should be compensated for elsewhere and contiguous with the TPZ. This may require root investigation by non destructive methods and consider relevant factors listed in clause 3.3.4.

**3.3.5 Structural Root Zone**

The SRZ is the area required for tree stability. A larger area is required to maintain a viable tree.

The SRZ only needs to be calculated when major encroachment into the TPZ is proposed.

There are many factors that affect the size of the SRZ (e.g. tree height, crown area, soil type, soil moisture). The SRZ may also be influenced by natural or built structures, such as rocks or footings. An indicative SRZ radius can be determined from the trunk diameter measured immediately above the root buttress using the following formula. Root investigation may provide more information on the extent of these roots SRZ radius.

SRZ radius = (D x 50)0.42 x 0.64
where
D = trunk diameter, in metres, measured above the root buttress

The SRZ for trees with trunk diameters less than 0.15 will be 1.5 metres