

A vertical photograph of a grey squirrel climbing a tree trunk. The squirrel is positioned on the left side of the image, facing upwards with its head tilted back and mouth open. Its front paws are gripping the bark, and its hind legs are also visible, pushing against the trunk. The bark is rough and textured, with some peeling. The background is a solid blue gradient.

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# Travers

bushfire & ecology



## Tree Assessment

Lot 1 DP1220196  
100 South Creek Road  
Cromer  
(western portion)

August 2018  
REF: (18EG03T)





# Tree Assessment Report

**Lot 1 DP1220196  
100 South Creek Road  
Cromer**

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Date:	10 August 2018
File:	18EG03T

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The mapping is indicative of available space and location of features which may prove critical in assessing the viability of the proposed works. Mapping has been produced on a map base with an inherent level of inaccuracy, the location of all mapped features are to be confirmed by a registered surveyor.

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# Executive Summary

This tree assessment report has been prepared by *Travers bushfire & ecology* to assess the condition and significance of trees located within the western portion of Lot 1 DP1220196, 100 South Creek Road, Cromer, in the Northern Beaches local government area (LGA). The proposed works are for an Australia Post delivery centre.

A safe useful life expectancy (SULE) assessment was conducted on 11–13<sup>th</sup> and 19<sup>th</sup> July, and 6<sup>th</sup> August, 2018. This tree assessment report has been prepared in accordance with Australian Standard *AS4970 (2009) – Amendment No. 1 2010*.

## Impact of the proposed development on trees

An assessment of all trees equal or greater than 10cm Diameter at Breast Height (DBH) was undertaken. 305 trees were assessed within the site.

It is noted that the SULE assessment identifies that one hundred and eighty seven (187) of the observed trees (61.31%) had a SULE condition rating of 2 (moderate condition). Eighty nine (89) of the assessed trees (29.18%) with a SULE rating of 3b or 4 are in poor condition.

The proposed development will remove 95 trees within the development footprint regardless of their SULE rating. The breakdown is as follows:

- Remove trees with poor SULE rating (3b, 4a-4f) – 48/305 trees = 15.75%,
- Remove further trees within or immediately adjacent to the development footprint – 91/305 trees = 29.84%
- Retain all other trees wherever possible – 166/305 = 54.43%

Tree protection zones (TPZ) are to be implemented for any retained tree in accordance with Australian Standard *AS4970* (Section 4). This report defines the Structural Root Zone (SRZ), Tree Protection Zone (TPZ) and other protection measures required for trees to be retained also in accordance with Australian Standard *AS4970*.

## Significant trees

The trees present within the study area are not commensurate with any Endangered Ecological Community (EEC) listed within the NSW *BC Act* (2016) or the Commonwealth *EPBC Act* (1999).

Sixty seven (67) trees within the study area are visually prominent trees primarily due to their size and being 'larger than most' of the trees observed. Thirty six (36) of these trees are to be removed.

Thirteen (13) trees were found to contain a variety of small cracks, splits or hollows that may support roosting/breeding habitat for hollow-dependent threatened species. Nine (9) hollow-bearing trees are identified to be removed.

The Warringah Local Environment Plan (LEP) 2011 register of Environmental Heritage (Schedule 5) does not list any trees of heritage conservation significance along South Creek, Inman, or Orlando Roads which bound the study area. Trees may however be included in a tree significance register if the specimen displays cultural, historic, scientific and/ or aesthetic value. No trees present on site are considered appropriate for nomination to this register.

# List of abbreviations

AS 4970	Protection of trees on a development site
APZ	asset protection zone
BC Act	<i>Biodiversity Conservation Act 2016</i>
BPA	bushfire protection assessment
CRZ	critical root zone
DCP	Development Control Plan
DOEE	Commonwealth Department of Environment & Energy
EEC	endangered ecological community
EPA	Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act</i>
FF	flora and fauna assessment
FM Act	<i>Fisheries Management Act</i>
FMP	fuel management plan
ha	hectares
HTA	habitat tree assessment
IPA	inner protection area
LEP	local environment plan
LGA	local government area
m	metres
NES	national environmental significance
NPWS	NSW National Parks and Wildlife Service
NSW DPI	NSW Department of Industry and Investment
OEH	Office of Environment and Heritage (Part of the NSW Department of Premier and Cabinet)
OPA	outer protection area
PBP	<i>Planning for bush fire protection 2006</i>
RF Act	<i>Rural Fires Act</i>
RFS	NSW Rural Fire Service
ROTAP	rare or threatened Australian plants
SEPP 44	<i>State Environmental Protection Policy No 44 – Koala Habitat Protection</i>
SRZ	structural root zone
SULE	safe useful life expectancy
TPO	tree preservation order
TPZ	tree protection zone
TRRP	tree retention and removal plan
TSC Act	<i>Threatened Species Conservation Act 1995</i>

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Schedule 1 – Tree Assessment Data Table  
Schedule 2 – SULE Assessment Plan  
Schedule 3 – Tree Retention and Removal Plan  
Schedule 4 – SULE Ratings & Terminology



# Background

# 1

This tree assessment report has been prepared by *Travers bushfire & ecology* to assess the condition and significance of trees located within the western portion of Lot 1 DP1220196, 100 South Creek Road, Cromer, in the Northern Beaches local government area (LGA). The proposed works are for an Australia Post delivery centre. The area subject to detailed survey effort is identified in Figure 1 and will hereafter be referred to as the 'study area'.

The tree condition assessment is based on the SULE classification (Barrell, 1993). The purpose of this report is to classify the existing condition of the trees within the study area and to identify those being impacted by the proposed development.



Figure 1 – Study area





# Survey Methods

## 2

### 2.1 Tree survey and condition assessment

Tree survey and assessment of the study area was conducted on the 11–13<sup>th</sup> and 19<sup>th</sup> July, and 3<sup>rd</sup> August 2018. Tree inspections and assessment were undertaken in accordance with Australian Standard *AS4970 (2009)-Amendment 1 (2010)*.

The aim of this tree assessment is to assess the condition and significance of trees within the study area, map the locations and determine which trees will be impacted by the proposed development.

The following survey and assessment was undertaken:

- a tree condition assessment
- a health assessment (SULE rating) of the trees
- an assessment of the significance of individual trees
- compilation of this report detailing the results of the above assessments

Trees with diameter at breast height (DBH) greater than 10cm were assessed. The tree assessment data is provided within Schedule 1, the location and number of each tree is shown in Schedule 2 and a description of terminology used is provided as Schedule 3.

The management requirements for maintaining safe trees (pruning, thinning etc.) was also considered in determining the health rating, therefore health ratings given to trees within this report assumes that appropriate maintenance will be provided by a qualified arborist during the life of the assessed trees. Incorrect or absent tree maintenance can significantly accelerate tree decline and increase hazard potential.

### 2.2 Identification of tree species

The identification of tree species is undertaken using available field guides and botanical texts. For any unidentifiable species a qualified and experienced botanist is utilised to confirm the tree identification. In many cases exotic species were identified to family name only. Samples may be sent off to the Royal Botanic Gardens should a potential threatened or rare species be present and where the identification is not clear. Further samples may be required during flowering and fruiting seasons of the tree to confirm the identification.

### 2.3 Structural faults and decay

Visible evidence of structural defects and evidence of decay is briefly assessed during tree inspections. Structural defects are categorised into (Matheny & Clark 1994):

- root defects – including but not limited to suspect root rot, root exposure, root pruning or restriction



- trunk defects – including but not limited to evidence of decay, structural damage, *Phytophthora* and bracket fungi, excessive lean, borer damage, hollows, cracks, deadwood and multiple attachments
- crown defects - including but not limited to poor taper, bow or sweep, forks, multiple attachments, excessive end weight, cracks, splits, hangers, girdling, wounds, decay, cavities, conks, mushroom or bracket fungi, bleeding/sap flow, hollows, deadwood, borers, termites, ants, cankers, balls, burls and previous failures

Visible evidence of structural defects or decay are noted during inspections however we advise that the individual trees require detailed assessment if they are located or are to be retained in close proximity to buildings or proposed works.

Overall tree health is an indicator of the life of the tree but sometimes hidden structural defects or decay can cause immediate structural failure when a tree is stressed due to high winds or other activities.

Structural defects or decay are not always visible from the exterior and may only become evident after damage has been caused. In the event that structural faults are detected, such as caused by hollows, fungal or termite attack, then internal diagnostic testing of the trees structural integrity is recommended.

Internal Diagnostic Testing (IDT) can be undertaken by Resistograph® to determine the trees structural integrity by measuring the location, extent and positioning of internal decay at the defects detected.

*Travers bushfire & ecology* advises that an a specialist advice should be sought for any trees in close proximity to any proposed works or if a structural assessment is required to determine the extent of structural faults and decay for tree retention or removal purposes.



# Survey results

## 3

A total of three hundred and five (305) trees with a DBH greater than 10cm were assessed within the study area (see Schedule 1). Trees were numbered T001, T002, T003, etc., and a metal tag embossed with the tree number was placed on the trunk for re-identification during future works.

### 3.1 Threatened ecological communities (TECs)

The great majority of trees present on site were mixed plantings of native and exotic landscaping species. A small number were commensurate with the plant community type (PCT) Sydney Peppermint - Smooth-barked Apple - Red Bloodwood shrubby open forest on slopes of moist sandstone gullies, eastern Sydney Basin Bioregion (PCT1250).

The vegetation communities present within the study area are not commensurate with any Threatened Ecological Community (TEC) listed within the NSW *BC Act* (2016) or the Commonwealth *EPBC Act* (1999).

### 3.2 Council's significant tree register

The Warringah Local Environment Plan (LEP) 2011 register of Environmental Heritage (Schedule 5) does not list any trees of heritage conservation significance along South Creek, Inman, or Orlando Roads which bound the study area. Trees may however be included into a tree significance register if the specimen displays cultural, historic, scientific and/or aesthetic value. No trees present on site are considered appropriate for nomination to the significant tree register.

