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ARBORICULTURAL DEVELOPMENT IMPACT ASSESSMENT REPORT

New Liverpool Primary School NSW
SSDA

REVISION C
29th May 2021

Prepared for
School Infrastructure NSW

Prepared by

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Executive Summary

This Arboricultural Development Impact Assessment Report has been commissioned by School Infrastructure NSW (SINSW) to prepare an Arboricultural Development Impact Assessment Report as part of a State Significant Development Application (SSDA) to be lodged with the Department of Planning, Industry and Environment (DPIE).

The scope of works incorporated by the SSDA includes the development of a New Liverpool Primary School (NLPS) project, proposing construction of new school buildings for core school facilities, teaching spaces and support units, as well as associated landscaping and open space areas. The school proposes a maximum capacity of 1300 students (comprising 1200 mainstream primary students, 60 support unit students, and 40 preschool students), and is expected to commence operation in Term 1, 2023.

There are additional works at the site including roadworks to Burnside Drive and infrastructure works or the proposed services works to the site. These works are included within separate Review of Environmental Factors (REF) for these projects. Refer to Birds Tree Consultancy Arboricultural Development Impact Assessment Report for New Liverpool Public School Infrastructure Works dated 10 May 2021 Rev B and Arboricultural Development Impact Assessment Report for New Liverpool Public School Roadworks dated 10 May 2021 Rev B for details of impact assessment for these works. The extent of the boundaries of these works are defined within Fitzpatrick Design Staging Diagram within Appendix E.

For the proposed roundabout and road works on Burnside Drive contained within the Roadworks REF, the scope of works includes:

- The construction of a new roundabout
- Road widening works and associated services upgrades on Burnside Drive to support the New Liverpool Primary School (delivered under a separate application);
- New on-street parking and kiss and drop parking area;
- Relocation of existing street lighting and associated electricity infrastructure works.

For the proposed roundabout and road works on Burnside Drive contained within the Infrastructure REF, the scope of works includes infrastructure upgrades and service connections to service the existing Liverpool Boys and Girls High School, including:

- Water and sewer infrastructure
- Telecommunications infrastructure
- Stormwater infrastructure
- New kiosk and substation

Tree 180 is dead with no visible habitat and is recommended for removal within the SSDA works.

Tree 191 has a prominently leaning trunk with no geotropism evident in the trunk or upper canopy. Additionally the roots on the tension side of the trunk are raised above the soil surface. This may be indicative of the subsidence of this tree. We recommend a Level 2 (TRAQ) Risk Assessment of this tree to determine the viability of this tree to be retained.

The Tree Protection Zone (TPZ) of Trees 1, 6, 9, 11, 12, 13, 14, 15, are encroached by the proposed infrastructure and services works within the Infrastructure REF by a

total or major encroachment as defined by *AS4970-2009 Protection of Trees on Development Sites.* These trees will not be viable to be retained and will be required to be removed due to the impact of the proposed infrastructure works.

The Tree Protection Zone (TPZ) of Trees 16, 17, 19, 20, 163, 164, 165, 166, 167, 168, 169, 177, 179, 183, 184, 185, 186, 187, 188, 189, 190, 192 and 193 are encroached by the proposed works within the Roadworks REF by a total or major encroachment as defined by *AS4970-2009 Protection of Trees on Development Sites.* These trees will not be viable to be retained and will be required to be removed due to the impact of the proposed roadworks.

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.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
2.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0. Retention and protection subject to separate application
3.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0. Retention and protection subject to separate application
4.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0.
5.	*Corymbia maculata*	Retain	Recommend risk assessment. Occlusion and wound from branch rubbing from adjacent tree.
6.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0. Retention and protection subject to separate application
7.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0.
8.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0.
9.	*Eucalyptus microcorys*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
10.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0.
11.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
12.	*Angophora costata*	Remove	Not viable to be retained due to encroachment within the TPZ by the

			proposed development. Removal subject to separate application.
13.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
14.	*Angophora costata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
15.	*Angophora costata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
16.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
17.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
19.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
20.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
161.	*Corymbia citriodora*	Retain	Retain and protect in accordance with 8.0.
162.	*Corymbia citriodora*	Retain	Retain and protect in accordance with 8.0.
163.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
164.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
165.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
166.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
167.	*Eucalyptus scoparia*	Remove	Not viable to be retained due to encroachment within the TPZ by the

			proposed development. Removal subject to separate application.
168.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
169.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
170.	*Eucalyptus scoparia*	Retain	Retain and protect in accordance with 8.0.
171.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0.
172.	*Eucalyptus robusta*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development.
173.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0.
174.	*Callistemon viminalis*	Retain	Retain and protect in accordance with 8.0.
175.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0.
176.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0.
177.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0.
178.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0.
179.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
180.	*Corymbia maculata*	Remove	Dead tree, removed as part of the SSDA process.
182.	*Eucalyptus viminalis*	Retain	Retain and protect in accordance with 8.0.
183.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
184.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
185.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
186.	*Eucalyptus sideroxylon*	Retain	Retain and protect in accordance with 8.0. Retention and protection subject to separate application

187.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
188.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
189.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
190.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
191.	*Eucalyptus tereticornis*	Retain	Retain and protect in accordance with 8.0.
192.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
193.	*Populus nigra 'Italica'*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.

Contents

1.0 Scope of Works

This Arboricultural Development Impact Assessment Report has been commissioned by School Infrastructure NSW (SINSW) to prepare an Arboricultural Development Impact Assessment Report as part of a State Significant Development Application (SSDA) to be lodged with the Department of Planning, Industry and Environment (DPIE).

