



ARBORICULTURAL DEVELOPMENT IMPACT ASSESSMENT REPORT

Waitara Public School

**25th of August 2017
Revision C**

**Prepared for
GHD**

Prepared by

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Executive Summary

This Arboricultural Development Impact Assessment Report has been commissioned by GHD to report on trees within the site of Waitara Public School. It has been commissioned to outline the health, condition and stability of these trees as well as their viability for retention within the context of the proposed development. The scope of this report includes all trees within areas that may be impacted by the proposed development.

Tree 112 has fruit which may be hazardous and is therefore recommended for removal.

Tree 117 is dead with no visible habitat and is recommended for removal. Tree 201 is in poor health and form with the majority of the live canopy epicormic growth. This tree is recommended for removal.

Tree 123 has decay and cavity within the trunk which places this tree at increased risk of failure. In consideration of the future development and the increased number of targets and therefore increased hazard posed, this tree is recommended for removal.

Tree 100 also has evidence of significant decay within the trunk. In order to determine extent of decay and therefore the viability of this tree to be retained, we recommend that this tree undergo further investigation by means of Resistograph Testing.

Trees 3, 5, 106, 107, 110, 121, 127, 201, 208, 213, 214, 215, 216, 217, 218, 219, 220 and 221 are encroached by the proposed construction and required earthworks by a major or total encroachment as defined by *AS4970-2009 Protection of Trees on Development Sites*. These trees will not be viable to be retained and are recommended for removal.

Trees 113 and 200 have their Tree Protection Zones encroached by slightly greater than the minor encroachment as defined by *AS4970-2009*. Under consideration of these species tolerance to root disturbance as permitted in clause 3.3.4 of *AS4970-2009*, these trees will remain viable to be retained on the condition that all excavation within the TPZ of these trees be carried out by means of non-destructive excavation such as use of an Air Knife (sucker truck not permissible).

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
3.	<i>Cinnamomum camphora</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
5.	<i>Lophostemon confertus</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.

100.	<i>Angophora costata</i>	Resistograph Test or Remove	Large cavity at base of tree with large swelling indicative of decay at 1500-1800.
101.	<i>Photinia glabra rubens</i>	Retain	
103.	<i>Melaleuca stypheloides</i>	Retain	
104.	<i>Callistemon viminalis</i>	Retain	
106.	<i>Cedrus deodara</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
107.	<i>Ceratopetalum gummiferum</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
109.	<i>Callistemon viminalis</i>	Retain	
110.	<i>Lophostemon confertus</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
111.	<i>Melaleuca stypheloides</i>	Retain	
112.	<i>Lagunaria patersonii</i>	Remove	
113.	<i>Melaleuca stypheloides</i>	Retain	
114.	<i>Cupressus spp</i>	Retain	
115.	<i>Angophora costata</i>	Retain	
116.	<i>Brachychiton acerifolia</i>	Retain	
117.	Dead tree	Remove	Dead tree with no apparent habitat.
118.	<i>Agonis flexuosa</i>	Retain	
119.	<i>Corymbia citriodora</i>	Retain	
120.	<i>Angophora costata</i>	Retain	
121.	<i>Cupressus spp</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
123.	<i>Angophora costata</i>	Remove	Extensive decay throughout trunk. Decay and cavity present at location of previous limb failure. Fungal fruiting body present.
124.	<i>Angophora costata</i>	Retain	
125.	<i>Angophora costata</i>	Retain	Evidence of decay in two primary branches. Remove these branches.
126.	<i>Angophora costata</i>	Retain	

127.	<i>Callistemon viminalis</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
128.	<i>Lophostemon confertus</i>	Retain	
129.	<i>Lophostemon confertus</i>	Retain	
131.	<i>Melaleuca stypheloides</i>	Retain	
132.	<i>Lophostemon confertus</i>	Retain	
133.	<i>Lophostemon confertus</i>	Retain	
200.	<i>Cupaniopsis anacardiodes</i>	Retain	
201.	<i>Pittosporum undulatum</i>	Remove	Poor form and high percentage of epicormic growth due to topping.
202.	<i>Cupaniopsis anacardiodes</i>	Retain	
203.	<i>Acmena smithii</i>	Retain	
204.	<i>Callistemon viminalis</i>	Retain	
205.	<i>Jacaranda mimosifolia</i>	Retain	
206.	<i>Callistemon viminalis</i>	Retain	
207.	<i>Callistemon viminalis</i>	Retain	
208.	<i>Cupaniopsis anacardiodes</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
209.	<i>Angophora floribunda</i>	Retain	
210.	<i>Callistemon viminalis</i>	Retain	
211.	<i>Acacia decurrens</i>	Retain	
212.	<i>Camellia japonica</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
213.	<i>Elaeocarpus reticulatis</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
214.	<i>Elaeocarpus reticulatis</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
215.	<i>Camellia japonica</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
216.	<i>Callistemon viminalis</i>	Remove	Not viable to be retained due to major or total

			encroachment of TPZ by proposed development.
217.	<i>Callistemon viminalis</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
218.	<i>Callistemon viminalis</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
219.	<i>Callistemon viminalis</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
220.	<i>Callistemon viminalis</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
221.	<i>Callistemon viminalis</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
222.	<i>Callistemon viminalis</i>	Retain	
223.	<i>Acacia spp</i>	Retain	
224.	<i>Casuarina spp</i>	Retain	
225.	<i>Casuarina spp</i>	Retain	

Contents

Executive Summary	2
Contents.....	6
1.0 Scope of Works	7
2.0 Site Analysis.....	7
2.1 Site.....	7
2.2 Topography.....	7
2.3 Identification.....	7
2.4 Soils	7
3.0 Existing Trees.....	7
4.0 Impact of Development.....	16
4.1 Tree Protection Zone	16
4.2 Development Impact.....	18
5.0 Recommendations	25
6.0 Pre-Construction Tree Protection Measures.....	29
6.1 General	29
6.2 Identification.....	29
6.3 Protective Fence.....	29
Mulching	29
7.0 Site Management Issues	29
7.1 Soil Compaction.....	29
7.2 Site Access	30
7.3 Excavation within Tree Protection Area	30
7.4 Possible Contamination / Storage of Materials	30
8.0 Tree Protection Measures During Construction ...	30
8.1 Maintenance of Pre-Construction Tree Protection Measures	30
8.2 Possible Contaminants.....	30
8.3 Physical Damage.....	30
8.4 Compaction.....	30
8.5 Trenching.....	30
8.6 Watering	30
8.7 Site Sheds / Amenities/ Storage.....	31
9.0 Environmental / Heritage/ Legislative Considerations	31
10.0 References	31
11.0 Disclaimer	31
Appendix A - Tree Inspection Data.....	32
Appendix B Tree Location Plans	33
Tree Protection Plans	33

1.0 Scope of Works

This Arboricultural Development Impact Assessment Report has been commissioned by GHD to report on trees within the site of Waitara Public School. It has been commissioned to outline the health, condition and stability of these trees as well as their viability for retention within the context of the proposed development. The scope of this report includes all trees within areas that may be impacted by the proposed development.

