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ARBORIST'S REPORT



PROPERTY OF THE PROPOSED DEVELOPMENT:	19-23 Douglas Street and 6 Neal Place Wallsend Arborist's Report 2022 NSW
NUMBER OF SUBJECT TREES:	6
DATE OF REPORT:	8 February 2022 (updated 21 September 2022 and 1 February 2024)
REQUESTED BY:	Sam Crawford Architects

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REPORT SUMMARY

The report recommends:

- The retention and protection of Tree 1 and adjacent shrub during a proposed development, and includes the protection requirements in accordance with Sections 4.5 and 7, Part A of the City of Newcastle (2018) Urban Forest Technical Manual, *Private Trees*, and AS 4970 (2009), *Protection of Trees on Development Sites*.
- The removal of Trees 2 and 3 under Section 4 – 4.3 of the City of Newcastle, Urban Forest Technical Manual, Part A, *Tree Removal on Private Land Associated with Development* as:
 - Tree 2 cannot be protected in accordance with AS 4970 (2009), *Protection of Trees on Development Sites*.
 - Tree 3 is an undesirable species.
- The retention and protection of Trees 4, 5 and 6 during the proposed development, and includes the protection requirements in accordance with Section 8, Part B of the City of Newcastle (2018) Urban Forest Technical Manual, *Public Trees*, and AS 4970 (2009), *Protection of Trees on Development Sites*.

INTRODUCTION

Project Brief

Assess the condition of the subject trees consider a proposed development and supply a written report.