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- Telecommunications infrastructure
- Stormwater infrastructure
- New kiosk and substation

On the 23rd of September 2019, Glenn Bird of Birds Tree Consultancy attended site and inspected the subject trees from the ground. The site was re-inspected on 31st of March 2021. 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.

This report is revised from the previous report dated 5 December 2019 based on a revised scope of works. Trees not potentially impacted have been omitted from this report however tree numbering has been retained from this previous report.

This impact assessment is based on Fitzpatrick + Partners Site Plan Issue 01 dated 06/04/2021.

2.0 Site Analysis

2.1 Site

The subject site is the proposed New Liverpool Primary School NSW. The subject trees are located within or adjacent to the boundaries of this site. The site is currently within the boundaries of the Liverpool Boys High School and is proposed for redevelopment including the construction of new school buildings.

2.2 Topography

The site is flat. The area in the vicinity of all trees is flat. Refer to detailed survey for greater detail of levels.

2.3 Identification

Trees are as identified in the attached inspection forms in Appendix C and shown in Tree location Plan A01 in Appendix D. This report is revised from the previous report dated 5 December 2019 based on a revised scope of works. Trees not potentially impacted have been omitted from this report however tree numbering has been retained from this previous report.

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 A.

3.1. Tree 1. *Corymbia maculata*

This mature tree is approximately 10m tall with a canopy spread of 4m. It has a single trunk with a diameter at breast height (DBH) of 10mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.2. Tree 2. *Corymbia maculata*

This mature tree is approximately 18m tall with a canopy spread of 9m. It has a single trunk with a DBH of 18mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.3. Tree 3. *Corymbia maculata*

This mature tree is approximately 20m tall with a canopy spread of 11m. It has a single trunk with a DBH of 20mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.4. Tree 4. *Corymbia maculata*

This mature tree is approximately 15m tall with a canopy spread of 9m. It has a single trunk with a DBH of 15mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.5. Tree 5. ***Corymbia maculata***

This mature tree is approximately 16m tall with a canopy spread of 9m. It has a single trunk with a DBH of 16mm. This tree is in good health and condition with minimal deadwood and epicormic growth. We recommend a risk assessment due to occlusion and wound from branch rubbing from adjacent tree.

3.6. Tree 6. ***Corymbia maculata***

This mature tree is approximately 20m tall with a canopy spread of 6m. It has a single trunk with a DBH of 20mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.7. Tree 7. ***Corymbia maculata***

This mature tree is approximately 18m tall with a canopy spread of 8m. It has a single trunk with a DBH of 18mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.8. Tree 8. ***Corymbia maculata***

This mature tree is approximately 15m tall with a canopy spread of 7m. It has twin co-dominant trunks from the base with an aggregate DBH of 15mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.9. Tree 9. ***Eucalyptus microcorys***

This mature tree is approximately 17m tall with a canopy spread of 11m. It has multiple co-dominant trunks from the base with an aggregate DBH of 17mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.10. Tree 10. ***Corymbia maculata***

This mature tree is approximately 15m tall with a canopy spread of 9m. It has a single trunk with a DBH of 15mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.11. Tree 11. ***Corymbia maculata***

This mature tree is approximately 14m tall with a canopy spread of 8m. It has a single trunk with a DBH of 14mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.12. Tree 12. ***Angophora costata***

This mature tree is approximately 15m tall with a canopy spread of 11m. It has a single trunk with a DBH of 15mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.13. Tree 13. ***Corymbia maculata***

This mature tree is approximately 14m tall with a canopy spread of 9m. It has a single trunk with a DBH of 14mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.14. Tree 14. *Angophora costata*

This mature tree is approximately 13m tall with a canopy spread of 11m. It has a single trunk with a DBH of 13mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.15. Tree 15. *Angophora costata*

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

3.16. Tree 16. *Corymbia maculata*

This mature tree is approximately 14m tall with a canopy spread of 6m. It has a single trunk with a DBH of 14mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.17. Tree 17. *Corymbia maculata*

This mature tree is approximately 16m tall with a canopy spread of 7m. It has twin co-dominant trunks from 1.5m above the base with a DBH of 16mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.18. Tree 19. *Corymbia maculata*

This mature tree is approximately 16m tall with a canopy spread of 7m. It has a single trunk with a DBH of 16mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.19. Tree 20. *Corymbia maculata*

This mature tree is approximately 16m tall with a canopy spread of 3m. It has a single trunk with a DBH of 16mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.20. Tree 161. *Corymbia citriodora*

This mature tree is approximately 20m tall with a canopy spread of 14m. It has a single trunk with a DBH of 20mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.21. Tree 162. *Corymbia citriodora*

This mature tree is approximately 21m tall with a canopy spread of 16m. It has a single trunk with a DBH of 21mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.22. Tree 163. *Corymbia maculata*

This mature tree is approximately 12m tall with a canopy spread of 5m. It has a single trunk with a DBH of 12mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.23. Tree 164. *Corymbia maculata*

This mature tree is approximately 15m tall with a canopy spread of 6m. It has a single trunk with a DBH of 15mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.24. Tree 165. *Corymbia maculata*

This mature tree is approximately 18m tall with a canopy spread of 6m. It has a single trunk with a DBH of 18mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.25. Tree 166. *Corymbia maculata*

This mature tree is approximately 9m tall with a canopy spread of 3m. It has a single trunk with a DBH of 9mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.26. Tree 167. *Eucalyptus scoparia*