On the 25th of July 2017, Glenn Bird of Birds Tree Consultancy attended site and inspected the subject trees from the ground. There was no aerial inspection carried out. A Visual Tree Assessment was undertaken in accordance with Visual Tree Assessment (VTA) guidelines (Mattheck and Breloer, 1994). Tree heights were measured using a Nikon Forestry 550 Heightmeter.

2.0 Site Analysis

2.1 Site

The subject site is Waitara Public School. The subject trees are located within or adjacent to the boundaries of this site. The site is proposed for development involving the construction of new school buildings. Refer to GHD construction drawings for greater details of the proposed development.

2.2 Topography

The site is relatively flat. The area in the vicinity of all trees is flat.

2.3 Identification

Trees are as identified in the attached inspection forms in Appendix A and shown in Tree location Plan A01 in Appendix B. For continuity, tree numbering reflects numbers provided in Arborsite Tree Report for the Department of Education and dated 13 December 2016. Trees that were not included in this report have been assigned number commencing with 200 in order to differentiate from previously reported trees.

2.4 Soils

Soil material and horizons were not tested for this report.

3.0 Existing Trees

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

3.3 Tree 3 *Cinnamomum camphora*

This mature tree is approximately 20m tall with a canopy spread of 20m. It has a single trunk with a diameter at breast height (DBH) of 1370mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

- 3.5 Tree 5 *Lophostemon confertus***
 This mature tree is approximately 20m tall with a canopy spread of 14m. It has multiple co-dominant trunks from 1.5m above the base with a DBH of 900mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.100 Tree 100 *Angophora costata***
 This mature tree is approximately 25m tall with a canopy spread of 24m. It has a single trunk with a DBH of 980mm. This tree is in good health and condition with minimal deadwood and epicormic growth. There is evidence of a large cavity at base of tree with large swelling indicative of decay at 1.5m – 1.8m. We are recommending further investigation by means of Resistograph Testing or the removal of this tree.
- 3.101 Tree 101 *Photinia glabra rubens***
 This mature tree is approximately 6m tall with a canopy spread of 8m. It has multiple (3) co-dominant trunks from the base with an aggregate DBH of 200mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.103 Tree 103 *Melaleuca stypheloides***
 This mature tree is approximately 8m tall with a canopy spread of 4m. It has a single trunk with a DBH of 260mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.104 Tree 104 *Callistemon viminalis***
 This mature tree is approximately 8m tall with a canopy spread of 5m. It has a single trunk with a DBH of 165mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.106 Tree 106 *Cedrus deodara***
 This mature tree is approximately 20m tall with a canopy spread of 9m. It has a single trunk with a DBH of 430mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.107 Tree 107 *Ceratopetalum gummiferum***
 This mature tree is approximately 7m tall with a canopy spread of 6m. It has twin co-dominant trunks from the base with an aggregate DBH of 175mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.109 Tree 109 *Callistemon viminalis***
 This mature tree is approximately 7m tall with a canopy spread of 5m. It has a single trunk with a DBH of 175mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.110 Tree 110 *Lophostemon confertus***
 This mature tree is approximately 10m tall with a canopy spread of 7m. It has twin co-dominant trunks from 2m above the base with a DBH of

200mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.111 Tree 111 *Melaleuca stypheloides*

This mature tree is approximately 10m tall with a canopy spread of 7m. It has a single trunk with a DBH of 320mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.112 Tree 112 *Lagunaria patersonii*

This mature tree is approximately 10m tall with a canopy spread of 4m. It has a single trunk with a DBH of 200mm. This tree is in good health and condition with minimal deadwood and epicormic growth. This tree is recommended for removal.

3.113 Tree 113 *Melaleuca stypheloides*

This mature tree is approximately 10m tall with a canopy spread of 8m. It has a single trunk with a DBH of 410mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.114 Tree 114 *Cupressus spp*

This mature tree is approximately 10m tall with a canopy spread of 8m. It has a single trunk with a DBH of 290mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.115 Tree 115 *Angophora costata*

This mature tree is approximately 15m tall with a canopy spread of 9m. It has a single trunk with a DBH of 320mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.116 Tree 116 *Brachychiton acerifolia*

This mature tree is approximately 10m tall with a canopy spread of 6m. It has a single trunk with a DBH of 255mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.117 Tree 117 *Dead tree*

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

3.118 Tree 118 *Agonis flexuosa*

This mature tree is approximately 6m tall with a canopy spread of 7m. It has a single trunk with a DBH of 290mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.119 Tree 119 *Corymbia citriodora*

This mature tree is approximately 15m tall with a canopy spread of 10m. It has a single trunk with a DBH of 435mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.120 Tree 120 *Angophora costata*

This mature tree is approximately 10m tall with a canopy spread of 8m. It has a single trunk with a DBH of 210mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.121 Tree 121 *Cupressus spp*

This mature tree is approximately 11m tall with a canopy spread of 5m. It has a single trunk with a DBH of 280mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.123 Tree 123 *Angophora costata*

This mature tree is approximately 25m tall with a canopy spread of 15m. It has a single trunk with a DBH of 870mm. This tree has minimal deadwood and epicormic growth however there is evidence of extensive decay throughout trunk, decay and cavity present at location of a previous limb failure with the presence of a fungal fruiting body indicating that the fungal decay is active. This tree is recommended for removal.