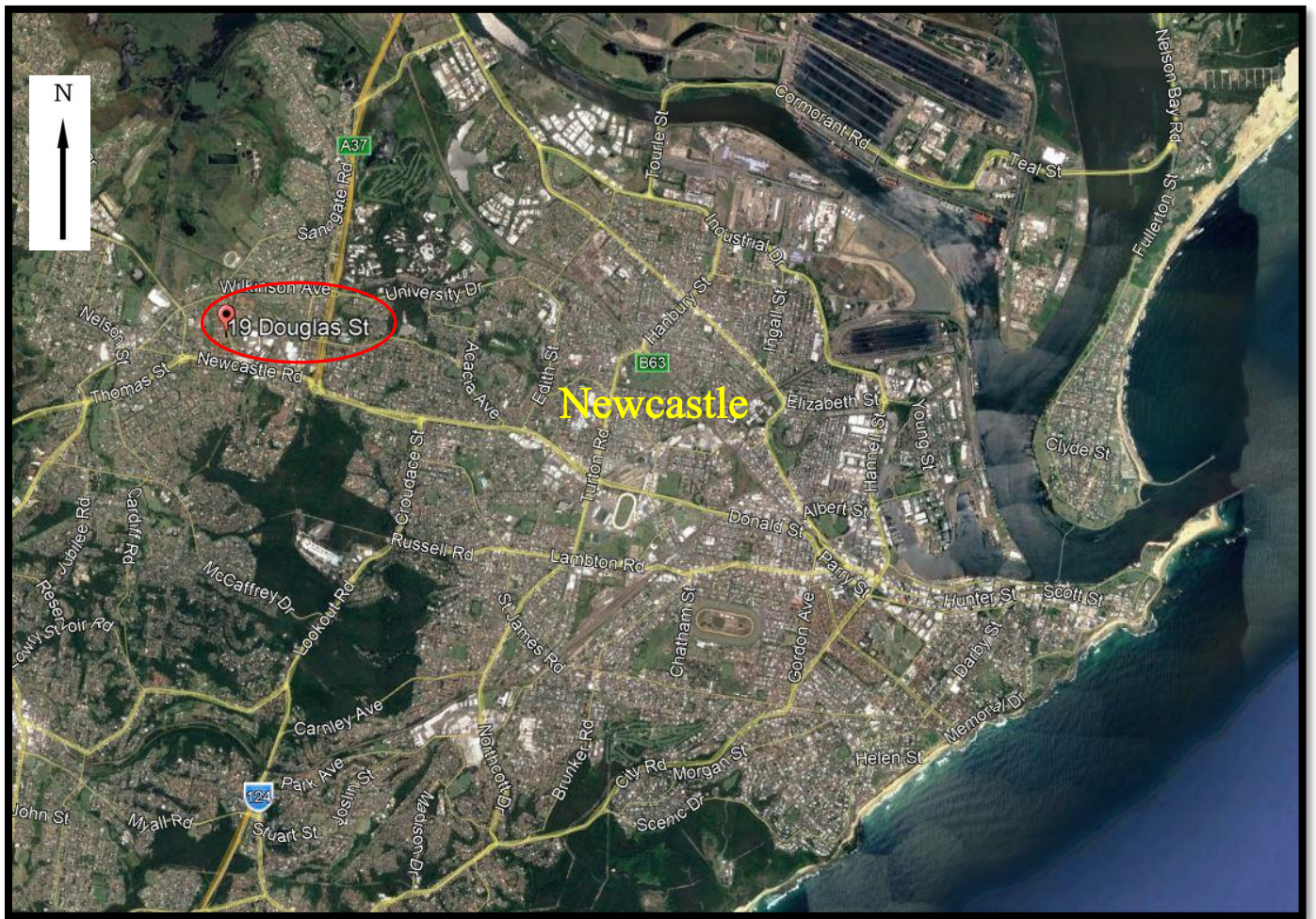
Methodology

A Visual Tree Inspection (VTA) was made of the subject trees from ground level on the 20th of October 2021. No internal testing e.g. Resistograph or drilling, or excavation was carried out. The trees were assessed from observations made during the inspection.

SITUATION OVERVIEW

- Trees 1 (and adjacent shrub), 4, 5 and 6 are retainable during and after the proposed development.
- Tree 2 requires major encroachment and will be affected by the proposed development.
- Tree 3 requires minor encroachment, is an undesirable species, a smaller specimen and its removal is appropriate for the site.

SITE LOCATION



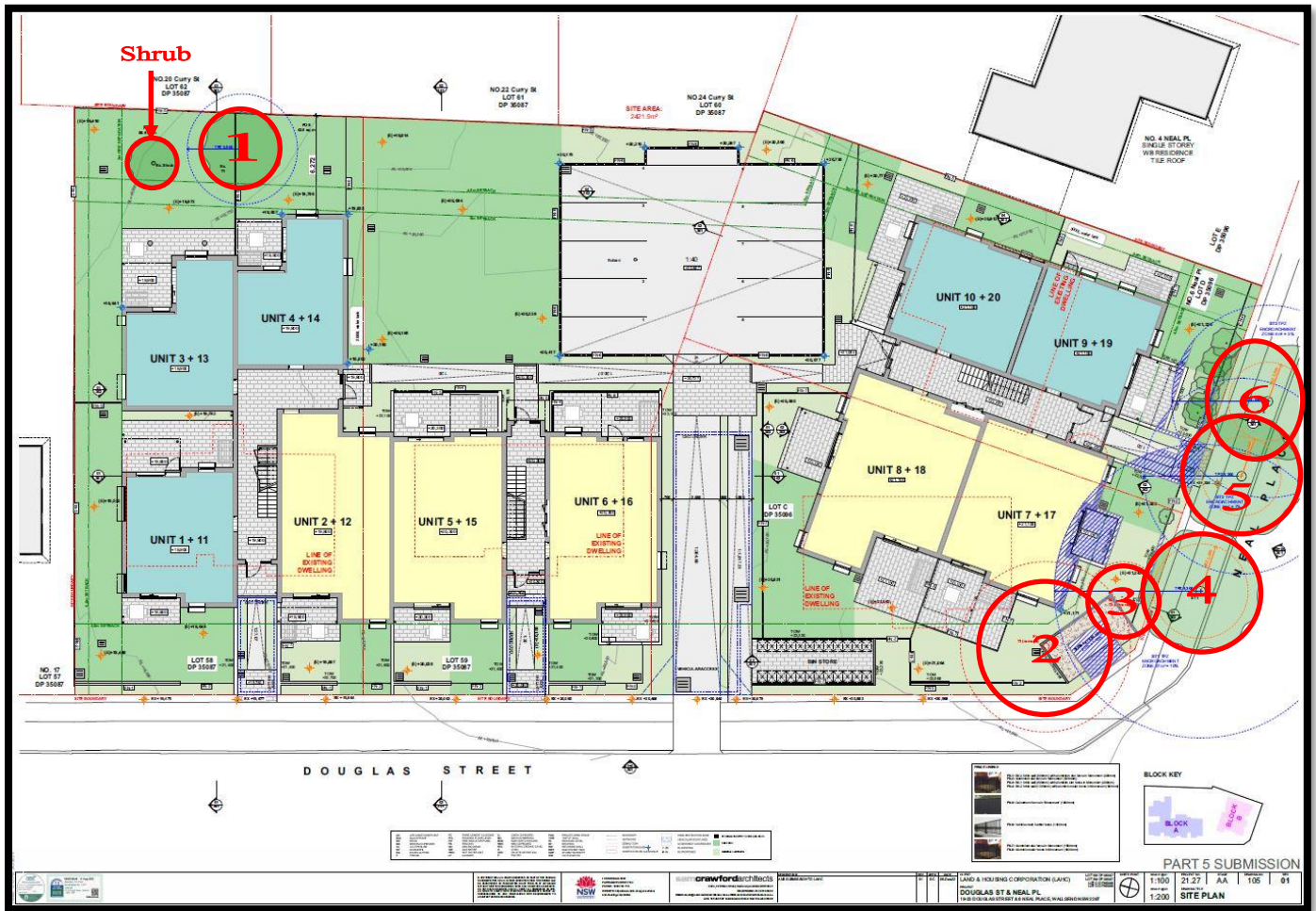
The site location (indicated).