### 3.3 Visually prominent trees

Sixty seven (67) trees within the study area are visually prominent trees primarily due to their size and being 'larger than most' of the trees observed. Thirty (36) of these trees are identified for removal due to their location within the development footprint or poor SULE rating. However, given that many other trees throughout the wider locality are comparable in size, the removal of these trees is not likely to be significant.

### 3.4 Hollow bearing trees

Thirteen (13) trees were found to contain a variety of small cracks, splits or hollows that may support roosting/breeding habitat for hollow-dependent threatened species including Little Lorikeet, East-coast Freetail Bat and Large-footed Myotis. A hollow within T196 (*Erythrina x sykesii*) was found to contain a possum. It is unknown if any further hollows are occupied by native fauna.

No large hollows suitable for threatened owls or cockatoos were recorded present.

Nine (9) hollow-bearing trees are identified to be removed. If any hollow-bearing tree is identified for removal, it will require supervision by a fauna ecologist at the time of removal to effectively recover any residing fauna, particularly threatened species, if present.

**Table 3.1 – Summary of SULE ratings**

Tree No.	Common name	DBH (cm)	Height (m)	Spread (m)	Vigour (%)	Hollows & other habitat features recorded	Retain / remove
T055	Brush Box	75	14	10	60	1x 5-10cm trunk hollow	REM (SULE/dev)
T083	Smooth-barked Apple	50	16	12	75	1x 5-10cm trunk hollow (3m)	REM (development)
T085	Bottlebrush	18,18	6	4	60	1x 0-5cm trunk (1.5m)	RET
T091	Norfolk Island Hibiscus	20,10	7	5	70	1x 0-5cm trunk (1.5m)	REM (development)
T121	Bangalay	100	20	18	70	1x 0-5cm flaking bark	REM (development)
T148	Water Gum	16	10	4	60	1x 0-5cm trunk (1.5m)	RET
T154	stag	76	3	1	0	5x 0-5cm flaking bark	REM (development)
T170	stag	20,30,20	14	5	0	1x 5-10cm trunk hollow (2m)	REM (SULE)
T173	Sydney Peppermint	36	15	8	30	1x 5-10cm trunk hollow (5m)	RET
T190	Coral Tree	93	13	12	60	1x 0-5cm branch hollow, 1x 10-15cm trunk base hollow	REM (SULE)
T191	Coral Tree	18,13	4	3	55	1x 0-5cm branch hollow (2)	REM (SULE)
T194	Coral Tree	48,35	10	7	60	1x 5-10cm branch hollow	REM (SULE)
T196	Coral Tree	55,50	15	14	70	1x 15-20cm trunk hollow (possum inside)	RET
T222	stag	75	4	2	0	1x 10-15cm trunk hollow	RET
T230	Sydney Peppermint	55	65	11	3	1x 10-12cm trunk hollow	RET

### 3.5 SULE rating

An assessment of the attributes and health of each tree is contained in Schedule 1. Where trees have been downgraded with respect to health, a comment as to the reasons for the downgrade is generally provided.

A summary of SULE results is provided in the following table:

**Table 3.2 – Summary of SULE ratings**

<b>SULE rating</b>	<b>No. of trees assessed</b>	<b>Proportion of trees assessed</b>
1a	0	0.00%
1b	0	0.00%
1c	0	0.00%
2a	151	49.51%
2b	1	0.33%
2c	5	1.64%
2d	30	9.84%
3a	11	3.61%
3b	48	15.74%
3c	18	5.90%
3d	0	0.00%
4a	23	7.54%
4b	0	0.00%
4c	17	5.57%
4d	1	0.33%
4e	0	0.00%
4f	0	0.00%
<b>TOTAL</b>	<b>305</b>	<b>100.00%</b>

One hundred and eighty seven (187) of the observed trees (61.31%) had a SULE condition rating of 2. These trees are in good condition and are retainable for 15 - 40 years with an acceptable level of risk.

There were several trees with significant structural weaknesses such as a heavily leaning trunk, exposed decaying wood, or presence of termites. These trees subsequently received a SULE rating of 4c, as indicated in Schedule 1, and are in poor condition and should be removed.

Other trees of lower health or vigor have been given a SULE of 3b as they tend to have large overhanging branches or other structural defects which indicate a potential safety concern now or in the near future, despite the potential for them to remain alive for up to fifteen (15) years or more.

Some trees within the study site are crowded and/or suppressed by larger specimens. These trees have mostly been given a SULE rating of 3c. This crowding and suppression can result in narrowing, tilting, off-centre canopies, canopy dieback and poor structural growth due to competition for available resources. However, it is considered that the level of suppression within the trees within the site is not high and that if natural processes cause a larger tree to die, the smaller trees underneath will rapidly fill the vacant space.

Various other defects related to poor health were observed for different trees and generally, where a tree's health has been downgraded the reasons are provided in the comments column in Schedule 1.

Trees of a suppressed nature with limited or minor defects are likely to be retainable. However, those that are heavily suppressed or have some defect due to over-competition have largely been rated at a lower SULE rating. Trees with a tolerable amount of

suppression have generally been given a higher SULE rating and can often be retained with a further assessment carried out within two to five (2-5) years to assess whether their condition has deteriorated or improved.



# Tree Removal & Impacts

## 4

### 4.1 Removal of trees due to condition

In assessing the removal of trees for a proposed development, trees assessed with a SULE rating of 3b, 3d or 4a – 4f are generally recommended for removal based on a short life expectancy, are dangerous or in a very poor condition. This is particularly the case of trees in close proximity to adjoining dwellings or site assets. Trees along the eastern edge of the study area with a rating of 3b and 4 are considered to be retainable at the present time as they are not in close proximity to dwellings or site assets.

Forty eight (48) trees or 15.74% of the assessed trees are recommended for removal due to their poor condition.

The following table is a summary of trees proposed for removal:

**Table 4.1 – Trees to be removed**

Trees removed for very poor SULE - some 4a to 4f - unsafe	20	6.56%
Trees removed for poor SULE ratings - some 3b - safety or nuisance	28	9.18%
Other trees removed within development footprint	91	29.84%
Trees retained	166	54.43%
Total	305	100.00%

### 4.2 Removal of trees due to proposed development

The proposed works are for an Australia Post delivery centre. One hundred and nineteen (119) trees or 39.02% of the trees within the study area are proposed for removal, regardless of their SULE rating, as they are located within the development footprint. This includes 91 (29.84%) trees in good condition that would not otherwise be removed.

### 4.3 Impact assessment

Forty eight (48) trees or 15.74% of the assessed trees are recommended for removal due to their poor condition. The development of the site is anticipated to require the removal of a further ninety one (91) trees within the study area.

Based on the above approach the proposed development results in the removal of one hundred and thirty nine (139) or 45.57% of the trees observed within the site. One hundred and sixty six (166) trees (54.43%) located within the study area are to be retained.

The Warringah Local Environment Plan (LEP) 2011 register of Environmental Heritage (Schedule 5) does not list any trees of heritage conservation significance along South Creek, Inman, or Orlando Roads which bound the study area. Trees may however be included in a



tree significance register if the specimen displays cultural, historic, scientific and/ or aesthetic value. No trees present on site are considered appropriate for nomination to this register.

Thirteen (13) hollow-bearing trees were observed within the study area. Nine (9) of these trees are identified to be removed. If any tree with a hollow is found and identified for removal, then supervision by a fauna ecologist at the time of removal is recommended to effectively recover and relocate any residing fauna, particularly threatened species, if present.

For all trees that are to be retained, it is recommended that Tree Protection Zones (TPZ) are to be implemented for any retained tree in accordance with Australian Standard *AS4970* (section 5.1).

The TPZ of fourteen (14) trees will be impacted by the proposed development. Calculated areas of impact of the proposed building within the nominated TPZ of retained trees is provided below.

Tree tag No	% of TPZ impacted on retained trees	Calculated TPZ radius (m)	Compensated TPZ radius +10% (m)
T021	3.18%	9.24	10.16
T037	6.22%	3.32	3.65
T055	5.76%	9.00	9.90
T067	9.55%	9.60	10.56
T071	3.30%	8.26	9.09
T072	1.37%	2.80	3.08
T075	1.84%	7.14	7.85
T098	3.07%	8.40	9.24
T117	5.16%	10.56	11.62
T135	3.28%	2.64	2.91
T141	7.81%	3.00	3.30
T144	7.49%	3.24	3.56
T171	2.27%	7.22	7.95
T175	6.08%	4.56	5.02

As the impact of the proposed development is less than 10% of the TPZ these trees, the TPZ is to be expanded to 1.1 times the calculated TPZ as compensation. This fulfils the requirement for the compensatory expansion of the TPZ as required in *AS4970-2009-Amendment 1-2010*. These trees can therefore be retained in situ with no significant impact expected.



# Tree Protection Guidelines

## 5

The following sections provide guidance as to the expected TPZs required for trees to be retained within the development site (either in the staged or ultimate development scenario), or affected by associated works. TPZs consist of:

- (a) Tree protection zone (TPZ) which aims to protect the full extent of the tree, and
- (b) Structural root zone (SRZ) which aims to define the critical root zone (CRZ) for the tree without causing fatal damage to the tree.

These are generic guidelines and any tree specific advice and management is required to assess impacts on trees that are affecting more than 10% of the tree protection zone or have suspected structural damage.

## 5.1 Tree protection measures

To determine the SRZ, the following is applied in accordance with Australian Standard *AS4970 – 2009 – Amendment 1-2010*.

The tree protection zone (TPZ) radius is measured by the DBH x 12 (Australian Standard *AS4970 – 2009*). For instance, if a tree has a DBH of 50cm, the TPZ radius would be 6m and a tree of DBH 30cm would have a TPZ radius of 3.6m.

The structural root zone (SRZ) is the area which is required to maintain a tree's stability. The SRZ is measured as:

SRZ radius =  $(BD \times 50)^{0.42} \times 0.64$  where BD is the basal trunk diameter, in m, measured above the root buttress. If BD is 50cm, then the SRZ would be 2.47m.

During the survey, DBH was measured for each tree to allow for TPZ to be calculated should the tree be retained as part of the future landscaping.