Figure 1 - Decay in Tree 123

- 3.124 Tree 124 *Angophora costata***
This mature tree is approximately 20m tall with a canopy spread of 12m. It has a single trunk with a DBH of 580mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.125 Tree 125 *Angophora costata***
This mature tree is approximately 20m tall with a canopy spread of 14m. It has a single trunk with a DBH of 600mm. This tree is in good health and condition with minimal deadwood and epicormic growth. There is evidence of decay in two primary branches. It is recommended to remove these branches.
- 3.126 Tree 126 *Angophora costata***
This mature tree is approximately 15m tall with a canopy spread of 14m. It has a single trunk with a DBH of 760mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.127 Tree 127 *Callistemon viminalis***
This mature tree is approximately 10m tall with a canopy spread of 7m. It has twin co-dominant trunks from the base with an aggregate DBH of 160mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.128 Tree 128 *Lophostemon confertus***
This mature tree is approximately 15m tall with a canopy spread of 9m. It has a single trunk with a DBH of 320mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.129 Tree 129 *Lophostemon confertus***
This mature tree is approximately 20m tall with a canopy spread of 12m. It has a single trunk with a DBH of 690mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.131 Tree 131 *Melaleuca stypheloides***
This mature tree is approximately 10m tall with a canopy spread of 5m. It has twin co-dominant trunks from the base with an aggregate DBH of 310mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.132 Tree 132 *Lophostemon confertus***
This mature tree is approximately 20m tall with a canopy spread of 14m. It has a single trunk with a DBH of 570mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.133 Tree 133 *Lophostemon confertus***
This mature tree is approximately 20m tall with a canopy spread of 14m. It has a single trunk with a DBH of 770mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

- 3.200 Tree 200. *Cupaniopsis anacardiodes***
This mature tree is approximately 8m tall with a canopy spread of 5m. It has a single trunk with a DBH of 140mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.201 Tree 201. *Pittosporum undulatum***
This mature tree is approximately 3m tall with a canopy spread of 3m. It has a single trunk with a DBH of 140mm. This tree has poor form and high percentage of epicormic growth due to topping. It is in good health and condition with minimal deadwood. This tree is recommended for removal.
- 3.202 Tree 202. *Cupaniopsis anacardiodes***
This mature tree is approximately 5m tall with a canopy spread of 4m. It has a single trunk with a DBH of 110mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.203 Tree 203. *Acmena smithii***
This mature tree is approximately 4m tall with a canopy spread of 2m. It has a single trunk with a DBH of 60mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.204 Tree 204. *Callistemon viminalis***
This mature tree is approximately 6m tall with a canopy spread of 4m. It has a single trunk with a DBH of 100mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.205 Tree 205. *Jacaranda mimosifolia***
This mature tree is approximately 6m tall with a canopy spread of 4m. It has a single trunk with a DBH of 120mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.206 Tree 206. *Callistemon viminalis***
This mature tree is approximately 6m tall with a canopy spread of 4m. It has a single trunk with a DBH of 90mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.207 Tree 207. *Callistemon viminalis***
This mature tree is approximately 6m tall with a canopy spread of 4m. It has a single trunk with a DBH of 90mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.208 Tree 208. *Cupaniopsis anacardiodes***
This mature tree is approximately 4m tall with a canopy spread of 2m. It has a single trunk with a DBH of 70mm. This tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.209 Tree 209. *Angophora floribunda***

This mature tree is approximately 6m tall with a canopy spread of 4m. It has a single trunk with a DBH of 130mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.210 Tree 210. *Callistemon viminalis*

This mature tree is approximately 4m tall with a canopy spread of 2m. It has multiple co-dominant trunks from the base with an aggregate DBH of 120mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.211 Tree 211. *Acacia decurrens*

This mature tree is approximately 4m tall with a canopy spread of 4m. It has a single trunk with a DBH of 120mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.212 Tree 212. *Camellia japonica*

This mature tree is approximately 5m tall with a canopy spread of 6m. It has a single trunk with a DBH of 160mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.213 Tree 213. *Elaeocarpus reticulatis*

This mature tree is approximately 12m tall with a canopy spread of 6m. It has a single trunk with a DBH of 240mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.214 Tree 214. *Elaeocarpus reticulatis*

This mature tree is approximately 9m tall with a canopy spread of 5m. It has a single trunk with a DBH of 175mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.215 Tree 215. *Camellia japonica*

This mature tree is approximately 4m tall with a canopy spread of 4m. It has a single trunk with a DBH of 140mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.216 Tree 216. *Callistemon viminalis*

This mature tree is approximately 7m tall with a canopy spread of 4m. It has multiple (3) co-dominant trunks from the base with an aggregate DBH of 190mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.217 Tree 217. *Callistemon viminalis*

This mature tree is approximately 7m tall with a canopy spread of 4m. It has multiple (3) co-dominant trunks from the base with an aggregate DBH of 160mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.218 Tree 218. *Callistemon viminalis*

This mature tree is approximately 7m tall with a canopy spread of 6m. It has a single trunk with a DBH of 160mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.219 Tree 219. *Callistemon viminalis*

This mature tree is approximately 7m tall with a canopy spread of 4m. It has a single trunk with a DBH of 100mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.220 Tree 220. *Callistemon viminalis*

This mature tree is approximately 7m tall with a canopy spread of 5m. It has a single trunk with a DBH of 120mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.221 Tree 221. *Callistemon viminalis*

This mature tree is approximately 6m tall with a canopy spread of 3m. It has a single trunk with a DBH of 110mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.222 Tree 222. *Callistemon viminalis*

This mature tree is approximately 6m tall with a canopy spread of 4m. It has a single trunk with a DBH of 100mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.223 Tree 223. *Acacia spp.*

This mature tree is approximately 5m tall with a canopy spread of 3m. It has a single trunk with a DBH of 100mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.224 Tree 224. *Casuarina spp*

This mature tree is approximately 9m tall with a canopy spread of 4m. It has a single trunk with a DBH of 120mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

3.225 Tree 225. *Casuarina spp*

This mature tree is approximately 11m tall with a canopy spread of 5m. It has a single trunk with a DBH of 145mm. This tree is in good health and condition with minimal deadwood and epicormic growth.