This mature tree is approximately 16m tall with a canopy spread of 11m. It has a single trunk with a DBH of 16mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.27. Tree 168. *Corymbia maculata*

This mature tree is approximately 18m tall with a canopy spread of 9m. It has a single trunk with a DBH of 18mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.28. Tree 169. *Corymbia maculata*

This mature tree is approximately 6m tall with a canopy spread of 3m. It has a single trunk with a DBH of 6mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.29. Tree 170. *Eucalyptus scoparia*

This mature tree is approximately 12m tall with a canopy spread of 9m. It has a single trunk with a DBH of 12mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.30. Tree 171. *Corymbia maculata*

This mature tree is approximately 8m tall with a canopy spread of 3m. It has a single trunk with a DBH of 8mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.31. Tree 172. *Eucalyptus robusta*

This mature tree is approximately 7m tall with a canopy spread of 6m. It has a single trunk with a DBH of 7mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.32. Tree 173. *Corymbia maculata*

This mature tree is approximately 11m tall with a canopy spread of 4m. It has a single trunk with a DBH of 11mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.33. Tree 174. *Callistemon viminalis*

This mature tree is approximately 6m tall with a canopy spread of 4m. It has multiple co-dominant trunks from the base with an aggregate DBH of 6mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.34. Tree 175. *Corymbia maculata*

This mature tree is approximately 11m tall with a canopy spread of 4m. It has a single trunk with a DBH of 11mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.35. Tree 176. *Corymbia maculata*

This mature tree is approximately 16m tall with a canopy spread of 8m. It has a single trunk with a DBH of 16mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.36. Tree 177. *Corymbia maculata*

This mature tree is approximately 10m tall with a canopy spread of 3m. It has a single trunk with a DBH of 10mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.37. Tree 178. *Corymbia maculata*

This mature tree is approximately 17m tall with a canopy spread of 11m. It has a single trunk with a DBH of 17mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.38. Tree 179. *Corymbia maculata*

This mature tree is approximately 10m tall with a canopy spread of 5m. It has a single trunk with a DBH of 10mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.39. Tree 180. *Corymbia maculata*

This is a dead tree with no visible or apparent habitat, and it is recommended for removal.

3.40. Tree 182 *Eucalyptus viminalis*

This mature tree is approximately 8m tall with a canopy spread of 6m. It has a single trunk with a DBH of 8mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.41. Tree 183. *Corymbia maculata*

This mature tree is approximately 13m tall with a canopy spread of 6m. It has a single trunk with a DBH of 13mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.42. Tree 184. *Corymbia maculata*

This mature tree is approximately 11m tall with a canopy spread of 6m. It has a single trunk with a DBH of 11mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.43. Tree 185. *Corymbia maculata*

This mature tree is approximately 8m tall with a canopy spread of 2m. It has a single trunk with a DBH of 8mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.44. Tree 186. *Eucalyptus sideroxylon*

This mature tree is approximately 17m tall with a canopy spread of 12m. It has a single trunk with a DBH of 17mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.45. Tree 187. *Corymbia maculata*

This mature tree is approximately 16m tall with a canopy spread of 5m. It has a single trunk with a DBH of 16mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.46. Tree 188. *Corymbia maculata*

This mature tree is approximately 16m tall with a canopy spread of 5m. It has a single trunk with a DBH of 16mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.47. Tree 189. *Corymbia maculata*

This mature tree is approximately 12m tall with a canopy spread of 5m. It has a single trunk with a DBH of 12mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.48. Tree 190. *Corymbia maculata*

This mature tree is approximately 16m tall with a canopy spread of 6m. It has a single trunk with a DBH of 16mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.49. Tree 191. *Eucalyptus tereticornis*

This mature tree is approximately 17m tall with a canopy spread of 12m. It has a single trunk with a prominent lean to the east with geotropism present and a DBH of 17mm. This tree is in good health and condition with minimal deadwood and epicormic growth. There is no evidence of subsidence.

3.50. Tree 192. *Corymbia maculata*

This mature tree is approximately 15m tall with a canopy spread of 6m. It has a single trunk with a DBH of 15mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.51. Tree 193. *Populus nigra 'Italica'*

This mature tree is approximately 16m tall with a canopy spread of 4m. It has a single trunk with a DBH of 16mm. 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.	*Corymbia maculata*	Medium
2.	*Corymbia maculata*	Medium
3.	*Corymbia maculata*	Medium
4.	*Corymbia maculata*	Medium
5.	*Corymbia maculata*	Medium
6.	*Corymbia maculata*	Medium
7.	*Corymbia maculata*	Medium
8.	*Corymbia maculata*	Medium
9.	*Eucalyptus microcorys*	Medium
10.	*Corymbia maculata*	Medium
11.	*Corymbia maculata*	Medium
12.	*Angophora costata*	Medium
13.	*Corymbia maculata*	Medium
14.	*Angophora costata*	Medium
15.	*Angophora costata*	Medium
16.	*Corymbia maculata*	Medium
17.	*Corymbia maculata*	Medium
19.	*Corymbia maculata*	Medium
20.	*Corymbia maculata*	Medium
161.	*Corymbia citriodora*	Medium
162.	*Corymbia citriodora*	Medium