**Table 5.1 – Estimated TPZ for trees**

DBH (cm)	TPZ (m)
15	1.8
20	2.4
25	3
30	3.6
35	4.2
40	4.8
45	5.4
50	6

**Table 5.1 – Estimated TPZ for trees**

<b>DBH (cm)</b>	<b>TPZ (m)</b>
55	6.6
60	7.2
65	7.8
70	8.4
75	9
80	9.6
85	10.2
90	10.8
95	11.4
100	12
105	12.6
110	13.2
115	13.8
120	14.4
150	18
200	24
250	30

**Table 5.2 – Estimated SRZ for trees**

<b>BD (cm)</b>	<b>SRZ (m)</b>
15	1.49
20	1.68
25	1.85
30	2
35	2.13
40	2.25
45	2.37
50	2.47
55	2.57
60	2.67
65	2.76
70	2.85
75	2.93
80	3.01
85	3.09
90	3.17
95	3.24
100	3.31
105	3.38
110	3.44
115	3.51
120	3.57

150	3.92
200	4.43
250	4.86
300	5.25

The SRZ and TPZ calculated for each of the trees assessed within the study area are provided in Schedule 1.

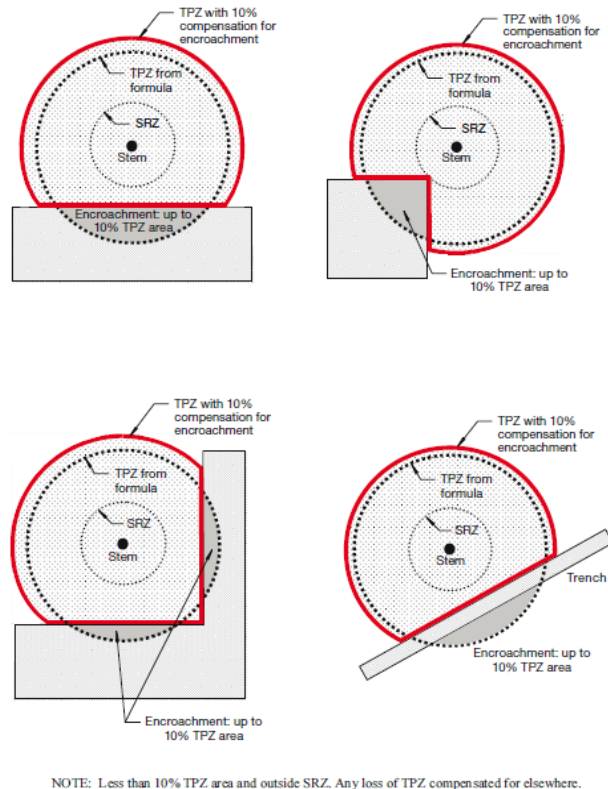
When working in close proximity of any tree to be retained or the nominated TPZ located within or adjacent to potential development areas, the following general management principles should be adopted:

- earthworks around subject trees are to be undertaken in the presence of a qualified ecologist / arborist who may provide additional on-site advice
- machine digging within the root mass of the subject tree (or trees) is to be minimised and, where possible, replaced by hand digging
- any exposed roots of the subject tree should be wrapped and protected during exposure and be replaced in a similar position prior to disturbance
- inspection of retained trees by a qualified person should be conducted at 3, 6, 9 and 12 months and then annually to 3 years after development completion.

Any retained tree on site will require protection both during and after development construction, applying the following tree protection guidelines:

The following guidelines are proposed in relation to any trees that may be retained within or adjacent to the proposed works area:

- i. Installation of a TPZ will be required surrounding any retained tree or group of trees. This TPZ can generally be provided by preserving an area equivalent to that shown in Schedule 1. A SRZ will apply to all retained trees in close proximity to work areas. No more than 10% of the TPZ should be impacted by earthworks with no infiltration into the SRZ. The TPZ is to be compensated elsewhere on the impacted tree to compensate for the loss of small areas of the TPZ. This is achieved by increasing the TPZ to an equivalent area to the area of impacted TPZ (Figure 2).

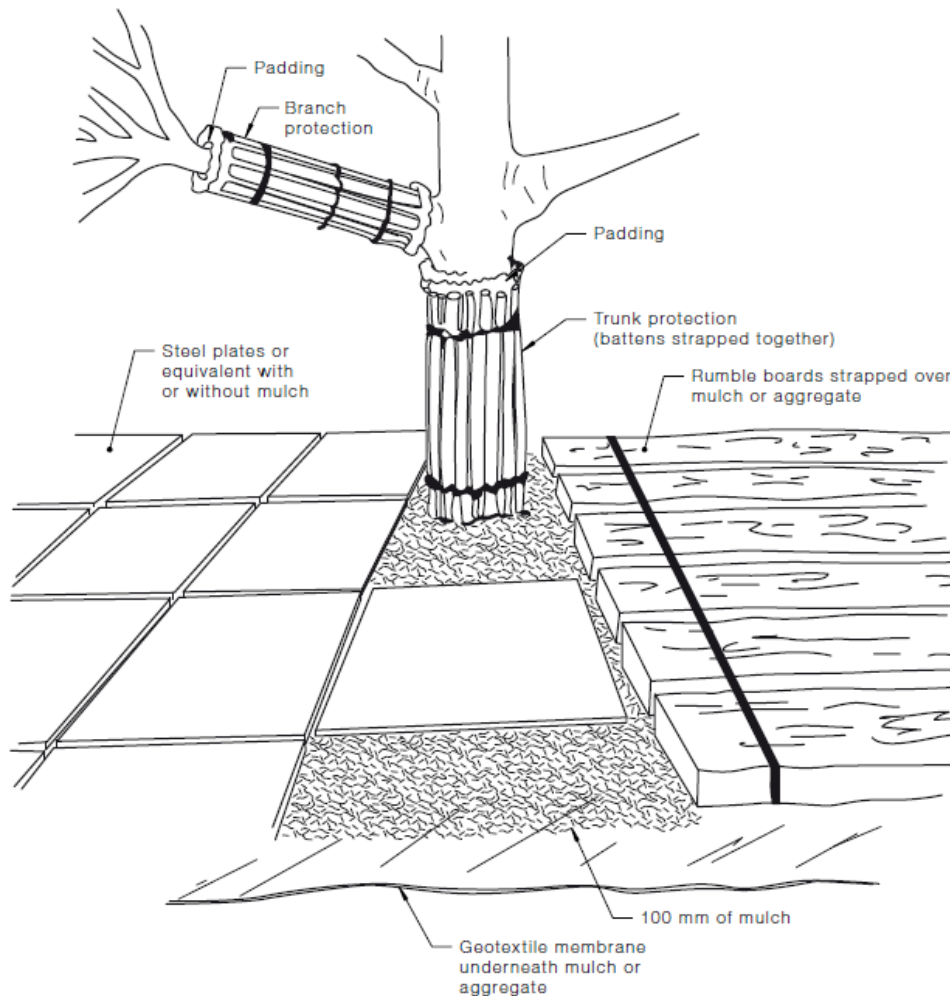


**Figure 2 - Minor encroachment on TPZ and 10% compensation for encroachment  
(Source AS 4970-2009)**

- ii. Trees to be retained, and in close proximity to any works, are to be protected by temporary fencing. Such temporary fencing can be constructed from plastic mesh, post and wire or temporary chain link fence panels. All fence posts and supports are to be located clear of the roots and have sufficient strength to support the fence without bending or collapsing. TPZs in close proximity to proposed works are to be marked and sign-posted. The protection fencing is not to be removed or altered without the approval of an appointed arborist. TPZ fencing is to be inspected on a regular basis and maintained in good condition.
- iii. All trees nominated for removal are to be removed only after the temporary fencing of the trees to be retained has been completed and prior to any construction activity or bulk earthworks. Approved tree removal operations in the vicinity of retained trees are to be undertaken in a manner that avoids canopy or root damage and/or soil compaction to any TPZ associated with any retained tree. Such works should be supervised by a qualified arborist.
- iv. Stumps are to be ground not dozed or dug out unless they impact on the installation of services, roads or building works.
- v. All excavation including but not limited to trenches, footings and major earth movement are to be avoided within TPZ's.
- vi. Stockpiling materials and soils within TPZs is to be avoided.
- vii. All machinery and vehicles are to be excluded from TPZs during all operations.

- viii. Where the proposed works are likely to cause excessive dust generation, the Tree is to be protected with shade cloth on the tree protection fence to minimise dust collection on the leaves.
- ix. The following activities prohibited within TPZs includes but are not limited to:
- machine excavation (including trenching)
  - excavation for silt fencing
  - cultivation
  - Storage
  - preparation of chemicals, including cement products
  - parking of vehicles or plant
  - refuelling
  - dumping of waste
  - refuelling
  - wash down or cleaning of equipment
  - placement of fill
  - lighting of fires
  - soil level changes
  - temporary or permanent installation of signs
  - physical damage to trees.
- x. Any works undertaken within TPZs are to be supervised and certified (photographed and documented) by a qualified arborist.
- xi. Where advised by the arborist, trunk and branch protection (Figure 3) is to be installed to a minimum height of 2 m using materials and positioning as advised by an appointed arborist.
- xii. Where advised by the arborist, other temporary root protection measures (Figure 3) such as thick mulch (50-100mm deep) or crushed rock below rumble boards, are to be installed to prevent root damage and soil compaction within the TPZ.
- xiii. Scaffolding is to be erected outside of the TPZ, where unavoidable protection measures are to be specified by the appointed arborist.
- xiv. All services are to be routed outside of the TPZ. Where not possible the arborist will specify directional drilling (at least 600mm deep) or manual excavation to avoid impacted on the insitu roots subject to the works and potential root damage.
- xv. If pruning is required it is to be undertaken by an arborist in accordance with AS4373 to prevent structural damage, disease and poor form.





**NOTES:**

- 1 For trunk and branch protection use boards and padding that will prevent damage to bark. Boards are to be strapped to trees, not nailed or screwed.
- 2 Rumble boards should be of a suitable thickness to prevent soil compaction and root damage.