4.0 Safe Useful Life Expectancy (SULE)

4.1 Safe Useful Life Expectancy

Safe Useful Life Expectancy (SULE) Ratings have been assessed for each of the subject trees. These assessments are in accordance with the categories provided by Jeremy Barrell (Proceedings of International Conference on Trees and Building Sites Chicago 1996). Refer to Appendix C.

Tree no.	Species	SULE Rating	Category
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3.	<i>Cinnamomum camphora</i>	2B	Medium
5.	<i>Lophostemon confertus</i>	2B	Medium
100.	<i>Angophora costata</i>	3B	Short
101.	<i>Photinia glabra rubens</i>	2B	Medium
103.	<i>Melaleuca stypheloides</i>	2B	Medium
104.	<i>Callistemon viminalis</i>	2B	Medium
106.	<i>Cedrus deodara</i>	2B	Medium
107.	<i>Ceratopetalum gummiferum</i>	2B	Medium
109.	<i>Callistemon viminalis</i>	2B	Medium
110.	<i>Lophostemon confertus</i>	2B	Medium
111.	<i>Melaleuca stypheloides</i>	2B	Medium
112.	<i>Lagunaria patersonii</i>	2B	Medium
113.	<i>Melaleuca stypheloides</i>	2B	Medium
114.	<i>Cupressus spp</i>	2B	Medium
115.	<i>Angophora costata</i>	2B	Medium
116.	<i>Brachychiton acerifolia</i>	2B	Medium
117.	<i>Dead tree</i>	4A	Remove
118.	<i>Agonis flexuosa</i>	2B	Medium
119.	<i>Corymbia citriodora</i>	2B	Medium
120.	<i>Angophora costata</i>	2B	Medium
121.	<i>Cupressus spp</i>	2B	Medium
123.	<i>Angophora costata</i>	4C	Remove
124.	<i>Angophora costata</i>	2B	Medium
125.	<i>Angophora costata</i>	2B	Medium
126.	<i>Angophora costata</i>	2B	Medium
127.	<i>Callistemon viminalis</i>	2B	Medium
128.	<i>Lophostemon confertus</i>	2B	Medium
129.	<i>Lophostemon confertus</i>	2B	Medium
131.	<i>Melaleuca stypheloides</i>	2B	Medium
132.	<i>Lophostemon confertus</i>	2B	Medium
133.	<i>Lophostemon confertus</i>	2B	Medium
200.	<i>Cupaniopsis anacardiodes</i>	2B	Medium
201.	<i>Pittosporum undulatum</i>	2B	Medium
202.	<i>Cupaniopsis anacardiodes</i>	2B	Medium
203.	<i>Acmena smithii</i>	2B	Medium
204.	<i>Callistemon viminalis</i>	2B	Medium
205.	<i>Jacaranda mimosifolia</i>	2B	Medium
206.	<i>Callistemon viminalis</i>	2B	Medium
207.	<i>Callistemon viminalis</i>	2B	Medium
208.	<i>Cupaniopsis anacardiodes</i>	2B	Medium
209.	<i>Angophora floribunda</i>	2B	Medium
210.	<i>Callistemon viminalis</i>	2B	Medium

211.	<i>Acacia decurrens</i>	2B	Medium
212.	<i>Camellia japonica</i>	2B	Medium
213.	<i>Elaeocarpus reticulatis</i>	2B	Medium
214.	<i>Elaeocarpus reticulatis</i>	2B	Medium
215.	<i>Camellia japonica</i>	2B	Medium
216.	<i>Callistemon viminalis</i>	2B	Medium
217.	<i>Callistemon viminalis</i>	2B	Medium
218.	<i>Callistemon viminalis</i>	2B	Medium
219.	<i>Callistemon viminalis</i>	2B	Medium
220.	<i>Callistemon viminalis</i>	2B	Medium
221.	<i>Callistemon viminalis</i>	2B	Medium
222.	<i>Callistemon viminalis</i>	2B	Medium
223.	<i>Acacia</i>	2B	Medium
224.	<i>Casuarina spp</i>	2B	Medium
225.	<i>Casuarina spp</i>	2B	Medium

5.0 Impact of Development

5.1 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 (%)
3.	<i>Cinnamomum camphora</i>	16.44	100
5.	<i>Lophostemon confertus</i>	10.8	50
100.	<i>Angophora costata</i>	11.76	0
101.	<i>Photinia glabra rubens</i>	2.4	0
103.	<i>Melaleuca stypheloides</i>	3.12	0
104.	<i>Callistemon viminalis</i>	2	0
106.	<i>Cedrus deodara</i>	5.16	50
107.	<i>Ceratopetalum gummiferum</i>	2.1	100
109.	<i>Callistemon viminalis</i>	2.1	0
110.	<i>Lophostemon confertus</i>	2.4	40
111.	<i>Melaleuca stypheloides</i>	3.84	0
112.	<i>Lagunaria patersonii</i>	2.4	0
113.	<i>Melaleuca stypheloides</i>	4.92	0