163.	*Corymbia maculata*	Medium
164.	*Corymbia maculata*	Medium
165.	*Corymbia maculata*	Medium
166.	*Corymbia maculata*	Medium
167.	*Eucalyptus scoparia*	Medium
168.	*Corymbia maculata*	Medium
169.	*Corymbia maculata*	Medium
170.	*Eucalyptus scoparia*	Medium
171.	*Corymbia maculata*	Medium
172.	*Eucalyptus robusta*	Medium
173.	*Corymbia maculata*	Medium
174.	*Callistemon viminalis*	Medium
175.	*Corymbia maculata*	Medium
176.	*Corymbia maculata*	Medium
177.	*Corymbia maculata*	Medium
178.	*Corymbia maculata*	Medium
179.	*Corymbia maculata*	Medium
180.	*Corymbia maculata*	Low
182.	*Eucalyptus viminalis*	Medium
183.	*Corymbia maculata*	Medium
184.	*Corymbia maculata*	Medium
185.	*Corymbia maculata*	Medium
186.	*Eucalyptus sideroxylon*	Medium
187.	*Corymbia maculata*	Medium
188.	*Corymbia maculata*	Medium
189.	*Corymbia maculata*	Medium
190.	*Corymbia maculata*	Medium
191.	*Eucalyptus tereticornis*	Medium
192.	*Corymbia maculata*	Medium
193.	*Populus nigra 'Italica'*	Low

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.	*Corymbia maculata*	Medium
2.	*Corymbia maculata*	Medium
3.	*Corymbia maculata*	Medium
4.	*Corymbia maculata*	Medium
5.	*Corymbia maculata*	Medium
6.	*Corymbia maculata*	Medium
7.	*Corymbia maculata*	Medium
8.	*Corymbia maculata*	Medium
9.	*Eucalyptus microcorys*	Medium
10.	*Corymbia maculata*	Medium
11.	*Corymbia maculata*	Medium
12.	*Angophora costata*	Medium
13.	*Corymbia maculata*	Medium
14.	*Angophora costata*	Medium
15.	*Angophora costata*	Medium
16.	*Corymbia maculata*	Medium
17.	*Corymbia maculata*	Medium
19.	*Corymbia maculata*	Medium
20.	*Corymbia maculata*	Medium
161.	*Corymbia citriodora*	Medium
162.	*Corymbia citriodora*	Medium
163.	*Corymbia maculata*	Medium
164.	*Corymbia maculata*	Medium
165.	*Corymbia maculata*	Medium
166.	*Corymbia maculata*	Medium
167.	*Eucalyptus scoparia*	Medium
168.	*Corymbia maculata*	Medium
169.	*Corymbia maculata*	Medium
170.	*Eucalyptus scoparia*	Medium
171.	*Corymbia maculata*	Medium
172.	*Eucalyptus robusta*	Medium
173.	*Corymbia maculata*	Medium
174.	*Callistemon viminalis*	Medium
175.	*Corymbia maculata*	Medium
176.	*Corymbia maculata*	Medium
177.	*Corymbia maculata*	Medium
178.	*Corymbia maculata*	Medium

179.	*Corymbia maculata*	Medium
180.	*Corymbia maculata*	Low
182.	*Eucalyptus viminalis*	Medium
183.	*Corymbia maculata*	Medium
184.	*Corymbia maculata*	Medium
185.	*Corymbia maculata*	Medium
186.	*Eucalyptus sideroxylon*	Medium
187.	*Corymbia maculata*	Medium
188.	*Corymbia maculata*	Medium
189.	*Corymbia maculata*	Medium
190.	*Corymbia maculata*	Medium
191.	*Eucalyptus tereticornis*	Medium
192.	*Corymbia maculata*	Medium
193.	*Populus nigra 'Italica'*	Low

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.

Tree no.	Species	TPZ Radius (m)	Encroachment (%)	Approval pathway
1.	*Corymbia maculata*	3.12	100	Roadworks REF
2.	*Corymbia maculata*	6	100	Infrastructure REF
3.	*Corymbia maculata*	6.96	100	Infrastructure REF
4.	*Corymbia maculata*	4.92	0	
5.	*Corymbia maculata*	4.08	0	
6.	*Corymbia maculata*	4.8	40	Infrastructure REF
7.	*Corymbia maculata*	4.32	0	
8.	*Corymbia maculata*	3.36	0	

9.	*Eucalyptus microcorys*	8.28	25	Infrastructure REF
10.	*Corymbia maculata*	2.76	0	
11.	*Corymbia maculata*	3.24	100	Infrastructure REF
12.	*Angophora costata*	7.08	100	Infrastructure REF
13.	*Corymbia maculata*	4.44	100	Infrastructure REF
14.	*Angophora costata*	6.48	100	Infrastructure REF
15.	*Angophora costata*	4.08	20	Infrastructure REF
16.	*Corymbia maculata*	2.88	100	Roadworks REF
17.	*Corymbia maculata*	4.32	100	Roadworks REF
19.	*Corymbia maculata*	3.84	100	Roadworks REF
20.	*Corymbia maculata*	2.52	100	Roadworks REF
161.	*Corymbia citriodora*	8.04	0	
162.	*Corymbia citriodora*	7.44	0	
163.	*Corymbia maculata*	3.72	100	Roadworks REF
164.	*Corymbia maculata*	3.48	100	Roadworks REF
165.	*Corymbia maculata*	3.6	100	Roadworks REF
166.	*Corymbia maculata*	2.64	100	Roadworks REF
167.	*Eucalyptus scoparia*	5.16	100	Roadworks REF
168.	*Corymbia maculata*	5.76	40	Roadworks REF
169.	*Corymbia maculata*	2.4	40	Roadworks REF
170.	*Eucalyptus scoparia*	6.36	0	
171.	*Corymbia maculata*	2.64	0	
172.	*Eucalyptus robusta*	2.76	0	
173.	*Corymbia maculata*	3.36	0	
174.	*Callistemon viminalis*	4.02	0	
175.	*Corymbia maculata*	2.4	0	
176.	*Corymbia maculata*	4.68	0	
177.	*Corymbia maculata*	2.4	100	Roadworks REF
178.	*Corymbia maculata*	5.4	0	
179.	*Corymbia maculata*	3.36	100	Roadworks REF
180.	*Corymbia maculata*	2.52	N/A	SSDA