**Figure 3 - Examples of trunk, branch and ground protection as per AS4970- 2009**

## 5.2 Tree protection fencing

Temporary tree protection fencing should be erected before any machinery or materials are brought onto the site and before the commencement of works (including demolition and bulk earthworks). The tree protection barrier fencing is to be located as shown in Schedule 2 – Tree Retention and Removal Plan. Once erected, protective fencing must not be removed or altered without approval by the project arborist. The fencing is to be fully secured to restrict access onto the protected root zone.

AS4687 specifies applicable fencing requirements. Installed construction fencing on the recommended alignment of the TPZ fencing can be installed as part of the protective fencing.

For construction crews, signage identifying the Tree Protection Zone (TPZ) shall be placed at 10 metre intervals along the TPZ barrier fencing. These signs will face towards the development site and shall have lettering that complies with AS1319. These signs will also specify the severe penalties for harming the TPZ in any way.

TPZ barrier fencing is to be inspected on a regular basis and maintained in good condition. It is recommended that the TPZ barrier fencing be installed as shown in Schedule 2 – Tree Retention and Removal Plan. Any works within the mapped tree protection zones is to be supervised (for excavation works) or under the direction of an AQ5 qualified arborist to limit damage to root zones and to install additional root, trunk and branch protection measures.



# Conclusions & Recommendations

## 6

### 6.1 Conclusions

An assessment of all trees equal or greater than 10cm Diameter at Breast Height (DBH) was undertaken. 305 trees were assessed within the site. Forty eight (48) trees or 15.74% of the assessed trees are recommended for removal due to their poor SULE rating or to reduce competition with neighbouring trees. The proposed development results in the removal of an additional ninety one (91) trees or 29.84% of the trees observed and assessed within the site. Therefore, in total, the current proposal will require the removal of 139 (45.57%) and the retention of 166 (54.43%) of the trees observed within the site.

It is noted that the SULE assessment identifies that one hundred and eighty seven (187) of the observed trees (61.31%) had a SULE condition rating of 2 (moderate condition). Eighty nine (89) of the assessed trees (29.18%) with a SULE rating of 3b or 4 are in poor condition.

For any trees that are to be retained, it is recommended that Tree Protection Zones (TPZ) are to be implemented for any retained tree in accordance with Australian Standard AS4970 (section 5.1).

### 6.2 Recommended tree protection strategies

To minimise impacts in local ecology and to maintain a stand of healthy trees within a broad scale development, the following recommendations apply:

- Aim to retain hollow bearing trees of good condition wherever possible throughout the landscape in order to retain fauna habitat
- Preferentially remove dangerous or poor condition trees and examine lot layouts to maximise tree retention
- Consider the placement of services to avoid or minimise tree removal
- Where appropriate, create mini reserves of good quality trees for future public or private use
- Remove suppressed or otherwise poor condition trees to reduce fuel loads
- Actively replant locally-occurring native trees within the streetscape and any open space areas to maximise local amenity within the development, to consolidate any retained native vegetation within the locality and to provide suitable habitat for locally occurring native fauna.

### 6.3 Recommended tree protection measures

In the event that trees are retained under the ultimate development proposal, appropriate tree protection measures should be implemented including:

- i. In the event that trees can be retained it is considered that an AQ5 qualified arborist be engaged to manage any construction works within the TPZ and to identify any other

mitigation measures to maintain or improve their condition where the works proposed impact on more than 10% of the TPZ.

- ii. TPZs in close proximity to proposed works should be adequately marked and sign-posted. Signage identifying the TPZ shall be placed at 10 metre intervals along the TPZ barrier fencing. These signs will face towards the development site and shall have lettering that complies with AS 1319. TPZ fencing and signage should be inspected on a regular basis and maintained in good condition.
- iii. All trees nominated for removal are to be removed prior to any construction activity or bulk earthworks. Approved tree removal operations in the vicinity of retained trees are to be undertaken in a manner that avoids canopy or root damage and soil compaction to retained trees. Such works should be supervised by a qualified arborist.
- iv. Stumps are to be ground, not dozed or dug out unless they impact on the installation of services, roads or building works.
- v. All trenches footings and major earth movement are to avoid TPZs.
- vi. Stockpiling materials and soils within TPZs is forbidden.
- vii. Machinery and other vehicles are to avoid TPZs during all operations.
- viii. Any trenching or construction works unavoidably undertaken within TPZs should be witnessed, supervised and recorded (photographed and documented) by an AQ5 qualified arborist who will specify any works to be undertaken to avoid or remediate damage to trees.

# Bibliography

- Barrell, J. (1993) *Pre-planning Tree Surveys: Safe Useful Life Expectancy (SULE) is the Natural Progression*. Arboricultural Journal Vol. 17, pp 33-46, AB Academic Publishers, Great Britain
- Boland, D. J., Brooker, M. I. H., Chippendale, G. G., Hall, N., Hyland, B. P. M., Johnston, R. D., Kleinig, D. A., Turner, J. D. (1992) *Forest Trees of Australia*. CSIRO, Melbourne
- British Standard BS5837 (1991) *Guide for Trees in Relation to Construction*, BSi Standards
- Brooker, M. I. H. and Kleinig, D. A. (1999) *Field Guide to Eucalyptus - South-eastern Australia*. Volume 1, Second Edition, Bloomings Books
- Florence, R. G. (1996) *Ecology and Silviculture of Eucalypt Forests*. CSIRO, Collingwood Victoria
- Hadlington, P. W. and Johnston, J. A. (1977) *Australian Trees, a Guide to Their Care and Cure*. Printed in Hong Kong by South China Printing Company
- Harden, G. (1993) *Flora of New South Wales* University NSW Press
- Queensland Arboricultural Association Inc (website)  
<http://www.qaa.net.au/calculations.php?>
- Mattheck, C. and Breloer, H (1998) *The Body Language of Trees - A Handbook for Failure Analysis*. HMSO, London.
- Rinn, F. (2011) *Basic Aspects of Mechanical Stability of Tree Cross-Sections*, *Arborist News*, Feb 2011, pp. 52-54.
- Simpfendorfer, K. J. (1992) *An Introduction to Trees for South-eastern Australia*. Inkata Press
- Threatened Species Conservation Act (TSC Act) (1995) *Schedules 1, 2 and 3*. NSW Scientific Committee