114.	<i>Cupressus spp</i>	3.48	0
115.	<i>Angophora costata</i>	3.84	0
116.	<i>Brachychiton acerifolia</i>	3.06	0
117.	<i>Dead tree</i>	0	0
118.	<i>Agonis flexuosa</i>	3.48	0
119.	<i>Corymbia citriodora</i>	5.22	0
120.	<i>Angophora costata</i>	2.52	0
121.	<i>Cupressus spp</i>	3.36	100
123.	<i>Angophora costata</i>	10.44	0
124.	<i>Angophora costata</i>	6.96	0
125.	<i>Angophora costata</i>	7.2	0
126.	<i>Angophora costata</i>	9.12	0
127.	<i>Callistemon viminalis</i>	2	25
128.	<i>Lophostemon confertus</i>	3.84	0
129.	<i>Lophostemon confertus</i>	8.28	0
131.	<i>Melaleuca stypheloides</i>	3.72	0
132.	<i>Lophostemon confertus</i>	6.84	0
133.	<i>Lophostemon confertus</i>	9.24	14
226.	<i>Cupaniopsis anacardiodes</i>	2	14
227.	<i>Pittosporum undulatum</i>	2	100
228.	<i>Cupaniopsis anacardiodes</i>	2	0
229.	<i>Acmena smithii</i>	2	0
230.	<i>Callistemon viminalis</i>	2	0
231.	<i>Jacaranda mimosifolia</i>	2	0
232.	<i>Callistemon viminalis</i>	2	0
233.	<i>Callistemon viminalis</i>	2	0
234.	<i>Cupaniopsis anacardiodes</i>	2	50
235.	<i>Angophora floribunda</i>	2	10
236.	<i>Callistemon viminalis</i>	2	0
237.	<i>Acacia decurrens</i>	2	0
238.	<i>Camellia japonica</i>	2	100
239.	<i>Elaeocarpus reticulatis</i>	2.88	100
240.	<i>Elaeocarpus reticulatis</i>	2.1	100
241.	<i>Camellia japonica</i>	2	100
242.	<i>Callistemon viminalis</i>	2.28	100
243.	<i>Callistemon viminalis</i>	2	100
244.	<i>Callistemon viminalis</i>	2	100
245.	<i>Callistemon viminalis</i>	2	100
246.	<i>Callistemon viminalis</i>	2	100
247.	<i>Callistemon viminalis</i>	2	40
248.	<i>Callistemon viminalis</i>	2	0
249.	<i>Acacia</i>	2	0
250.	<i>Casuarina spp</i>	2	0
251.	<i>Casuarina spp</i>	2	0

5.2 Development Impact

5.2.3 Tree 3 *Cinnamomum camphora*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will be completely encroached by the proposed development. As a result this tree will not be viable to be retained under the proposed development.

5.2.5 Tree 5 *Lophostemon confertus*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will be encroached by the proposed development by 50% which is significantly greater than the minor encroachment as defined by AS 4970-2009. This tree will not be viable to be retained under the proposed development.

5.2.100 Tree 100 *Angophora costata*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.101 Tree 101 *Photinia glabra rubens*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.103 Tree 103 *Melaleuca stypheloides*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.104 Tree 104 *Callistemon viminalis*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.106 Tree 106 *Cedrus deodara*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will be encroached by the proposed development by 50% which is significantly greater than the minor encroachment as defined by AS 4970-2009. This tree will not be viable to be retained under the proposed development.

- 5.2.107 Tree 107 *Ceratopetalum gummiferum***
The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will be completely encroached by the proposed development. As a result this tree will not be viable to be retained under the proposed development.
- 5.2.109 Tree 109 *Callistemon viminalis***
The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.
- 5.2.110 Tree 110 *Lophostemon confertus***
The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will be encroached by the proposed development by 40% which is significantly greater than the minor encroachment as defined by AS 4970-2009. This tree will not be viable to be retained under the proposed development.
- 5.2.111 Tree 111 *Melaleuca stypheloides***
The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.
- 5.2.112 Tree 112 *Lagunaria patersonii***
This tree is recommended for removal.
- 5.2.113 Tree 113 *Melaleuca stypheloides***
The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.
- 5.2.114 Tree 114 *Cupressus spp***
The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.
- 5.2.115 Tree 115 *Angophora costata***
The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.
- 5.2.116 Tree 116 *Brachychiton acerifolia***

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.117 Tree 117

Dead tree

This tree is recommended for removal.

5.2.118 Tree 118

Agonis flexuosa

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.119 Tree 119

Corymbia citriodora

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.120 Tree 120

Angophora costata

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.121 Tree 121

Cupressus spp

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will be completely encroached by the proposed development. As a result this tree will not be viable to be retained under the proposed development.

5.2.123 Tree 123

Angophora costata

This tree is recommended for removal.

5.2.124 Tree 124

Angophora costata

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.125 Tree 125

Angophora costata

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.126 Tree 126

Angophora costata

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.127 Tree 127 *Callistemon viminalis*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will be encroached by the proposed development by 25% which is significantly greater than the minor encroachment as defined by AS 4970-2009. This tree will not be viable to be retained under the proposed development.

5.2.128 Tree 128 *Lophostemon confertus*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.129 Tree 129 *Lophostemon confertus*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.131 Tree 131 *Melaleuca stypheloides*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.132 Tree 132 *Lophostemon confertus*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.133 Tree 133 *Lophostemon confertus*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will be encroached by the proposed development by 14% which is slightly greater than the minor encroachment as defined by AS 4970-2009. Based on consideration of existing structures and this species tolerance to root disturbance in accordance with clause 3.3.4 of AS 4970-2009, this tree will be viable to be retained under the proposed development.

5.2.200 Tree 200. *Cupaniopsis anacardiodes*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will be encroached by the proposed development by 14% which is slightly

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

5.2.201 Tree 201. *Pittosporum undulatum*

This tree is recommended for removal.

5.2.202 Tree 202. *Cupaniopsis anacardiodes*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.203 Tree 203. *Acmena smithii*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.204 Tree 204. *Callistemon viminalis*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.205 Tree 205. *Jacaranda mimosifolia*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.206 Tree 206. *Callistemon viminalis*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.207 Tree 207. *Callistemon viminalis*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.208 Tree 208. *Cupaniopsis anacardiodes*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will be encroached by the proposed development by 50% which is significantly greater than the minor encroachment as defined by AS

4970-2009. This tree will not be viable to be retained under the proposed development.

5.2.209 Tree 209. *Angophora floribunda*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will be encroached by the proposed development by 10% which is equal to the minor encroachment as defined by AS 4970-2009. This tree will be viable to be retained under the proposed development.

5.2.210 Tree 210. *Callistemon viminalis*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.211 Tree 211. *Acacia decurrens*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.212 Tree 212. *Camellia japonica*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will be completely encroached by the proposed development. As a result this tree will not be viable to be retained under the proposed development.

5.2.213 Tree 213. *Elaeocarpus reticulatis*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will be completely encroached by the proposed development. As a result this tree will not be viable to be retained under the proposed development.

5.2.214 Tree 214. *Elaeocarpus reticulatis*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will be completely encroached by the proposed development. As a result this tree will not be viable to be retained under the proposed development.

5.2.215 Tree 215. *Camellia japonica*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will be completely encroached by the proposed development. As a result this tree will not be viable to be retained under the proposed development.