182.	*Eucalyptus viminalis*	3.36	0	
183.	*Corymbia maculata*	3.6	100	Roadworks REF
184.	*Corymbia maculata*	3.12	100	Roadworks REF
185.	*Corymbia maculata*	2.4	100	Roadworks REF
186.	*Eucalyptus sideroxylon*	8.52	20	Roadworks REF
187.	*Corymbia maculata*	2.76	100	Roadworks REF
188.	*Corymbia maculata*	4.32	100	Roadworks REF
189.	*Corymbia maculata*	4.32	100	Roadworks REF
190.	*Corymbia maculata*	4.8	100	Roadworks REF
191.	*Eucalyptus tereticornis*	8.88	0	
192.	*Corymbia maculata*	3.84	100	Roadworks REF
193.	*Populus nigra 'Italica'*	6	100	Roadworks REF

7.0 Recommendations

Tree 180 is dead with no visible habitat and is recommended for removal within the SSDA works.

Tree 191 has a prominently leaning trunk with no geotropism evident in the trunk or upper canopy. Additionally the roots on the tension side of the trunk are raised above the soil surface. This may be indicative of the subsidence of this tree. We recommend a Level 2 (TRAQ) Risk Assessment of this tree to determine the viability of this tree to be retained.

The Tree Protection Zone (TPZ) of Trees 1, 6, 9, 11, 12, 13, 14, 15, are encroached by the proposed infrastructure and services works within the Infrastructure REF by a total or major encroachment as defined by *AS4970-2009 Protection of Trees on Development Sites.* These trees will not be viable to be retained and will be required to be removed due to the impact of the proposed infrastructure works.

The Tree Protection Zone (TPZ) of Trees 16, 17, 19, 20, 163, 164, 165, 166, 167, 168, 169, 177, 179, 183, 184, 185, 186, 187, 188, 189, 190, 192 and 193 are encroached by the proposed works within the Roadworks REF by a total or major encroachment as defined by *AS4970-2009 Protection of Trees on Development Sites.* These trees will not be viable to be retained and will be required to be removed due to the impact of the proposed roadworks.

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.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
2.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0. Retention and protection subject to separate application
3.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0. Retention and protection subject to separate application
4.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0.
5.	*Corymbia maculata*	Retain	Recommend risk assessment. Occlusion and wound from branch rubbing from adjacent tree.
6.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0. Retention and protection subject to separate application
7.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0.

8.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0.
9.	*Eucalyptus microcorys*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
10.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0.
11.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
12.	*Angophora costata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
13.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
14.	*Angophora costata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
15.	*Angophora costata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
16.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
17.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
19.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
20.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
161.	*Corymbia citriodora*	Retain	Retain and protect in accordance with 8.0.
162.	*Corymbia citriodora*	Retain	Retain and protect in accordance with 8.0.
163.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.

164.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
165.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
166.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
167.	*Eucalyptus scoparia*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
168.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
169.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
170.	*Eucalyptus scoparia*	Retain	Retain and protect in accordance with 8.0.
171.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0.
172.	*Eucalyptus robusta*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development.
173.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0.
174.	*Callistemon viminalis*	Retain	Retain and protect in accordance with 8.0.
175.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0.
176.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0.
177.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0.
178.	*Corymbia maculata*	Retain	Retain and protect in accordance with 8.0.
179.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
180.	*Corymbia maculata*	Remove	Dead tree, removed as part of the SSDA process.
182.	*Eucalyptus viminalis*	Retain	Retain and protect in accordance with 8.0.

183.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
184.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
185.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
186.	*Eucalyptus sideroxylon*	Retain	Retain and protect in accordance with 8.0. Retention and protection subject to separate application
187.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
188.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
189.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
190.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
191.	*Eucalyptus tereticornis*	Retain	Retain and protect in accordance with 8.0.
192.	*Corymbia maculata*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.
193.	*Populus nigra 'Italica'*	Remove	Not viable to be retained due to encroachment within the TPZ by the proposed development. Removal subject to separate application.

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.

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 will cause significant soil compaction. This will be exacerbated by increased water expected on these soils as result of adjacent construction and weather. Compaction of the soil within the TPZ will reduce the voids between soil peds or particles therefore will reduce the gaseous exchange capacity of the root system which will slow critical metabolic processes such

as respiration which produces Adenosine Triphosphate (ATP) which provides energy for the photosynthesis, which in turn provides photosynthates such as glucose. These photosynthates provide the carbohydrates required for tree extension growth, girth expansion, reproduction and pest and disease resistance. No pedestrian or plant access is permissible to the TPZ.

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 Superintendent. Should any further trenching be required within the TPZs identified, this work is to be carried out by hand and under the supervision of a qualified Arborist.

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 Threatened Species Conservation Act 1995.

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.

Appendix A Landscape Significance

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.