SITE PLAN



An aerial photograph (Six Maps – 2018) used as a site plan showing the position of the subject trees with approximate canopy extents.

SITE PLAN OF THE PROPOSED DEVELOPMENT



A supplied site plan of the proposed development (drawing 105, revision 01) showing the positions of the subject trees.

SITES DESCRIPTION

19 – 23 Douglas Street and are individual flat suburban blocks facing WSW, and 6 Neal Place is a flat suburban block facing WSW.

Trees on site are:

- 19 Douglas Street – one shrub under 5 metres high (exempt) and 1 palm.
- 21 Douglas Street – 1 small tree 3 metres high (exempt).
- 23 Douglas Street – various small shrubs (exempt), 1 palm and one tree.
- 6 Neal Place – various shrubs under 5 metres high (all exempt).
- 24 Curry Street – no trees within 5 metres of the subject properties.

There are three street trees in front of 6 Neal Place (Trees 4, 5 and 6), and these are discussed in a separate section in the report.

Three trees are located in 18 Curry Street and are more than 5 metres from the proposed development, and will not be affected by the development.

SUMMARY OF ACTION PROPOSED FOR THE SUBJECT TREES

The following actions are proposed for the subject trees:

- The retention and protection of Tree 1 and adjacent shrub during a proposed development, and includes the protection requirements in accordance with Sections 4.5 and 7, Part A of the City of Newcastle Urban Forest Technical Manual, *Private Trees*, and AS 4970 (2009), *Protection of Trees on Development Sites*.
- The removal of Trees 2 and 3 under Section 4 – 4.3 of the City of Newcastle, Urban Forest Technical Manual, Part A, *Tree Removal on Private Land Associated with Development*.
- The retention and protection of Trees 4, 5 and 6 during the proposed development, and includes the protection requirements in accordance with Section 8, Part B of the City of Newcastle Urban Forest Technical Manual, *Public Trees*, and AS 4970 (2009), *Protection of Trees on Development Sites*.