# Schedule 1

Tree Assessment Data Table



# Lot 1 DP1220196, 100 South Creek Road, CROMER

Tag No.	Common name	Scientific name	DBH (cm)	Calc DBH (cm)	BD (cm)	Height (m)	Spread (m)	Vigour (%)	SULE	TPZ radius (m)	SRZ radius (m)	Retain / remove	Reason for removal	Visual sig.	Habitat tree	Comments
T001	Broad-leaved Paperbark	<i>Melaleuca quinquenervia</i>	53	53	58	7	6	70	2a	6.4	2.6	REM	development			
T002	Broad-leaved Paperbark	<i>Melaleuca quinquenervia</i>	95	95	95	10	8	70	3b	11.4	3.2	REM	SULE/dev			borers, trunk at 60°
T003	Sweet Gum	<i>Liquidambar styraciflua</i>	104	104	120	17	16	75	2d	12.5	3.6	REM	development	V2		some overhanging branches
T004	Chinese Tallow	<i>Triadica sebiferum</i>	52	52	65	8	8	60	3c	6.2	2.8	REM	development			supressed, canopy off-centre
T005	Chinese Tallow	<i>Triadica sebiferum</i>	50	50	55	10	8	70	3b	6.0	2.6	REM	SULE/dev			trunk at 60°
T006	Spotted Gum	<i>Corymbia maculata</i>	79	79	90	18	16	85	2a	9.5	3.2	REM	development	V2		
T007	Spotted Gum	<i>Corymbia maculata</i>	74	74	85	17	16	85	2a	8.9	3.1	REM	development	V2		
T008	Spotted Gum	<i>Corymbia maculata</i>	22	22	24	8	5	70	2c	2.6	1.8	REM	development			crowded
T009	Bangalay	<i>Eucalyptus botryoides</i>	76	76	70	12	14	65	2d	9.1	2.8	REM	development	V3		overhanging branches, exposed deadwood
T010	Wallangarra White Gum	<i>Eucalyptus scoparia</i>	95	95	110	16	14	65	2d	11.4	3.4	REM	development	V2		poor structure, exposed deadwood
T011	Spotted Gum	<i>Corymbia maculata</i>	34	34	36	13	10	75	3c	4.1	2.2	REM	development			crown off-centre
T012	Spotted Gum	<i>Corymbia maculata</i>	83	83	100	16	14	60	4c	10.0	3.3	REM	SULE/dev	V2		large split in trunk
T013	Spotted Gum	<i>Corymbia maculata</i>	74	74	74	17	16	55	4c	8.9	2.9	REM	SULE/dev	V2		large split in trunk, damaged trunk, lots of kino
T014	Spotted Gum	<i>Corymbia maculata</i>	75	75	85	17	17	80	2a	9.0	3.1	REM	development	V2		
T015	Spotted Gum	<i>Corymbia maculata</i>	85	85	95	16	16	75	2a	10.2	3.2	REM	development	V2		
T016	Spotted Gum	<i>Corymbia maculata</i>	72	72	80	16	17	80	2a	8.6	3.0	REM	development	V2		
T017	Swamp Mahogany	<i>Eucalyptus robusta</i>	76	76	90	18	16	75	2a	9.1	3.2	REM	development	V2		
T018	Banksia	<i>Banksia sp.</i>	14	14	30	4	5	5	4a	1.7	2.0	REM	SULE/dev			dying
T019	Scribbly Gum	<i>Eucalyptus sclerophylla</i>	67	67	80	15	10	70	2d	8.0	3.0	REM	development			exposed deadwood, small kino
T020	Scribbly Gum	<i>Eucalyptus sclerophylla</i>	66	66	60	12	12	70	2a	7.9	2.7	REM	development	V3		slightly off-centre
T021	Cottonwood	<i>Hibiscus tiliaceus</i>	77	77	90	10	18	80	2a	9.2	3.2	REM	development			
T022	Bangalay	<i>Eucalyptus botryoides</i>	150	150	170	20	18	80	2a	18.0	4.1	REM	development	V2		
T023	Yew Pine	<i>Podocarpus macrophyllus</i>	22	22	40	4	5	60	3c	2.6	2.3	REM	development			stunted
T024	Sydney Peppermint	<i>Eucalyptus piperita</i>	54	54	60	12	10	65	3b	6.5	2.7	REM	SULE/dev			split in trunk from twisting forces
T025	Spotted Gum	<i>Corymbia maculata</i>	50	50	57	12	9	65	3c	6.0	2.6	REM	development			split in trunk, kino
T026	Grey Gum	<i>Eucalyptus punctata</i>	84	84	95	16	12	70	3b	10.1	3.2	REM	SULE/dev	V2		decay/fungus in trunk
T027	Sydney Peppermint	<i>Eucalyptus piperita</i>	28	28	35	8	4	85	2a	3.4	2.1	REM	development			
T028	Yew Pine	<i>Podocarpus macrophyllus</i>	11	11	30	4	5	70	2b	1.3	2.0	REM	development			
T029	Broad-leaved Paperbark	<i>Melaleuca quinquenervia</i>	40,34	52	65	9	7	75	2a	6.3	2.8	REM	development			
T030	Tallowwood	<i>Eucalyptus microcorys</i>	87	87	95	18	14	80	2a	10.4	3.2	REM	development	V2		
T031	Red Bloodwood	<i>Corymbia gummifera</i>	38	38	40	8	4	60	3c	4.6	2.3	REM	development			supressed, exposed wood at base
T032	Tallowwood	<i>Eucalyptus microcorys</i>	66	66	75	18	14	80	2a	7.9	2.9	REM	development	V2		
T033	Red Bloodwood	<i>Corymbia gummifera</i>	53	53	70	14	10	75	3b	6.4	2.8	REM	SULE/dev			possible termites, kino
T034	Yew Pine	<i>Podocarpus macrophyllus</i>	18	18	20	4	4	80	2a	2.2	1.7	REM	development			
T035	Yew Pine	<i>Podocarpus macrophyllus</i>	18	18	30	5	4	80	2a	2.2	2.0	RET				
T036	Norfolk Island Hibiscus	<i>Lagunaria patersonia</i>	70	70	70	16	10	75	2a	8.4	2.8	REM	development			
T037	Weeping Bottlebrush	<i>Callistemon viminalis</i>	20,13,14	28	35	5	5	70	2a	3.3	2.1	RET				
T038	Spotted Gum	<i>Corymbia maculata</i>	70	70	90	12	14	75	2a	8.4	3.2	REM	development	V3		
T039	Queensland Firewheel Tree	<i>Stenocarpus sinuatus</i>	18,10	21	25	6	5	70	2a	2.5	1.8	REM	development			
T040	Wallangarra White Gum	<i>Eucalyptus scoparia</i>	95	95	110	13	15	70	2a	11.4	3.4	REM	development	V3		
T041	Spotted Gum	<i>Corymbia maculata</i>	75	75	85	18	12	80	2a	9.0	3.1	REM	development	V2		
T042	Magenta Lilly Pilly	<i>Syzygium paniculatum</i>	11	11	14	6	3	80	2a	1.3	1.4	REM	development			
T043	Magenta Lilly Pilly	<i>Syzygium paniculatum</i>	16	16	18	6	4	65	2d	1.9	1.6	REM	development			grub nests
T044	Magenta Lilly Pilly	<i>Syzygium paniculatum</i>	13	13	15	6	4	65	2d	1.6	1.5	REM	development			grub nests
T045	Magenta Lilly Pilly	<i>Syzygium paniculatum</i>	24	24	26	7	6	70	2d	2.9	1.9	RET				grub nests

# Lot 1 DP1220196, 100 South Creek Road, CROMER

Tag No.	Common name	Scientific name	DBH (cm)	Calc DBH (cm)	BD (cm)	Height (m)	Spread (m)	Vigour (%)	SULE	TPZ radius (m)	SRZ radius (m)	Retain / remove	Reason for removal	Visual sig.	Habitat tree	Comments
T046	Lemon-scented Gum	<i>Corymbia citriodora</i>	85	85	95	17	14	70	4c	10.2	3.2	REM	SULE	V2		termites, split in trunk at base, kino
T047	Coast Banksia	<i>Banksia integrifolia</i>	15	15	17	6	3	70	2a	1.8	1.6	RET				
T048	Banksia	<i>Banksia sp.</i>	13,10	16	25	6	4	70	3b	2.0	1.8	REM	SULE			weak junction of trunks
T049	Banksia	<i>Banksia sp.</i>	20	20	23	7	4	75	2a	2.4	1.8	RET				
T050	Coast Banksia	<i>Banksia integrifolia</i>	12	12	14	5	3	70	2a	1.4	1.4	RET				
T051	Swamp Oak	<i>Casuarina glauca</i>	14	14	16	8	3	75	2a	1.7	1.5	RET				
T052	Spotted Gum	<i>Corymbia maculata</i>	34	34	45	11	7	75	2a	4.1	2.4	RET				
T053	Curracabah	<i>Acacia leiocalyx</i>	47	47	50	10	10	70	2a	5.6	2.5	REM	development			
T054	Smooth-barked Apple	<i>Angophora costata</i>	50	50	60	15	10	70	2a	6.0	2.7	REM	development			
T055	Bangalay	<i>Eucalyptus botryoides</i>	75	75	85	14	10	60	3b	9.0	3.1	REM	SULE/dev		Cat 3	poor health, lots small deadwood
T056	Smooth-barked Apple	<i>Angophora costata</i>	76	76	80	17	14	70	2d	9.1	3.0	RET		V2		crown off-centre
T057	Willow Bottlebrush	<i>Callistemon salignus</i>	28	28	30	7	4	70	2a	3.4	2.0	RET				
T058	Sydney Peppermint	<i>Eucalyptus piperita</i>	72,52	89	90	13	9	65	2d	10.7	3.2	RET				smaller trunk at 60°, exposed wood, epicormic gr
T059	Scribbly Gum	<i>Eucalyptus sclerophylla</i>	82	82	95	15	12	80	2a	9.8	3.2	REM	development	V3		crown off-centre
T060	Swamp Mahogany	<i>Eucalyptus robusta</i>	105	105	120	16	16	70	2d	12.6	3.6	REM	development	V2		small kino, exposed wood
T061	Scribbly Gum	<i>Eucalyptus sclerophylla</i>	50	50	48	12	8	60	3b	6.0	2.4	REM	SULE/dev			trunk at 50°, large exposed wood at base
T062	Bangalay	<i>Eucalyptus botryoides</i>	55	55	57	15	10	70	2a	6.6	2.6	REM	development			
T063	Norfolk Island Hibiscus	<i>Lagunaria patersonia</i>	53	53	65	12	10	80	2a	6.4	2.8	REM	development			
T064	Fiddlewood	<i>Citharexylum spinosum</i>	59	59	65	15	13	70	3b	7.1	2.8	REM	SULE			possible rot in trunk
T065	Bangalay	<i>Eucalyptus botryoides</i>	86	86	95	20	18	75	3b	10.3	3.2	REM	SULE/dev	V2		probable termites
T066	Eucalyptus	<i>Eucalyptus sp.</i>	55	55	70	14	10	60	2d	6.6	2.8	REM	development			dieback in crown, epicormic growth
T067	Bangalay	<i>Eucalyptus botryoides</i>	80	80	100	17	15	70	3b	9.6	3.3	REM	SULE/dev	V2		possible termite termites
T068	Frangipani	<i>Plumeria obtusa</i>	12,13, 10	20	20	4	5	50	4a	2.4	1.7	REM	SULE			declining
T069	Sydney Bluegum	<i>Eucalyptus saligna</i>	88	88	95	18	16	75	2a	10.6	3.2	REM	development	V2		
T070	Lemon-scented Tea Tree	<i>Leptospermum petersonii</i>	26	26	30	6	5	65	2a	3.1	2.0	RET				small deadwood
T071	Bangalay	<i>Eucalyptus botryoides</i>	47,33, 38	69	60	17	18	70	3b	8.3	2.7	REM	SULE/dev	V2		weak junction of trunks, possible termites, kino
T072	Tea Tree	<i>Leptosperum sp.</i>	17,16	23	35	6	7	65	3b	2.8	2.1	REM	SULE			poor structure, trunk at 50°
T073	Tea Tree	<i>Leptosperum sp.</i>	18,17, 15,15	33	40	7	6	80	2a	3.9	2.3	REM	development			
T074	Dagger plant	<i>Yucca aloifolia</i>	25,23, 11,10	37	65	6	7	80	2a	4.4	2.8	RET				
T075	Cottonwood	<i>Hibiscus tiliaceus</i>	45,15, 17,17, 18,12, 12,10	59	140	9	17	80	3b	7.1	3.8	REM	SULE/dev			overhanging branches
T076	Bangalay	<i>Eucalyptus botryoides</i>	113	113	120	20	18	70	3b	13.6	3.6	REM	SULE	V2		termites
T077	Bangalay	<i>Eucalyptus botryoides</i>	75	75	90	20	15	80	3b	9.0	3.2	REM	SULE/dev	V2		termites in bark
T078	Bangalay	<i>Eucalyptus botryoides</i>	94	94	105	17	16	75	4c	11.3	3.4	REM	SULE/dev	V2		rotten and termites in base
T079	Blueberry Ash	<i>Elaeocarpus reticulatus</i>	24	24	30	7	4	70	2a	2.9	2.0	REM	development			
T080	Blueberry Ash	<i>Elaeocarpus reticulatus</i>	24	24	30	8	5	75	2a	2.9	2.0	REM	development			
T081	Blueberry Ash	<i>Elaeocarpus reticulatus</i>	27	27	34	8	5	10	4a	3.2	2.1	REM	SULE			
T082	Bangalay	<i>Eucalyptus botryoides</i>	55	55	60	17	12	80	2a	6.6	2.7	REM	development			
T083	Smooth-barked Apple	<i>Angophora costata</i>	50	50	60	16	12	75	2d	6.0	2.7	REM	development		Cat 3	exposed wood at 3m
T084	Water Gum	<i>Tristaniopsis laurina</i>	13,12, 11	21	30	6	5	70	2a	2.5	2.0	RET				
T085	Bottlebrush	<i>Callistemon sp.</i>	18,18	25	35	6	4	60	3a	3.1	2.1	RET			Cat 3	supressed
T086	Bottlebrush	<i>Callistemon sp.</i>	20,20,	42	50	7	8	80	2a	5.1	2.5	REM	development			