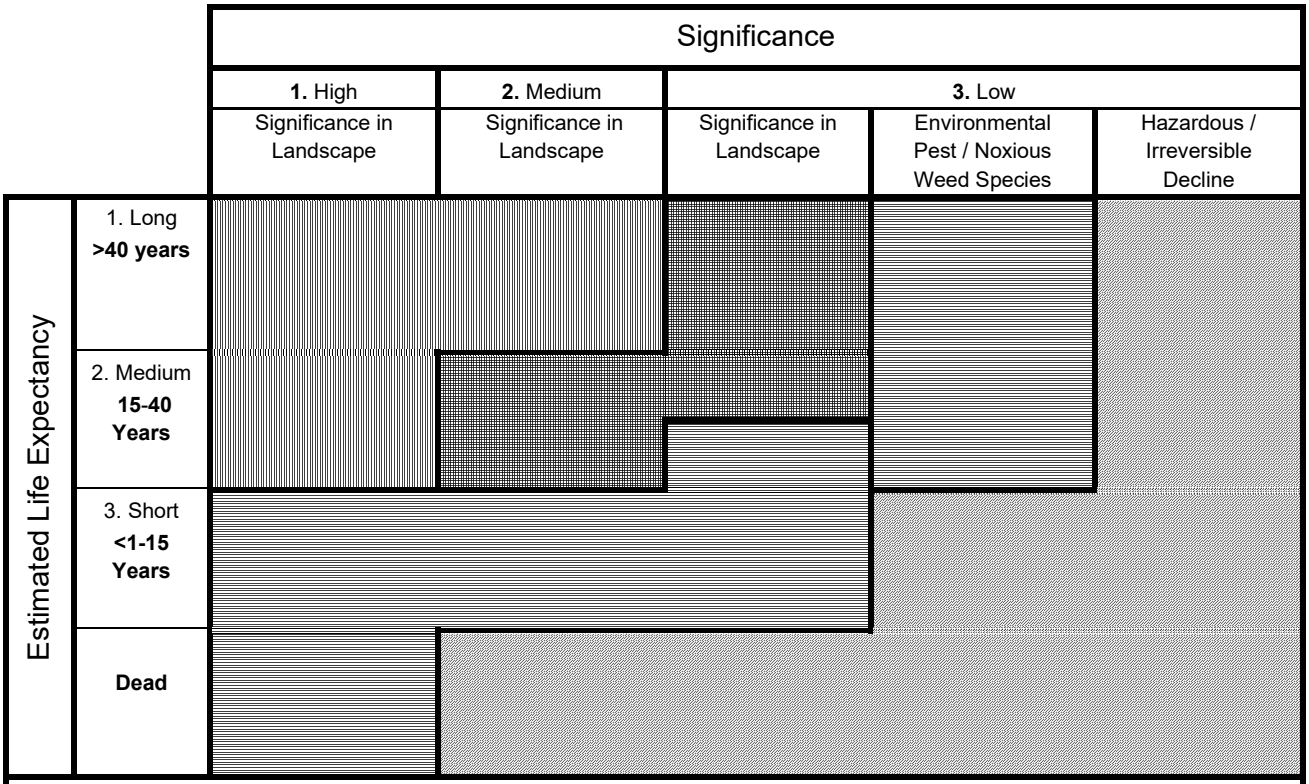
Hazardous/Irreversible Decline

- 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



Legend for Matrix Assessment

	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 *Protection of trees on development sites*. 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