TREE ASSESSMENT

Tree Identification	Description		Health	Structure	U.L.E.
			Good	Good	(Useful Life Expectancy)
Tree 1	<u>Age:</u>	Mature	Description:	Description:	The tree has been given a ULE of 2B due to the good condition.
Botanical Name	<u>CBH</u>	920	Leaf density of 90% coverage.	Good structure and form.	
<i>Syagrus romanzoffiana</i>	(mm)				
<u>DBH</u>	290				
	(mm)				
Common Name	<u>Height</u>	8			
Cocos Palm	(metres)				
	<u>Canopy Spread</u>	5 X 5			
	(metres)				
Tree 2	<u>Age:</u>	Mature	Health	Structure	The tree has been given a ULE of 2B due to the mature age and close proximity to the house.
Botanical Name			Good	Good	
<i>Araucaria heterophylla</i>	<u>CBH</u>	1400	Description:	Description:	
	(mm)		Leaf density 90% coverage.	Good structure and form.	
<u>DBH</u>	450				
	(mm)				
Common Name	<u>Height</u>	14	Slight deadwood to 50 mm diameter.		
Norfolk Island Pine	(metres)				
	<u>Canopy Spread</u>	7 X 6.5			
	(metres)				
Tree 3	<u>Age:</u>	Mature	Health	Structure	The tree has been given a ULE of 2B due to the mature age and close proximity to the house.
Botanical Name			Good	Good	
<i>Syagrus romanzoffiana</i>	<u>CBH</u>	830	Description:	Description:	
	(mm)		Leaf density 90% coverage.	Good structure and form.	
<u>DBH</u>	260				
	(mm)				
Common Name	<u>Height</u>	8			
Cocos Palm	(metres)				
	<u>Canopy Spread</u>	6 X 6			
	(metres)				

TREE ASSESSMENT CONTINUED

Tree Identification	Description		Health	Structure	U.L.E.
			Good	Good	(Useful Life Expectancy)
Tree 4	<u>Age:</u>	Mature	Description:	Description:	The tree has been given a ULE of 2B due to the mature age and close proximity to the other trees.
Botanical Name	<u>CBH</u> (mm)	2450 (at 500 mm high)	Leaf density 90% coverage.	Five dominant stems from 1.4 metres high.	
<i>Lophostemon confertus</i>	<u>DBH</u> (mm)	780	Slight deadwood to 50 mm diameter.		
Common Name	<u>Height</u> (metres)	11			
Brush Box	<u>Canopy Spread</u> (metres)	8 X 8			
Tree 5	<u>Age:</u>	Mature	Health	Structure	The tree has been given a ULE of 2B due to the mature age and close proximity to the other trees.
Botanical Name			Good	Good	
<i>Lophostemon confertus</i>	<u>CBH</u> (mm)	1630 (at 700 mm high)	Description:	Description:	
	<u>DBH</u> (mm)	520	Leaf density 90% coverage.	Five dominant stems from 1 metre high.	
Common Name	<u>Height</u> (metres)	11	Slight deadwood to 50 mm diameter.		
Brush Box	<u>Canopy Spread</u> (metres)	8 X 6			
Tree 6	<u>Age:</u>	Mature	Health	Structure	The tree has been given a ULE of 2B due to the mature age and close proximity to the other trees.
Botanical Name			Good	Fair (form)	
<i>Lophostemon confertus</i>	<u>CBH</u> (mm)	1600 (at 900 mm high)	Description:	Description:	
Common Name	<u>DBH</u> (mm)	510	Leaf density 90% coverage.	Four dominant stems at 1 metre high.	
Brush Box			Slight deadwood to 50 mm diameter.		
Common Name	<u>Height</u> (metres)	11			
Brush Box	<u>Canopy Spread</u> (metres)	7 X 7			

USEFUL LIFE EXPECTANCY (ULE)

ULE is an acronym for Useful Life Expectancy. There are a number of ULE categories that indicate the safe useful life anticipated for each tree. Factors such as the location, age, condition and health of the [particular] tree are significant to determining this rating. ULE is a broad classification as trees are living organisms and changes can occur over time.

Tree 1 is in good health, structurally sound with good form, although it is an undesirable species.

Tree 2 is in good health, structurally sound, with good form. It is not ideally placed.

Tree 3 is in good health, structurally sound with good form, although it is an undesirable species.

Tree 4 is in good health, structurally sound, with [generally] good form.

Tree 5 is in good health, structurally sound, with [generally] good form.

Tree 6 is in good health, structurally sound, with [generally] good form.

The ULE classification for each tree is assessed as they are at the time of the inspection, and the proposed development is not included as part of the ULE assessment.