- 5.2.216 Tree 216. *Callistemon viminalis***
The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will be completely encroached by the proposed development. As a result this tree will not be viable to be retained under the proposed development.
- 5.2.217 Tree 217. *Callistemon viminalis***
The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will be completely encroached by the proposed development. As a result this tree will not be viable to be retained under the proposed development.
- 5.2.218 Tree 218. *Callistemon viminalis***
The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will be completely encroached by the proposed development. As a result this tree will not be viable to be retained under the proposed development.
- 5.2.219 Tree 219. *Callistemon viminalis***
The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will be completely encroached by the proposed development. As a result this tree will not be viable to be retained under the proposed development.
- 5.2.220 Tree 220. *Callistemon viminalis***
The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will be completely encroached by the proposed development. As a result this tree will not be viable to be retained under the proposed development.
- 5.2.221 Tree 221. *Callistemon viminalis***
The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will be encroached by the proposed development by 40% which is significantly greater than the minor encroachment as defined by AS 4970-2009. This tree will not be viable to be retained under the proposed development.
- 5.2.222 Tree 222. *Callistemon viminalis***
The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.
- 5.2.223 Tree 223. *Acacia spp.***

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.224 Tree 224. *Casuarina spp*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

5.2.22 Tree 225. *Casuarina spp*

The Tree Protection Zone (TPZ) of this tree in accordance with AS 4970-2009 *Protection of Trees on Development Sites* will not be further encroached by the proposed development. This tree will be viable to be retained under the proposed development.

6.0 Recommendations

Tree 112 has fruit which may be hazardous and is therefore recommended for removal.

Tree 117 is dead with no visible habitat and is recommended for removal. Tree 201 is in poor health and form with the majority of the live canopy epicormic growth. This tree is recommended for removal.

Tree 123 has decay and cavity within the trunk which places this tree at increased risk of failure. In consideration of the future development and the increased number of targets and therefore increased hazard posed, this tree is recommended for removal.

Tree 100 also has evidence of significant decay within the trunk. In order to determine extent of decay and therefore the viability of this tree to be retained, we recommend that this tree undergo further investigation by means of Resistograph Testing.

Trees 3, 5, 106, 107, 110, 121, 127, 201, 208, 213, 214, 215, 216, 217, 218, 219, 220 and 221 are encroached by the proposed construction and required earthworks by a major or total encroachment as defined by AS4970-2009 *Protection of Trees on Development Sites*. These trees will not be viable to be retained and are recommended for removal.

Trees 113 and 200 have their Tree Protection Zones encroached by slightly greater than the minor encroachment as defined by AS4970-2009. Under consideration of these species tolerance to root disturbance as permitted in clause 3.3.4 of AS4970-2009, these trees will remain viable to be retained on the condition that all excavation within the TPZ of these trees be carried out by means of non-destructive excavation such as use of an Air Knife (sucker truck not permissible).

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
3.	<i>Cinnamomum camphora</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
5.	<i>Lophostemon confertus</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
100.	<i>Angophora costata</i>	Resistograph Test or Remove	Large cavity at base of tree with large swelling indicative of decay at 1500-1800.
101.	<i>Photinia glabra rubens</i>	Retain	
103.	<i>Melaleuca stypheloides</i>	Retain	
104.	<i>Callistemon viminalis</i>	Retain	
106.	<i>Cedrus deodara</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
107.	<i>Ceratopetalum gummiferum</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
109.	<i>Callistemon viminalis</i>	Retain	
110.	<i>Lophostemon confertus</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
111.	<i>Melaleuca stypheloides</i>	Retain	
112.	<i>Lagunaria patersonii</i>	Remove	
113.	<i>Melaleuca stypheloides</i>	Retain	
114.	<i>Cupressus spp</i>	Retain	
115.	<i>Angophora costata</i>	Retain	
116.	<i>Brachychiton acerifolia</i>	Retain	
117.	Dead tree	Remove	Dead tree with no apparent habitat.
118.	<i>Agonis flexuosa</i>	Retain	
119.	<i>Corymbia citriodora</i>	Retain	
120.	<i>Angophora costata</i>	Retain	
121.	<i>Cupressus spp</i>	Remove	Not viable to be retained due to major or total

			encroachment of TPZ by proposed development.
123.	<i>Angophora costata</i>	Remove	Extensive decay throughout trunk. Decay and cavity present at location of previous limb failure. Fungal fruiting body present.
124.	<i>Angophora costata</i>	Retain	
125.	<i>Angophora costata</i>	Retain	Evidence of decay in two primary branches. Remove these branches.
126.	<i>Angophora costata</i>	Retain	
127.	<i>Callistemon viminalis</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
128.	<i>Lophostemon confertus</i>	Retain	
129.	<i>Lophostemon confertus</i>	Retain	
131.	<i>Melaleuca stypheloides</i>	Retain	
132.	<i>Lophostemon confertus</i>	Retain	
133.	<i>Lophostemon confertus</i>	Retain	
200.	<i>Cupaniopsis anacardiodes</i>	Retain	
201.	<i>Pittosporum undulatum</i>	Remove	Poor form and high percentage of epicormic growth due to topping.
202.	<i>Cupaniopsis anacardiodes</i>	Retain	
203.	<i>Acmena smithii</i>	Retain	
204.	<i>Callistemon viminalis</i>	Retain	
205.	<i>Jacaranda mimosifolia</i>	Retain	
206.	<i>Callistemon viminalis</i>	Retain	
207.	<i>Callistemon viminalis</i>	Retain	
208.	<i>Cupaniopsis anacardiodes</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
209.	<i>Angophora floribunda</i>	Retain	
210.	<i>Callistemon viminalis</i>	Retain	
211.	<i>Acacia decurrens</i>	Retain	
212.	<i>Camellia japonica</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
213.	<i>Elaeocarpus reticulatis</i>	Remove	Not viable to be retained due to major or total

			encroachment of TPZ by proposed development.
214.	<i>Elaeocarpus reticulatis</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
215.	<i>Camellia japonica</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
216.	<i>Callistemon viminalis</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
217.	<i>Callistemon viminalis</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
218.	<i>Callistemon viminalis</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
219.	<i>Callistemon viminalis</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
220.	<i>Callistemon viminalis</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
221.	<i>Callistemon viminalis</i>	Remove	Not viable to be retained due to major or total encroachment of TPZ by proposed development.
222.	<i>Callistemon viminalis</i>	Retain	
223.	<i>Acacia spp</i>	Retain	
224.	<i>Casuarina spp</i>	Retain	
225.	<i>Casuarina spp</i>	Retain	

7.0 Pre-Construction Tree Protection Measures

7.1 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.