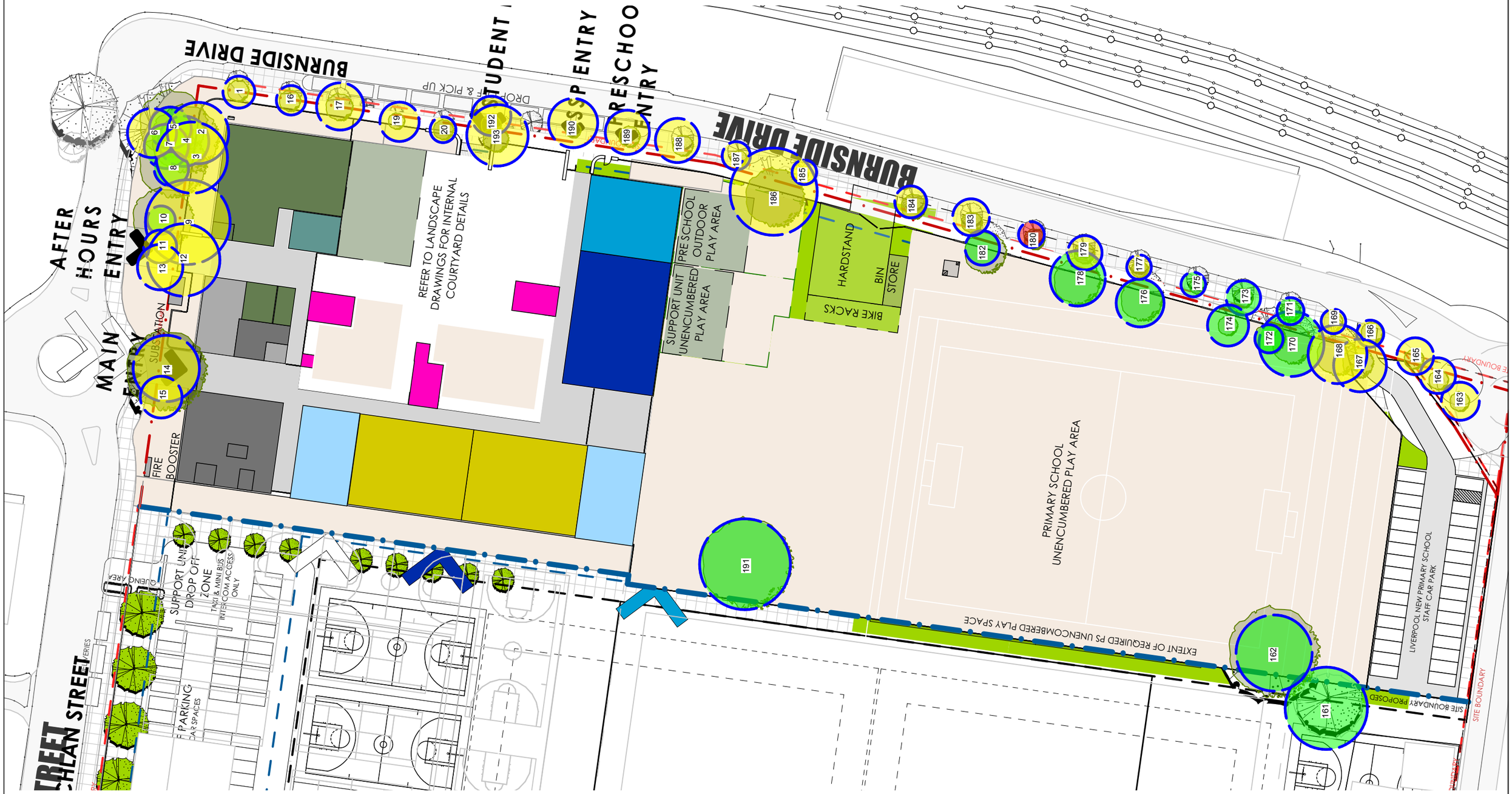
Inspection Data 31-Mar-21

New Liverpool Primary School

Tree no.	Species	Height (m)	Spread(m)	DBH (mm)	TPZ Radius (m)	Maturity	Trunk (single, twin, multiple @)	Trunk lean	Form/Crown shape	Branching Habit	Crown Distribution	Stability	Branching Structure	Pruning History	Defects	Damage	Overall Health & Vigour	Canopy Density	Foliage	Deadwood	Epicormic Growth	Pest Infestation	Disease	Life expectancy	Env. & Landcape significance	Retention Value	Notes/Comments
1	Corymbia maculata	10	4	260	3.12	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	Medium	Medium	
2	Corymbia maculata	18	9	500	6	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	Corymbia maculata	20	11	580	6.96	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	
4	Corymbia maculata	15	9	410	4.92	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	
5	Corymbia maculata	16	9	340	4.08	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Evidence of decay, Occlusion	Wound	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	Medium	Medium	Recommend risk assessment, Occlusion and wound from branch rubbing from adjacent tree.
6	Corymbia maculata	20	9	400	4.8	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	
7	Corymbia maculata	18	8	360	4.32	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	Corymbia maculata	15	7	280	3.36	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	
9	Eucalyptus microcorys	17	11	690	8.28	Mature	Multiple @ base	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	Medium	Medium	
10	Corymbia maculata	15	9	230	2.76	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	Medium	Medium	
11	Corymbia maculata	14	8	270	3.24	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	
12	Angophora costata	15	11	590	7.08	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	
13	Corymbia maculata	14	9	370	4.44	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	
14	Angophora costata	13	11	540	6.48	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	
15	Angophora costata	10	8	340	4.08	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	
16	Corymbia maculata	14	6	240	2.88	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	
17	Corymbia maculata	16	7	360	4.32	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	
19	Corymbia maculata	16	7	320	3.84	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	Corymbia maculata	16	3	210	2.52	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	
160	Eucalyptus sideroxylon	23	13	610	7.32	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	
163	Corymbia maculata	12	5	310	3.72	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	
164	Corymbia maculata	15	6	290	3.48	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	
165	Corymbia maculata	18	6	300	3.6	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	
166	Corymbia maculata	9	3	220	2.64	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	
167	Eucalyptus scoparia	16	11	430	5.16	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	
168	Corymbia maculata	18	9	480	5.76	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	Medium	Medium	
169	Corymbia maculata	6	3	200	2.4	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	
170	Eucalyptus scoparia	12	9	530	6.36	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	
171	Corymbia maculata	8	3	220	2.64	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	
172	Eucalyptus robusta	7	6	230	2.76	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	Medium	Medium	

Tree no.	Species	Height (m)	Spread(m)	DBH (mm)	TPZ Radius (m)	Maturity	Trunk (single, twin, multiple @)	Trunk lean	Form/Crown shape	Branching Habit	Crown Distribution	Stability	Branching Structure	Pruning History	Defects	Damage	Overall Health & Vigour	Canopy Density	Foliage	Deadwood	Epicormic Growth	Pest Infestation	Disease	Life expectancy	Env. & Landcape significance	Retention Value	Notes/Comments
173	Corymbia maculata	11	4	280	3.36	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	
174	Callistemon viminalis	6	4	335	4.02	Mature	Multiple @ base	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	Medium	Medium	
175	Corymbia maculata	11	4	200	2.4	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	
176	Corymbia maculata	16	8	390	4.68	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	Medium	Medium	
177	Corymbia maculata	10	3	200	2.4	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	
178	Corymbia maculata	17	11	450	5.4	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	
179	Corymbia maculata	10	5	280	3.36	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	
180	Dead tree				0	Dead																			Low	Low	
182	Eucalyptus viminalis	8	6	280	3.36	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	
183	Corymbia maculata	13	6	300	3.6	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	
184	Corymbia maculata	11	6	260	3.12	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	
185	Corymbia maculata	8	2	200	2.4	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	
186	Eucalyptus sideroxylon	17	12	710	8.52	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	
187	Corymbia maculata	16	5	230	2.76	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	Medium	Medium	
188	Corymbia maculata	16	5	360	4.32	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	
189	Corymbia maculata	12	5	360	4.32	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	
190	Corymbia maculata	16	6	400	4.8	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	
192	Corymbia maculata	15	6	320	3.84	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	
193	Populus nigra 'Italica'	16	4	500	6	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	Medium	Low	