TREE RETENTION VALUE

Using the Newcastle City Council Urban Forest Plan Technical Manual (Part A) Section 4.1, the following retention value has been assigned to the trees:

Tree 1	
Tree Sustainability	15 – 40 years
Landscape Significance:	Low
Retention Value:	Low

Tree 3	
Tree Sustainability	15 – 40 years
Landscape Significance:	Low
Retention Value:	Low

Tree 5	
Tree Sustainability	15 – 40 years
Landscape Significance:	Moderate
Retention Value:	Moderate

Tree 2	
Tree Sustainability	15 – 40 years
Landscape Significance:	Moderate
Retention Value:	Moderate

Tree 4	
Tree Sustainability	15 – 40 years
Landscape Significance:	Moderate
Retention Value:	Moderate

Tree 6	
Tree Sustainability	15 – 40 years
Landscape Significance:	Moderate
Retention Value:	Moderate

TREE PROTECTION ZONE (TPZ) & STRUCTURAL ROOT ZONE (SRZ)

In accordance with AS 4970 (2009), *Protection of Trees on Construction Sites*, the following TPZ and SRZ is applicable to each tree (metres radius from the trunk).

Tree	TPZ	SRZ	Tree	TPZ	SRZ	Tree	TPZ	SRZ	Tree	TPZ	SRZ	Tree	TPZ	SRZ
1/	3.5	N/A	2/	5.4	2.4	3/	4.0	N/A	4/	9.3	3.0	5/	6.2	2.5
Tree	TPZ	SRZ												
6/	6.1	2.5												

Major encroachment of 20% into the TPZ and 0% into the SRZ of Tree 2 is required for the development.

Minor encroachment is required for T3, and its removal is recommended (undesirable species).

Minor encroachment may be required for T4, 5 and 6, and the protection requirements discussed on page 11-12 will require implementation.

Regarding Tree 2: Clause 3.3.3 (Major encroachment) of AS 4970 states:

“If the proposed encroachment is greater than 10% of the TPZ or inside the SRZ (see Clause 3.3.5), the project arborist must demonstrate that the tree(s) would remain viable. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ”.

The Arborist cannot demonstrate that Tree 2 would remain viable, and its proximity to the proposed development and boundary prevents contiguous compensation of the TPZ.

ARBORICULTURAL IMPACT ASSESSMENT

Encroachment Percentages for each tree.

The proposed development will require the following percentages of encroachment, as their TPZs/SRZs dominate the area of the proposed development.

Tree	TPZ	Encroachment	SRZ	Encroachment	Tree	TPZ	Encroachment	SRZ	Encroachment
1/	3.5	0%	N/A	N/A%	2/	5.4	20%	2.4	0%
3/	4.0	10%	N/A	N/A%	4/	9.3	3.09% (dwelling) 5.47% (substation) Total 8.56%	3.0	0%
5/	6.2	2%	2.5	0%	6/	6.1	2%	2.5	0%

From the percentages above, the following impacts are expected:

No impact – Tree 1

Slight impact – Trees 3, 4, 5 and 6

Moderate impact – Tree 2

Severe impact – N/A

ARBORICULTURAL IMPACT ASSESSMENT CONTINUED

The effects of root loss or damage by any means, as required by the development could include:

- Loss of stability if structural woody roots or even lower order woody roots are cut
- Reduction in water and nutrient uptake
- An eventual loss of leaves, reduced photosynthesis and thus sugar production
- Decay as a result of wounding
- Predisposition to soil borne pathogens

ALTERNATIVE DESIGN CONSIDERATIONS

Section 4 of the Urban Forest Technical manual (Part A) recommends alternative design considerations such as:

- Relocating and/or minimising driveway crossover widths to retain existing trees
- Altering development footprint
- Altering hard surface design
- Utilising permeable pavement
- Move footpath alignment, or location
- Ramp or bridge over tree roots, or use elevated walkways
- Install footpath on surface without excavation and reduced batter
- Move above or below ground utilities (e.g. powerlines, water, gas) away from trees
- Avoid level changes near trees.

It is considered that the size and shape of the block(s) and best use of them, physically and economically, prevents any major design changes in relation to Trees 2 and 3.