# Lot 1 DP1220196, 100 South Creek Road, CROMER

Tag No.	Common name	Scientific name	DBH (cm)	Calc DBH (cm)	BD (cm)	Height (m)	Spread (m)	Vigour (%)	SULE	TPZ radius (m)	SRZ radius (m)	Retain / remove	Reason for removal	Visual sig.	Habitat tree	Comments
			20,16,14,11													
T087	Bottlebrush	<i>Callistemon sp.</i>	80	80	80	7	7	80	2a	9.6	3.0	REM	development			
T088	Norfolk Island Hibiscus	<i>Lagunaria patersonia</i>	34,17,25,25	52	55	7	5	60	2d	6.2	2.6	REM	development			poorly pruned
T089	Norfolk Island Hibiscus	<i>Lagunaria patersonia</i>	15,15,10	23	35	6	5	70	2d	2.8	2.1	REM	development			
T090	Norfolk Island Hibiscus	<i>Lagunaria patersonia</i>	16	16	20	7	3	60	4a	1.9	1.7	REM	SULE/dev			declining
T091	Norfolk Island Hibiscus	<i>Lagunaria patersonia</i>	20,10	22	40	7	5	70	3b	2.7	2.3	REM	SULE/dev		Cat 3	exposed wood at base
T092	Norfolk Island Hibiscus	<i>Lagunaria patersonia</i>	26,20,13,12	37	50	8	7	75	2a	4.5	2.5	REM	development			
T093	Brush Box	<i>Lophostemon confertus</i>	76	76	90	9	9	80	2a	9.1	3.2	REM	development			
T094	Kaffir Plum	<i>Harpephyllum caffrum</i>	94	94	130	14	16	75	2a	11.3	3.7	REM	development	V3		
T095	Broad-leaved Paperbark	<i>Melaleuca quinquenervia</i>	17,19	25	40	5	5	60	4c	3.1	2.3	REM	SULE			trunk at 30°
T096	Bottlebrush	<i>Callistemon sp.</i>	26	26	35	6	5	70	2d	3.1	2.1	RET				dead branches to remove
T097	Tallowwood	<i>Eucalyptus microcorys</i>	72	72	85	18	12	70	2a	8.6	3.1	REM	development	V2		
T098	Tallowwood	<i>Eucalyptus microcorys</i>	70	70	85	18	12	75	2a	8.4	3.1	RET		V2		
T099	Curracabah	<i>Acacia leiocalyx</i>	55	55	65	7	8	70	2a	6.6	2.8	RET				
T100	Bottlebrush	<i>Callistemon sp.</i>	13,18	22	40	7	7	70	2a	2.7	2.3	RET				
T101	Bangalay	<i>Eucalyptus botryoides</i>	89	89	90	20	15	80	2a	10.7	3.2	RET		V2		
T102	Bangalay	<i>Eucalyptus botryoides</i>	80	80	95	18	14	75	2a	9.6	3.2	RET		V2		
T103	Bangalay	<i>Eucalyptus botryoides</i>	80	80	100	17	16	75	2a	9.6	3.3	RET		V2		
T104	Camphor Laurel	<i>Cinnamomum camphora</i>	84,79,120,53,76,43	195	170	17	19	80	2a	23.4	4.1	RET		V2		
T105	Willow Bottlebrush	<i>Callistemon salignus</i>	23	23	30	7	4	65	2a	2.8	2.0	RET				
T106	Bangalay	<i>Eucalyptus botryoides</i>	73	73	80	20	17	70	2a	8.8	3.0	RET		V2		
T107	Bangalay	<i>Eucalyptus botryoides</i>	37	37	43	10	8	55	3c	4.4	2.3	RET				supressed
T108	Red Bloodwood	<i>Corymbia gummifera</i>	32	32	50	10	6	60	3c	3.8	2.5	RET				supressed
T109	Smooth-barked Apple	<i>Angophora costata</i>	27	27	30	7	3	50	4a	3.2	2.0	REM	SULE/dev			declining, borers, kino
T110	Red Bloodwood	<i>Corymbia gummifera</i>	60	60	75	15	10	70	2a	7.2	2.9	REM	development			
T111	Melaleuca sp.	<i>Melaleuca sp.</i>	20,15	25	30	5	5	60	3c	3.0	2.0	REM	development			supressed
T112	Weeping Bottlebrush	<i>Callistemon viminalis</i>	30	30	40	7	6	65	2a	3.6	2.3	REM	development			
T113	Sikly Oak	<i>Grevillea robusta</i>	40	40	50	10	5	65	2a	4.8	2.5	RET				
T114	Sikly Oak	<i>Grevillea robusta</i>	18	18	25	6	4	65	2a	2.2	1.8	RET				
T115	Sikly Oak	<i>Grevillea robusta</i>	32	32	36	11	6	70	2a	3.8	2.2	RET				
T116	Scribbly Gum	<i>Eucalyptus sclerophylla</i>	16,13	21	32	4	4	60	3b	2.5	2.1	REM	SULE/dev			poor structure , exposed wood at base
T117	Swamp Mahogany	<i>Eucalyptus robusta</i>	88	88	100	15	16	80	2a	10.6	3.3	RET		V3		
T118	Spotted Gum	<i>Corymbia maculata</i>	22	22	24	7	3	65	3b	2.6	1.8	REM	SULE			borers, kino
T119	Broad-leaved Paperbark	<i>Melaleuca quinquenervia</i>	108	108	100	14	12	65	4d	13.0	3.3	REM	SULE/dev	V3		trunk damaged from lost limb
T120	Swamp Oak	<i>Casuarina glauca</i>	90	90	90	16	12	70	2a	10.8	3.2	REM	development	V2		
T121	Bangalay	<i>Eucalyptus botryoides</i>	100	100	110	20	18	70	2d	12.0	3.4	REM	development	V2	Cat 3	exposed wood from lost limbs, small kino at2m
T122	<i>Agonis flexuosa</i>	<i>Agonis flexuosa</i>	32,18,18,16,13,12	47	75	5	9	70	2d	5.7	2.9	REM	development			med-large deadwood
T123	<i>Agonis flexuosa</i>	<i>Agonis flexuosa</i>	140	140	130	10	12	75	2a	16.8	3.7	REM	development			
T124	Bangalay	<i>Eucalyptus botryoides</i>	24,24	34	40	11	6	85	2a	4.1	2.3	REM	development			
T125	Lemon-scented Gum	<i>Corymbia citriodora</i>	18,13	22	28	8	4	75	3b	2.7	1.9	REM	SULE/dev			divided trunk, weak junction
T126	Lemon-scented Gum	<i>Corymbia citriodora</i>	25	25	30	8	4	80	3c	3.0	2.0	REM	development			kino at 2m, possible borers