Appendix D Tree Location Plans



Legend

- Tree to be Retained and Protected
- Tree to be Removed
- Tree Not Viable to be Retained due to Proposed Development
- Tree Protection Zone (TPZ) in accordance with AS4970-2009

Birds Tree Consultancy
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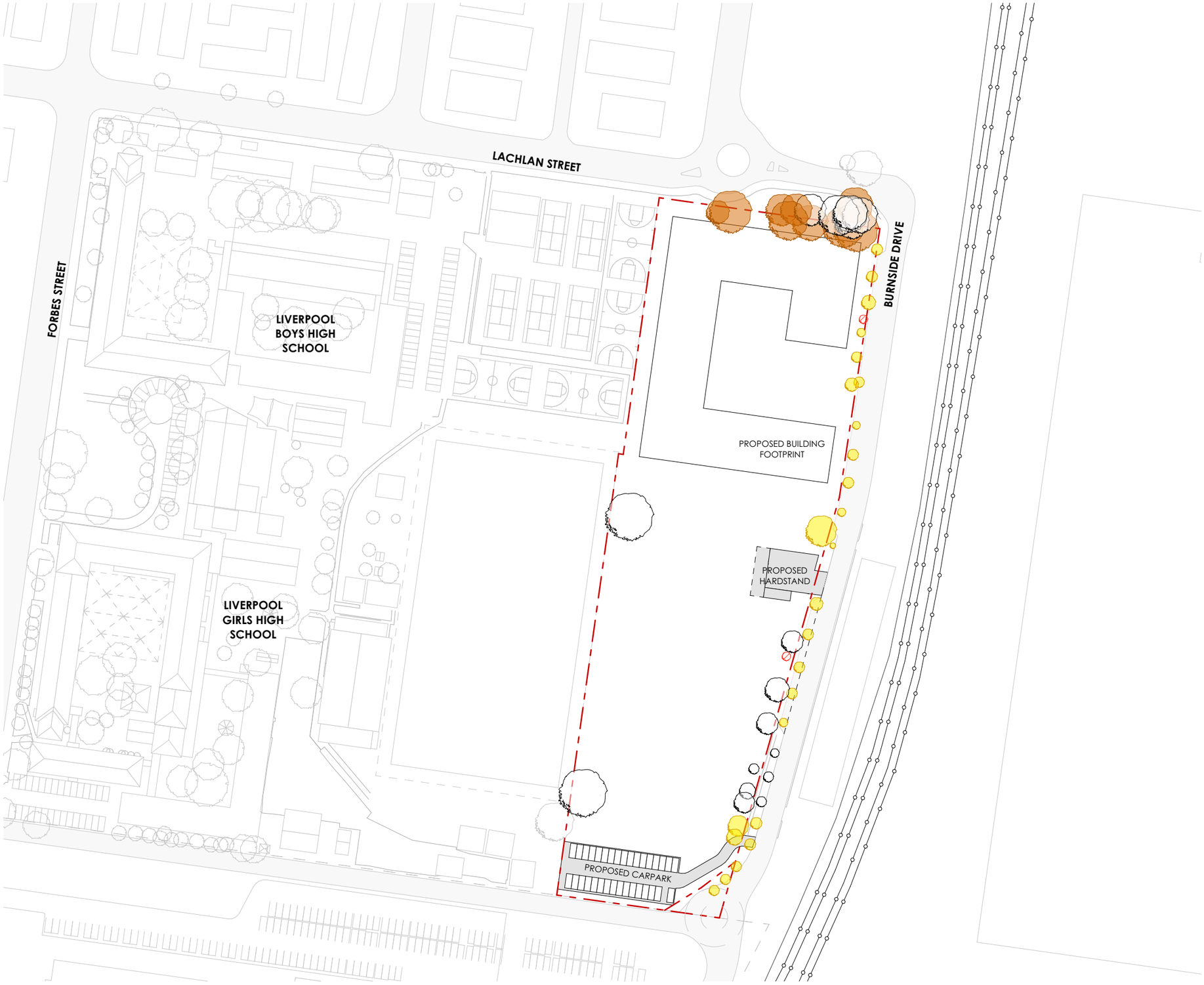
Project: New Liverpool Primary School
Client: Schools Infrastructure NSW
DWG: A01 REV C
Plan: Tree Location Plan 01
Date: 29 May 2021 Scale : 1:750 @ A3

Appendix E Staging Diagram

NEW LIVERPOOL PRIMARY SCHOOL

STAGING DIAGRAM - TREE STAGING



EXISTING TREES TO REMAIN

TREES REMOVED IN STAGE 2 (REF) WORKS

TREES REMOVED IN STAGE 3 (REF) WORKS

TREES ASSESSED & NOTED AS DEAD WITH NO HABITAT TO BE REMOVED WITHOUT CONSENT PRIOR TO REF WORKS

fitzpatrick + partners

SK210504

SOUTHERN SUBURBS CLUSTER

PHASE 03 SCHEMATIC DESIGN