TREE PROTECTION MEASURES

The following tree protection measures must be implemented by the construction supervisor for Trees 1, 4, 5 & 6:

- Steel mesh fencing [around the TPZs] should be used where practical. Where this may be impractical, the TPZ of each tree should be measured and marked with road marking paint, and construction staff informed that the area is a Tree Protection Zone.
- Overall encroachment should be a maximum of 10% of the area of a TPZ. Encroachment exceeding this, if required, should be discussed with the Project Arborist.
- Pedestrian traffic must be kept to a minimum, and no materials are to be stored within a TPZ during construction.
- Vehicles must not be parked within a TPZ during construction.
- Any excavation within a TPZ/SRZ should be dug using hand tools or hydraulic or pneumatic excavating equipment, e.g. air spade.
- Some root pruning within a TPZ is acceptable, however, excavation machinery such as backhoes and hand tools (shovels etc.) must not be used to cut tree roots. Root pruning must be carried out using secateurs or a saw. Any roots over 50 mm diameter within the TPZ requiring pruning should be inspected by an AQF 5 Arborist to ensure their removal will not have an adverse effect on the [particular] tree.

TREE PROTECTION CONTINUED

- No encroachment into the SRZs of Trees 4, 5 and 6 is required for the development.
- Any concrete paths should be laid above ground on a 75 – 100 mm thick layer of 15 – 20 mm aggregate, so as to not disturb any roots beneath, and reduce the likely-hood of infrastructure damage in the future. Permeable paving is preferred if possible.
- The aggregate allows air and moisture exchange with the soil and tree roots (all plant roots need air as well as water, which is why plants will decline in health if the surrounding soil becomes compacted or sealed).
- Any pruning of the tree canopies must be carried out by a qualified contractor in accordance with AS 4373 (2007), *Pruning of Amenity Trees*, and within Council's policy. Pruning of public trees is not permitted by private contractors (contact Council if such pruning is required).

SIGNIFICANCE CHECKLIST

Trees 1 – 6 have no listing on the Biodiversity Conservation Act 2016, No 63, Part 4, Threatened Species and Threatened Ecological Communities or individual listings on Council's [Heritage] Tree Register.

Trees 4, 5 and 6 are public trees, and retention and protection is required.

No faunal activity was observed in the trees, that is, no nests or nesting hollows in the canopies, claw marks on the stems or scat around the bases.

CONCLUSION

The development requires major encroachment into the TPZ of Tree 2, and adequate tree protection cannot be implemented.

Tree 3 is a smaller undesirable species and minor encroachment is required. The Arborist supports its removal on these grounds.

Minor encroachment is required for T4, 5 and 6 however, adequate tree protection can be implemented.

The alternatives to the removal of T2 and T3 would require an attempt at alternative plans. The size and shape of the block(s) prevent any major design changes if best use is to be achieved.

Considering best use of the properties, the removal of Trees 2 and 3, and replacement with new plantings is seen as fitting for the site.

RECOMMENDATIONS

Based on the observations made during the inspection, information supplied and the considerations in the conclusion, it is recommended that:

- Trees 2 and 3 be removed and replaced.
- Trees 1, 4, 5 and 6 be retained and protected as discussed.

COMPENSATORY PLANTING

The following species/cultivars are suggested for compensatory planting:

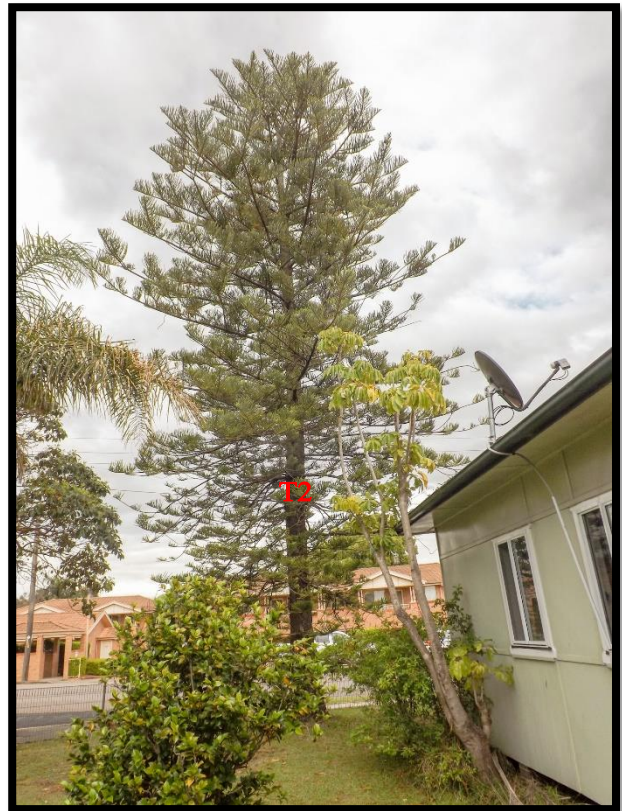
<i>Agonis</i> 'After Dark'	<i>Backhousia citriodora</i>
<i>Corymbia</i> 'Baby Orange'	<i>Corymbia</i> 'Mini Orange'
<i>Corymbia</i> 'Baby Scarlet'	<i>Corymbia</i> 'Summer Red'
<i>Elaeocarpus reticulatus</i>	<i>Elaeocarpus</i> 'Prima Donna'
<i>Syzygium</i> 'Resistance'	<i>Syzygium</i> 'Cheetah'
<i>Acer palmatum</i> 'Dissectum' varieties	<i>Lagerstroemia indica</i> 'Zuni' varieties