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Tag No.	Common name	Scientific name	DBH (cm)	Calc DBH (cm)	BD (cm)	Height (m)	Spread (m)	Vigour (%)	SULE	TPZ radius (m)	SRZ radius (m)	Retain / remove	Reason for removal	Visual sig.	Habitat tree	Comments
T127	Bangalay	<i>Eucalyptus botryoides</i>	11	11	13	6	3	70	3a	1.3	1.4	REM	development			supressed but should grow well if T126 removed
T128	Lemon-scented Gum	<i>Corymbia citriodora</i>	12	12	15	9	3	70	2a	1.4	1.5	REM	development			slightly supressed
T129	Swamp Oak	<i>Casuarina glauca</i>	15	15	17	12	3	65	2a	1.8	1.6	REM	development			
T130	Swamp Oak	<i>Casuarina glauca</i>	11	11	14	9	3	60	2c	1.3	1.4	REM	development			supressed
T131	Swamp Oak	<i>Casuarina glauca</i>	25	25	30	14	4	65	2a	3.0	2.0	REM	development			supressed
T132	Lemon-scented Gum	<i>Corymbia citriodora</i>	12	12	15	7	3	65	4c	1.4	1.5	REM	SULE			large kino at 1m, probable borers
T133	Swamp Oak	<i>Casuarina glauca</i>	13	13	18	10	3	65	2a	1.6	1.6	RET				supressed
T134	Swamp Oak	<i>Casuarina glauca</i>	11	11	13	10	2	60	3c	1.3	1.4	RET				supressed
T135	Bangalay	<i>Eucalyptus botryoides</i>	17,14	22	35	12	6	70	3b	2.6	2.1	REM	SULE			divided trunk, weak junction
T136	Lemon-scented Gum	<i>Corymbia citriodora</i>	12	12	14	7	3	65	3c	1.4	1.4	RET				kino at base, supressed
T137	Flax-leaved Paperbark	<i>Melaleuca linariifolia</i>	17	17	19	5	3	65	2d	2.0	1.6	RET				crown off-centre
T138	Lemon-scented Gum	<i>Corymbia citriodora</i>	23	23	30	12	7	70	2a	2.8	2.0	RET				
T139	Swamp Oak	<i>Casuarina glauca</i>	23	23	30	13	5	70	2a	2.8	2.0	RET				
T140	Lemon-scented Gum	<i>Corymbia citriodora</i>	21	21	24	13	5	65	3b	2.5	1.8	REM	SULE			borers & large kino at 2m
T141	Swamp Oak	<i>Casuarina glauca</i>	25	25	28	17	6	75	2a	3.0	1.9	RET				
T142	Flax-leaved Paperbark	<i>Melaleuca linariifolia</i>	12	12	18	4	3	65	2a	1.4	1.6	RET				
T143	Flax-leaved Paperbark	<i>Melaleuca linariifolia</i>	17	17	22	5	4	65	2a	2.0	1.8	RET				
T144	Swamp Oak	<i>Casuarina glauca</i>	27	27	32	17	7	70	2a	3.2	2.1	RET				
T145	Swamp Oak	<i>Casuarina glauca</i>	22	22	23	16	6	75	2a	2.6	1.8	RET				
T146	Swamp Oak	<i>Casuarina glauca</i>	21	21	23	8	4	60	2d	2.5	1.8	RET				heavily & unevenly pruned
T147	Swamp Oak	<i>Casuarina glauca</i>	16	16	19	12	3	70	2a	1.9	1.6	RET				
T148	Water Gum	<i>Tristania laurina</i>	16	16	22	10	4	60	2d	1.9	1.8	RET			Cat 3	supressed, med deadwood
T149	Red Bloodwood	<i>Corymbia gummifera</i>	60	60	80	18	18	70	2d	7.2	3.0	REM	development			overhanging branch
T150	Diamond-leaf Pittosporum	<i>Auranticarpa rhombifolia</i>	25,15	29	35	8	5	70	2a	3.5	2.1	REM	development			small deadwood
T151	Bangalay	<i>Eucalyptus botryoides</i>	46	46	55	15	15	70	2d	5.5	2.6	REM	development			overhanging branch, crown slightly off-centre
T152	Swamp Oak	<i>Casuarina glauca</i>	80	80	80	15	12	70	4c	9.6	3.0	REM	SULE/dev	V3		trunk at 45°
T153	Swamp Oak	<i>Casuarina glauca</i>	58	58	70	18	14	75	2a	7.0	2.8	REM	development			
T154	stag	<i>stag</i>	76	76	80	3	1	0	4a	9.1	3.0	REM	SULE/dev		Cat 3	
T155	Swamp Oak	<i>Casuarina glauca</i>	22	22	25	15	4	80	2a	2.6	1.8	REM	development			
T156	Lemon-scented Gum	<i>Corymbia citriodora</i>	36	36	40	12	8	80	2a	4.3	2.3	REM	development			
T157	Lemon-scented Gum	<i>Corymbia citriodora</i>	13	13	18	5	3	60	2a	1.6	1.6	REM	development			
T158	Lemon-scented Gum	<i>Corymbia citriodora</i>	28	28	34	11	6	80	2a	3.4	2.1	REM	development			
T159	Lemon-scented Gum	<i>Corymbia citriodora</i>	15	15	18	7	3	65	3b	1.8	1.6	REM	SULE/dev			kino & possible borers at base
T160	Lemon-scented Gum	<i>Corymbia citriodora</i>	14,13	19	20	6	4	70	3b	2.3	1.7	REM	SULE/dev			divided trunk, weak junction
T161	Lemon-scented Gum	<i>Corymbia citriodora</i>	12	12	13	7	4	70	3a	1.4	1.4	REM	development			small kino at base
T162	Bangalay	<i>Eucalyptus botryoides</i>	15	15	17	9	5	85	2a	1.8	1.6	REM	development			
T163	Red Ironbark	<i>Eucalyptus sideroxylon</i>	56	56	60	10	12	65	2a	6.7	2.7	REM	development			small deadwood
T164	Flax-leaved Paperbark	<i>Melaleuca linariifolia</i>	15	15	16	5	5	70	2a	1.8	1.5	REM	development			
T165	Lemon-scented Gum	<i>Corymbia citriodora</i>	57	57	80	17	15	80	2d	6.8	3.0	REM	development			overhanging branches
T166	Flax-leaved Paperbark	<i>Melaleuca linariifolia</i>	18	18	24	4	5	70	2a	2.2	1.8	REM	development			
T167	Flax-leaved Paperbark	<i>Melaleuca linariifolia</i>	12	12	14	4	4	65	3a	1.4	1.4	REM	development			supressed
T168	Heath-leaved Banksia	<i>Banksia ericifolia</i>	10	10	20	4	3	55	4a	1.2	1.7	REM	SULE/dev			declining
T169	Grevillea	<i>Grevillea sp.</i>	20	20	38	4	4	70	2a	2.4	2.2	REM	development			
T170	stag	<i>stag</i>	20,30,20	41	45	14	5	0	4a	4.9	2.4	REM	SULE		Cat 3	
T171	Smooth-barked Apple	<i>Angophora costata</i>	45,40	60	70	17	15	70	2a	7.2	2.8	RET		V2		small deadwood

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Tag No.	Common name	Scientific name	DBH (cm)	Calc DBH (cm)	BD (cm)	Height (m)	Spread (m)	Vigour (%)	SULE	TPZ radius (m)	SRZ radius (m)	Retain / remove	Reason for removal	Visual sig.	Habitat tree	Comments
T172	Camphor Laurel	<i>Cinnamomum camphora</i>	84	84	95	15	10	65	3c	10.1	3.2	RET				crown off-centre
T173	Sydney Peppermint	<i>Eucalyptus piperita</i>	36	36	45	15	8	30	4a	4.3	2.4	RET			Cat 3	declining / supressed
T174	Camphor Laurel	<i>Cinnamomum camphora</i>	10	10	16	10	3	70	3c	1.2	1.5	RET				
T175	Swamp Oak	<i>Casuarina glauca</i>	38	38	48	18	7	70	2a	4.6	2.4	RET				
T176	Swamp Oak	<i>Casuarina glauca</i>	54	54	70	18	6	70	2a	6.5	2.8	REM	development			slightly supressed
T177	Swamp Oak	<i>Casuarina glauca</i>	46	46	55	18	8	70	3c	5.5	2.6	REM	development			
T178	Swamp Oak	<i>Casuarina glauca</i>	37	37	40	18	6	70	2a	4.4	2.3	REM	development			supressed
T179	Bottlebrush	<i>Callistemon sp.</i>	28	28	30	10	4	70	2a	3.4	2.0	RET				
T180	Bottlebrush	<i>Callistemon sp.</i>	12	12	15	7	3	60	3a	1.4	1.5	REM	development			
T181	Swamp Oak	<i>Casuarina glauca</i>	40	40	45	10	8	70	3b	4.8	2.4	REM	SULE/dev			crown off-centre, trunk kinked
T182	Smooth-barked Apple	<i>Angophora costata</i>	13	13	17	8	3	70	2a	1.6	1.6	REM	development			
T183	Swamp Oak	<i>Casuarina glauca</i>	20	20	24	9	4	65	2a	2.4	1.8	RET				
T184	Swamp Oak	<i>Casuarina glauca</i>	25	25	30	9	4	70	2a	3.0	2.0	RET				
T185	Swamp Oak	<i>Casuarina glauca</i>	33	33	36	9	5	75	2a	4.0	2.2	RET				
T186	Broad-leaved Paperbark	<i>Melaleuca quinquenervia</i>	21,28,36,39	64	60	7	9	65	2d	7.6	2.7	REM	development			overhanging branches
T187	Cockspur Coral Tree	<i>Erythrina crista-galli</i>	23	23	30	9	4	55	3c	2.8	2.0	RET				
T188	Cypress	<i>Cupressus sp.</i>	12	12	14	4	2	50	4a	1.4	1.4	REM	SULE			declining
T189	Camphor Laurel	<i>Cinnamomum camphora</i>	30,48,50	76	100	15	13	70	2a	9.1	3.3	RET		V3		
T190	Coral Tree	<i>Erythrina x sykesii</i>	93	93	120	13	12	60	4c	11.2	3.6	REM	SULE	V3	Cat2	exposed rotten wood at base
T191	Coral Tree	<i>Erythrina x sykesii</i>	18,13	22	45	4	3	55	3b	2.7	2.4	REM	SULE		Cat 3	exposed rotten wood at base
T192	Coral Tree	<i>Erythrina x sykesii</i>	40,26	48	50	8	7	60	3b	5.7	2.5	REM	SULE			exposed wood at 1m
T193	Coral Tree	<i>Erythrina x sykesii</i>	92	92	90	9	8	60	3b	11.0	3.2	REM	SULE			exposed rotten wood at 1-2m
T194	Coral Tree	<i>Erythrina x sykesii</i>	48,35	59	60	10	7	60	4c	7.1	2.7	REM	SULE		Cat 3	exposed rotten wood in trunk
T195	Coral Tree	<i>Erythrina x sykesii</i>	33	33	16	8	4	50	4c	4.0	1.5	REM	SULE			exposed rotten wood in trunk
T196	Coral Tree	<i>Erythrina x sykesii</i>	55,50	74	120	15	14	70	2d	8.9	3.6	RET		V3	Cat2	overhanging branches
T197a	Spotted Gum	<i>Corymbia maculata</i>	27	27	30	13	14	70	2a	3.2	2.0	RET				
T197b	Camphor Laurel	<i>Cinnamomum camphora</i>	120	120	150	20	17	80	2a	14.4	3.9	RET		V2		
T198	Black She-oak	<i>Allocasuarina littoralis</i>	38,14	40	48	16	7	60	3a	4.9	2.4	RET				crown off-centre, supressed
T199	Camphor Laurel	<i>Cinnamomum camphora</i>	72	72	90	17	15	80	2a	8.6	3.2	RET		V2		
T200	Sydney Peppermint	<i>Eucalyptus piperita</i>	86	86	90	20	16	70	3b	10.3	3.2	RET		V2		exposed wood at base
T201	Camphor Laurel	<i>Cinnamomum camphora</i>	39	39	50	17	12	80	2a	4.7	2.5	RET				
T202	Camphor Laurel	<i>Cinnamomum camphora</i>	22,26	34	40	16	8	70	3b	4.1	2.3	RET				supressed, double trunk
T203	Flame Tree	<i>Brachychiton acerifolius</i>	33	33	30	15	5	75	3b	4.0	2.0	RET				poor trunk structure
T204	Flame Tree	<i>Brachychiton acerifolius</i>	39	39	45	17	6	70	2a	4.7	2.4	RET				
T205	Flame Tree	<i>Brachychiton acerifolius</i>	36	36	40	16	6	70	2c	4.3	2.3	RET				narrow crown
T206	Camphor Laurel	<i>Cinnamomum camphora</i>	95	95	110	18	17	80	3b	11.4	3.4	RET		V2		divided trunk, leaning crown
T207	Camphor Laurel	<i>Cinnamomum camphora</i>	70	70	80	16	12	70	2c	8.4	3.0	RET		V2		supressed
T208	Camphor Laurel	<i>Cinnamomum camphora</i>	55	55	70	16	14	75	2a	6.6	2.8	RET				
T209	Camphor Laurel	<i>Cinnamomum camphora</i>	24	24	28	13	4	65	3b	2.9	1.9	RET				crown offcentre
T210	Camphor Laurel	<i>Cinnamomum camphora</i>	17	17	18	8	5	60	3c	2.0	1.6	RET				supressed
T211	Christmas Bush	<i>Ceratopetalum gummiferum</i>	18	18	20	12	5	60	3b	2.2	1.7	RET				trunk at 70deg, crown offcentre
T212	Christmas Bush	<i>Ceratopetalum gummiferum</i>	25	25	28	12	7	60	2c	3.0	1.9	RET				supressed, crown offcentre
T213	Christmas Bush	<i>Ceratopetalum gummiferum</i>	28	28	45	15	8	70	2a	3.4	2.4	RET				