7.2 Identification

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

7.3 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.

7.4 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.

8.0 Site Management Issues

8.1 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.

8.2 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.

8.3 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)

8.4 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.

9.0 Tree Protection Measures During Construction

9.1 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.

9.2 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.

9.3 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.

9.4 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.

9.5 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.

9.6 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.

9.7 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.

10.0 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.

11.0 Compensatory Planting

This report makes the recommendation for the removal of 4 trees and outlines another 18 trees that will require removal as consequence of encroachment by the proposed development. We recommend that compensatory planting be carried out as part of the proposed landscape works ancillary to the development works. Replacement tree species should be selected from Hornsby Council list of local indigenous tree species and planted as directed in locations determined by the Landscape Architect.

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 - Tree Inspection Data

Birds Tree Consultancy

Consulting Arborist • Project Management • Horticultural Consultancy • Landscape Management

Inspection Data
Waitara Public School 25-Jul-17

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. & Landscape significance	Retention Value	Notes/Comments
3	Cinnamomum camphora	20	20	1370	16.44	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	Moderate	Moderate	
5	Lophostemon confertus		14	900	10.8	Mature	Multiple @ 1500	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
100	Angophora costata	25	24	980	11.76	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Cavity, Evidence of decay	Cavity	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	Large cavity at base of tree with large swelling indicative of decay at 1500-1800. Resi test or remove
101	Photinia glabra rubens	6	8	200	2.4	Mature	Multiple (3) @ base	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
103	Melaleuca stypheloides	8	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	High	High	
104	Callistemon viminalis	8	5	165	2	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
106	Cedrus deodara	20	9	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	High	High	
107	Ceratopetalum gummiferum	7	6	175	2.1	Mature	Twin @ base	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
109	Callistemon viminalis	7	5	175	2.1	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
110	Lophostemon confertus	10	7	200	2.4	Mature	Twin @ 2m	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
111	Melaleuca stypheloides		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	High	High	
112	Lagunaria patersonii		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	High	High	Remove
113	Melaleuca stypheloides		8	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	High	High	
114	Cupressus spp		8	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	High	High	
115	Angophora costata		9	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	High	High	
116	Brachychiton acerifolia		6	255	3.06	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
117	Dead tree				0	Dead	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Dead	Dead	Nil	100%	Nil	No evidence	No evidence	Dead	Low	Low	Dead tree with no apparent habitat. Remove
118	Agonis flexuosa	6	7	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	High	High	
119	Corymbia citriodora		10	435	5.22	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
120	Angophora costata		8	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	High	High	
121	Cupressus spp	11	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	High	High	
123	Angophora costata	25	15	870	10.44	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Evidence of decay, Cavity	Cavity, Limb failure at collar	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	Low	Extensive decay throughout trunk. Remove. Decay and cavity present wt location of previous limb failure. Fungal fruiting body present
124	Angophora costata		12	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	High	High	
125	Angophora costata		14	600	7.2	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	Evidence of decay in two primary branches. Remove these branches

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. & Landscape significance	Retention Value	Notes/Comments
126	Angophora costata		14	760	9.12	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
127	Callistemon viminalis		7	160	2	Mature	Twin @ base	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
128	Lophostemon confertus		9	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	High	High	
129	Lophostemon confertus		12	690	8.28	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
131	Melaleuca stypheloides		5	310	3.72	Mature	Twin @ base	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
132	Lophostemon confertus		14	570	6.84	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
133	Lophostemon confertus		14	770	9.24	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
200	Cupaniopsis anacardiodes	8	5	140	2	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
201	Pittosporum undulatum	3	3	140	2	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	Topped	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	Low	Poor form and high percentage of epicormic growth due to topping. Remove
202	Cupaniopsis anacardiodes	5	4	110	2	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
203	Acmena smithii	4	2	60	2	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
204	Callistemon viminalis	6	4	100	2	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
205	Jacaranda mimosifolia	6	4	120	2	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
206	Callistemon viminalis	6	4	90	2	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
207	Callistemon viminalis	6	4	90	2	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
208	Cupaniopsis anacardiodes	4	2	70	2	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
209	Angophora floribunda	6	4	130	2	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
210	Callistemon viminalis	4	2	120	2	Mature	Multiple @ base	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
211	Acacia decurrens	4	4	120	2	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
212	Camellia japonica	5	6	160	2	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
213	Elaeocarpus reticulatis	12	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	High	High	
214	Elaeocarpus reticulatis	9	5	175	2.1	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
215	Camellia japonica	4	4	140	2	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
216	Callistemon viminalis	7	4	190	2.28	Mature	Multiple (3) @ base	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
217	Callistemon viminalis	7	4	160	2	Mature	Multiple (3) @ base	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
218	Callistemon viminalis	7	6	160	2	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
219	Callistemon viminalis	7	4	100	2	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
220	Callistemon viminalis	7	5	120	2	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
221	Callistemon viminalis	6	3	110	2	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
222	Callistemon viminalis	6	4	100	2	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
223	Acacia	5	3	100	2	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
224	Casuarina spp	9	4	120	2	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	
225	Casuarina spp	11	5	145	2	Mature	Single	NIL	Normal	Normal	Balanced	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	High	High	