Note The above species/cultivars are suggestions only.

PHOTOGRAPHS



Tree 1 and the shrub in 19 Douglas Street.



Tree 2 in 23 Douglas Street.

PHOTOGRAPHS CONTINUED



Tree 3 in 23 Douglas Street.



Street trees (4, 5 and 6) in front of 6 Neal Place.

Stephen Williams

Stephen Williams

AQF 5 Arborist

Hunter Horticultural Services

DISCLAIMER

The recommendations given in this report assumes that reasonable maintenance will be provided by a qualified Arboriculturist working to Australian Standard 4373 (2007), *Pruning Amenity Trees* and AS 4970 (2009), *Protection of Trees on Development Sites*.

Incorrect tree work practices can significantly accelerate tree decline and increase hazard potential.

No liability is accepted for any effects if the recommendations in this report were not followed.

The information in this report does not take into account the effects of unforeseen circumstances, severe weather, external organisms or tree aging on the subject tree.

ACKNOWLEDGEMENTS

Aerial Photographs courtesy of Google Earth and Six Maps

REFERENCES

Australian Standard 4970 (2009), *Protection of Trees on Development Sites*.

Australian Standard 4373 (2007), *Pruning Amenity Trees*.

City of Newcastle (2018), Urban Forest Technical Manual, Part A, *Private Trees*

City of Newcastle (2018), Urban Forest Technical Manual, Part B, *Public Trees*

Proofsafe TPZ Calculator

APPENDICES

Tree Schedule_____	1
U.L.E._____	2
Glossary of Terminology_____	3
Qualifications_____	4

No	Botanic Name	Common Name	Age	Height (m)	CBH (mm)	DBH (mm)	Canopy Spread (m)				Health	Structure	ULE	Comments
							North	South	East	West				
1	<i>Syagrus romanzoffiana</i>	Cocos Palm	M	8	920	240	3	3	3	3	G	G	2B	Leaf density of 90% coverage. Good structure and form. Can be adequately protected during and after construction. Retain and protect.
2	<i>Araucaria heterophylla</i>	Norfolk Island Pine	M	14	1400	450	3.5	3.5	3	3.5	G	G	2B	Leaf density 90% coverage. Minor deadwood to 50 mm diameter. Good structure and form. Severe encroachment (20%) into the TPZ required. Cannot be adequately protected during and after construction. Remove tree and replace.
3	<i>Syagrus romanzoffiana</i>	Cocos Palm	M	8	830	260	3	3	3	3	G	G	2B	Leaf density 90% coverage. Good structure and form. Minor encroachment (10%) into the TPZ required, however, it is an undesirable species. Remove tree and replace.
4	<i>Lophostemon confertus</i>	Brush Box	M	11	2440 (at 500 mm high)	640	6	5.5	5.5	5.5	G	G	2B	Leaf density 90% coverage. Minor deadwood to 50 mm diameter. Good structure and [generally] good form. Slight encroachment (8.56%) into the TPZ required. Can be adequately protected during and after construction. Retain and protect.
5	<i>Lophostemon confertus</i>	Brush Box	M	11	1630 (at 700 mm high)	520	6.5	7.5	2.5	6.5	G	F (form)	2B	Leaf density 90% coverage. Slight deadwood to 50 mm diameter. Good structure and [generally] good form. Minor encroachment (2%) into the TPZ required. Can be adequately protected during and after construction. Retain and protect.
6	<i>Lophostemon confertus</i>	Brush Box	M	11	1600 (at 900 mm high)	510	6.5	7.5	2.5	6.5	G	F (form)	2B	Leaf density 90% coverage. Slight deadwood to 50 mm diameter. Good structure and [generally] good form. Minor encroachment (2%) into the TPZ required. Can be adequately protected during and after construction. Retain and protect.

Appendix 1

Age	DBH	Structure	Health
SM – Semi - Mature	Diameter at 1.4 m high	VP – Very Poor	VP – Very Poor
EM – Early Mature		P – Poor	P – Poor
M – Mature		F – Fair	F – Fair
LM – Late Mature		G – Good	G – Good
OM – Over Mature			

ULE

ULE is an acronym for Useful Life Expectancy. There are a number of ULE categories that indicate the safe useful life anticipated for each tree. Factors such as the location, age, condition and health of the tree are significant to determining this rating. Other influences such as the tree's effect on better specimens and the economics of managing the tree successfully in its location are also relevant to ULE (Barrell 1993, 1995).

ULE Categories and Subgroups

1 = Long ULE of > 40 years

A Structurally sound in suitable location	B Suitable to retain with some remedial care	C Significant status – requires Special care to preserve
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2 = Medium ULE of 15 – 40 years

A Lifespan limit	B Eventual removal for safety or nuisance	C Remove for adjacent trees or replanting	D Requires extensive remedial care
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3 = Short ULE of 5 – 15 years

A Lifespan limit	B Eventual removal for safety or nuisance	C Remove for adjacent trees or replanting	D Requires extensive remedial care
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4 = Remove tree within 5 years

A Dead, dying or diseased	B Unstable or exposed by new clearing	C Structurally defective	D Damaged and unsafe	E Remove for adjacent trees or replanting	F Damaging existing structures	G Clearing will affect stability
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5 = Trees suitable to transplant

A Less than 5m high	B Young trees over 5m high	C Height/width contained by pruning
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The ULE rating given to any tree in this report assumes that reasonable maintenance will be provided by a qualified Arboriculturist using correct and acknowledged techniques. Retained trees are to be protected from root damage. Incorrect tree work practices can significantly accelerate tree decline and increase hazard potential.

Appendix 2

Glossary of Terminology

CBH:	Trunk circumference at 1.4 metres high or as otherwise stated
DBH:	Trunk diameter at 1.4 metres high or as otherwise stated
Epicormic:	Leaf shoots which arise from under the bark, and are not attached to the heartwood. These can detach, especially as they become larger, and have a high risk factor
Frass	Sawdust and webbing combined to cover holes of certain types of wood borer
Kino:	A type of resin exudated by Eucalypts and Angophoras as a defence mechanism against pathogen attack
Mistletoe:	A family (<i>Loranthaceae</i> in the southern hemisphere) of several genera [in the Sydney region] of parasitic plants, often hastening the decline of trees in poor health; many species are host specific.
Structure:	The shape of the tree, ranging from very good, with a single straight trunk, to very poor, with misshapen multiple trunks. Trees with multiple trunks etc. can have a higher risk factor, as splitting and trunk collapse may occur.
ULE:	An acronym for Useful Life Expectancy. A system for rating the possible longevity of a tree, designed by English Arborist Jeremy Barrell (see appendix 1.2).
Included Bark:	Bark that occurs in a crotch between branch and trunk or between co-dominant stems.
Included bark usually:	<ul style="list-style-type: none"> • prevents the trunk from growing around a branch. • occurs on defective V-shaped crotches in which the bark grows inward and on itself, causing a physical weakness where the co-dominant leaders meet.

Appendix 3

Contact Details	Qualifications
P.O. Box 3193 Glendale NSW 2285 Ph 0409 559 147 Email: jwi52886@bigpond.net au	Bachelor of Arts Degree (Botany) Horticulture Certificate (1989) with Arboriculture component included. Horticulture Certificate (2000 Northern Melbourne Institute of Technology) Diploma of Horticulture (2007 Kurri Kurri Tafe) Arboriculture. AQF Level 5 Accreditation Number 5510397

Appendix 4