Appendix B Tree Location Plans

Tree Protection Plans



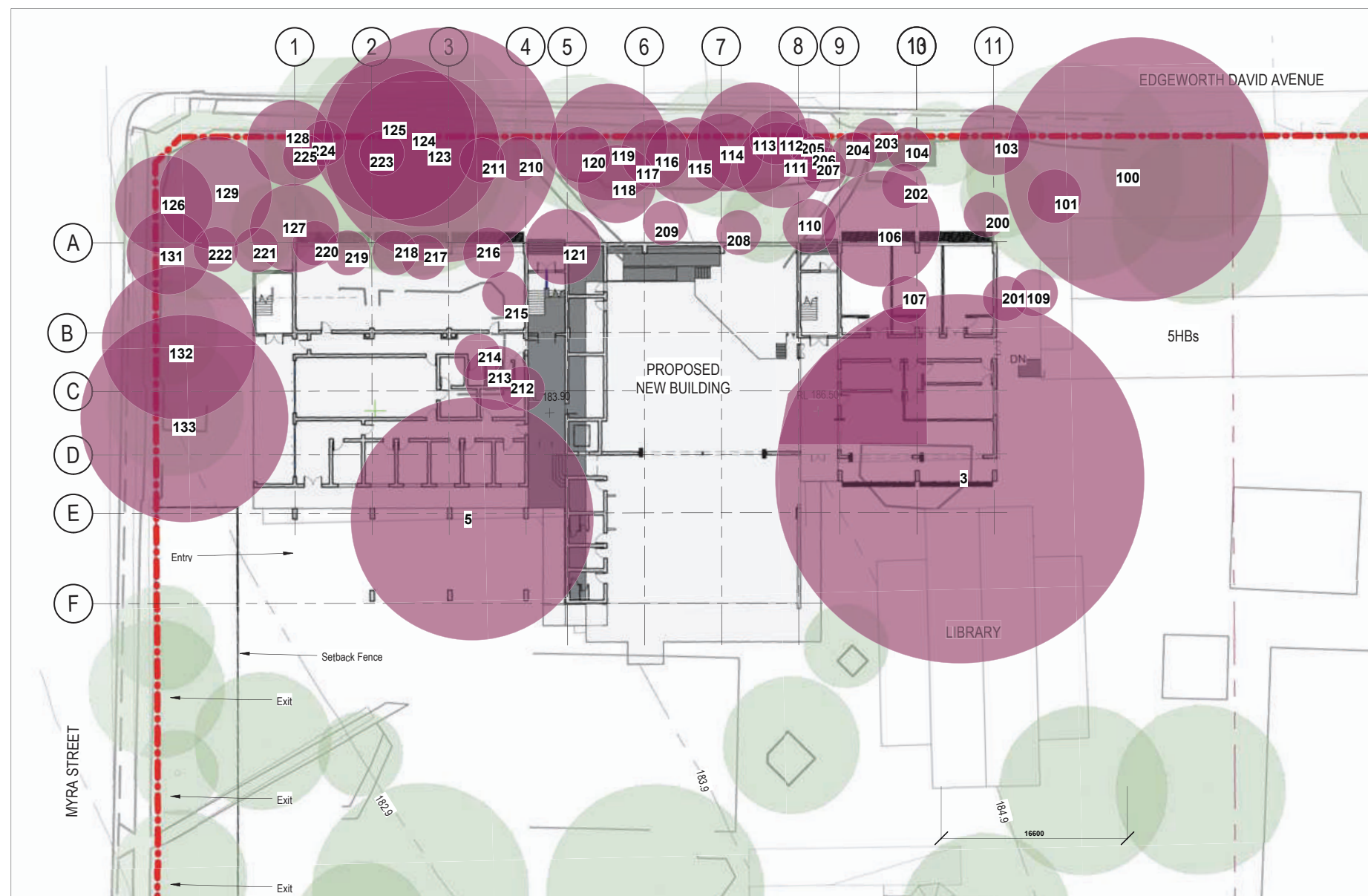
Legend

- Tree to be Retained and Protected
- Tree not viable to be retained due to proposed development
- Tree to be Removed
- Tree Protection Zone (TPZ) in accordance with AS4970-2009

Birds Tree Consultancy

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Project: Waitara Public School
 Client: GHD
 DWG: A01
 Plan: Tree Location Plan
 Date: 14 August 2017 Scale : Not to Scale



Legend

- Tree to be Retained and Protected
- Tree not viable to be retained due to proposed development
- Tree to be Removed
- Tree Protection Zone (TPZ) in accordance with AS4970-2009

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Project: Waitara Public School
 Client: GHD
 DWG: A02
 Plan: Tree Protection Plan
 Date: 14 August 2017 Scale : Not to Scale

Appendix C – Safe Useful Life Expectancy

SULE CATEGORIES AND SUB-CATEGORIES

	1	2	3	4	5
	Long SULE:	Medium SULE:	Short SULE:	Remove:	Small, Young or regularly clipped:
	Trees that appeared to be retainable at the time of assessment for more than 40 years with and acceptable level of risk	Trees that appeared to be retainable at the time of assessment for 15 to 40 years with and acceptable level of risk	Trees that appeared to be retainable at the time of assessment for 5 to 15 years with and acceptable level of risk	Trees that should be removed within the next 5 years	Trees that can be reliably transplanted or replaced
A	Structurally sound trees located in positions that can accommodate future growth	Trees that may only live for between 15 and 40 more years	Trees that may only live for between 5 and 15 more years	Dead, dying, suppressed or declining trees through disease or inhospitable conditions	Small trees less than 5 metres in height
B	Trees that could be made suitable for retention in the long term by remedial Care	Trees that may live for more than 40 years, but would need to be removed for safety or nuisance reasons	Trees that may live for more than 15 years, but would need to be removed for safety or nuisance reasons	Dangerous trees through instability or recent loss of adjacent trees	Young trees less than 15 years old but over 5 metres in height
C	Trees of special significance for historical, commemorative or rarity reasons that would warrant extraordinary efforts to secure their long term retention	Trees that may live for more than 40 years, but should be removed to prevent interference with more suitable individuals or to provide space for new planting	Trees that may live for more than 15 years, but should be removed to prevent interference with more suitable individuals or to provide space for new planting	Dangerous trees through structural defects including cavities, decay, included bark, wounds or poor form	Trees that have been regularly pruned to artificially control growth
D		Trees that could be made suitable for retention in the medium term by remedial Care	Trees that require substantial remedial care and are only suitable for retention in the short term	Damaged trees that are clearly not safe to retain	
E				Trees that may live for more than 5 years, but should be removed to prevent interference with more suitable individuals or to provide space for new planting	
F				Trees that may cause damage to existing structures within 5 years	
G				Trees that will become dangerous after removal of other trees for reasons given in 1A-1F	

Ref: Barrell, Jeremy (1996)

Pre-development Tree Assessment

Proceedings of the International Conference on Trees and Building Sites (Chicago)