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Tag No.	Common name	Scientific name	DBH (cm)	Calc DBH (cm)	BD (cm)	Height (m)	Spread (m)	Vigour (%)	SULE	TPZ radius (m)	SRZ radius (m)	Retain / remove	Reason for removal	Visual sig.	Habitat tree	Comments
T214	Blueberry Ash	<i>Elaeocarpus reticulatus</i>	28	28	34	7	3	40	4a	3.4	2.1	RET				
T215	Blueberry Ash	<i>Elaeocarpus reticulatus</i>	12	12	13	8	3	70	2a	1.4	1.4	RET				
T216	Smooth-barked Apple	<i>Angophora costata</i>	55	55	55	20	12	70	4c	6.6	2.6	RET				trunk at 60deg
T217	Flame Tree	<i>Brachychiton acerifolius</i>	12	12	12	11	5	80	2a	1.4	1.4	RET				
T218	Bangalow Plam	<i>Archontophoenix cunninghamiana</i>	23	23	26	6	3	80	2a	2.8	1.9	RET				
T219	Swamp Oak	<i>Casuarina glauca</i>	23	23	28	10	4	60	3a	2.8	1.9	RET				
T220	Forest Oak	<i>Allocasuarina torulosa</i>	34	34	38	16	6	65	2a	4.1	2.2	RET				
T221	Camphor Laurel	<i>Cinnamomum camphora</i>	13	13	16	7	4	70	3b	1.6	1.5	RET				divided trunk
T222	stag	<i>stag</i>	75	75	95	4	2	0	4a	9.0	3.2	RET			Cat 2	
T223	Forest Oak	<i>Allocasuarina torulosa</i>	40,17	43	55	20	12	70	2d	5.2	2.6	RET				broken branches
T224	Traveller's Palm	<i>Ravenala madagascariensis</i>	12,12,12,12	24	45	5	4	85	2a	2.9	2.4	RET				
T225	Crabapple	<i>Schizomeria ovata</i>	42	42	48	14	4	65	3b	5.0	2.4	RET				poor structure
T226	Crabapple	<i>Schizomeria ovata</i>	35	35	37	14	8	70	2a	4.2	2.2	RET				possum drey?
T227	Crabapple	<i>Schizomeria ovata</i>	13	13	16	7	3	60	3b	1.6	1.5	RET				supressed, failed leader
T228	Camphor Laurel	<i>Cinnamomum camphora</i>	12,12	17	35	12	6	80	3b	2.0	2.1	RET				divided trunk
T229	Forest Oak	<i>Allocasuarina torulosa</i>	22	22	35	10	3	40	4a	2.6	2.1	RET				declining
T230	Sydney Peppermint	<i>Eucalyptus piperita</i>	55	55	65	11	3	40	4c	6.6	2.8	RET			Cat 2	regrown from old trunk, rot, exposed wood, termites
T231	Smooth-barked Apple	<i>Angophora costata</i>	46	46	47	16	12	80	2a	5.5	2.4	RET				
T232	Camphor Laurel	<i>Cinnamomum camphora</i>	53	53	56	16	10	80	2a	6.4	2.6	RET				
T233	Sydney Peppermint	<i>Eucalyptus piperita</i>	70	70	75	17	6	25	4a	8.4	2.9	RET				
T234	stag	<i>stag</i>	15	15	16	8	1	0	4a	1.8	1.5	RET				
T235	Camphor Laurel	<i>Cinnamomum camphora</i>	15	15	20	10	3	70	2a	1.8	1.7	RET				
T236	Forest Oak	<i>Allocasuarina torulosa</i>	20	20	35	8	3	65	3b	2.4	2.1	RET				exposed wood at base
T237	Camphor Laurel	<i>Cinnamomum camphora</i>	13	13	25	12	4	70	3b	1.6	1.8	RET				divided trunk
T238	Camphor Laurel	<i>Cinnamomum camphora</i>	19	19	23	10	3	75	2a	2.3	1.8	RET				
T239	Swamp Oak	<i>Casuarina glauca</i>	28	28	30	13	5	70	2a	3.4	2.0	RET				
T240	Bangalay	<i>Eucalyptus botryoides</i>	50	50	55	20	12	80	2a	6.0	2.6	RET				
T241	Lilly Pilly	<i>Syzygium sp.</i>	58	58	60	16	12	80	2a	7.0	2.7	RET				
T242	Cheese Tree	<i>Glochidion ferdinandi</i>	44	44	50	16	12	75	2a	5.3	2.5	RET				
T243	Lemon Myrtle	<i>Backhousia citriodora</i>	12	12	16	6	3	80	2a	1.4	1.5	RET				
T244	Flax-leaved Paperbark	<i>Melaleuca linariifolia</i>	19,18,15	30	30	7	4	70	2a	3.6	2.0	RET				
T245	Rough-barked Apple	<i>Angophora floribunda</i>	22	22	25	8	2	30	4a	2.6	1.8	RET				declining
T246	Lemon Myrtle	<i>Backhousia citriodora</i>	12	12	14	6	2	75	2a	1.4	1.4	RET				
T247	Coast Banksia	<i>Banksia integrifolia</i>	21	21	30	8	3	75	2a	2.5	2.0	RET				
T248	stag	<i>stag</i>	13	13	18	6	2	0	4a	1.6	1.6	RET				
T249	Bangalay	<i>Eucalyptus botryoides</i>	38	38	40	13	8	70	2a	4.6	2.3	RET				
T250	stag	<i>stag</i>	17	17	20	6	3	0	4a	2.0	1.7	RET				
T251	Smooth-barked Apple	<i>Angophora costata</i>	20	20	22	14	6	70	4c	2.4	1.8	RET				damaged at base
T252	Swamp Oak	<i>Casuarina glauca</i>	28	28	33	17	8	70	2a	3.4	2.1	RET				
T253	Flame Tree	<i>Brachychiton acerifolius</i>	34,34	48	50	13	8	80	3b	5.8	2.5	RET				divided trunk
T254	Woody Pear	<i>Xylomelum pyriforme</i>	27	27	30	8	2	40	4a	3.2	2.0	RET				declining
T255	Flame Tree	<i>Brachychiton acerifolius</i>	28,21,20	40	40	12	7	80	3b	4.8	2.3	RET				divided trunk
T256	Woody Pear	<i>Xylomelum pyriforme</i>	21,15	26	30	10	7	60	3b	3.1	2.0	RET				divided trunk



# Lot 1 DP1220196, 100 South Creek Road, CROMER

Tag No.	Common name	Scientific name	DBH (cm)	Calc DBH (cm)	BD (cm)	Height (m)	Spread (m)	Vigour (%)	SULE	TPZ radius (m)	SRZ radius (m)	Retain / remove	Reason for removal	Visual sig.	Habitat tree	Comments
T257	Flax-leaved Paperbark	<i>Melaleuca linariifolia</i>	22	22	30	5	5	70	2a	2.6	2.0	RET				
T258	Rough-barked Apple	<i>Angophora floribunda</i>	18	18	23	5	5	50	4a	2.2	1.8	RET				declining, supressed
T259	Coast Banksia	<i>Banksia integrifolia</i>	17	17	20	6	4	65	2a	2.0	1.7	RET				
T260	Brush Box	<i>Lophostemon confertus</i>	80	80	85	18	12	75	2a	9.6	3.1	RET		V2		
T261	Brush Box	<i>Lophostemon confertus</i>	53	53	58	13	8	75	2a	6.4	2.6	RET				
T262	Brush Box	<i>Lophostemon confertus</i>	87	87	87	18	16	80	2a	10.4	3.1	RET		V2		
T263	Broad-leaved Paperbark	<i>Melaleuca quinquenervia</i>	102	102	100	16	12	70	2d	12.2	3.3	RET		V2		exposed wood in lowest branch
T264	Coral Tree	<i>Erythrina x sykesii</i>	26	26	40	8	8	65	4c	3.1	2.3	RET				rot at base
T265	Woody Pear	<i>Xylomelum pyriforme</i>	49,38	62	90	18	15	70	2d	7.4	3.2	RET		V2		larger trunk damaged at base
T266	stag	<i>stag</i>	20	20	22	8	3	0	4a	2.4	1.8	RET				
T267	Broad-leaved Paperbark	<i>Melaleuca quinquenervia</i>	20	20	35	8	2	65	2a	2.4	2.1	RET				
T268	Smooth-barked Apple	<i>Angophora costata</i>	85	85	85	16	12	70	2d	10.2	3.1	RET		V2		med deadwood, crown offcentre
T269	Swamp Oak	<i>Casuarina glauca</i>	19	19	22	10	3	70	2a	2.3	1.8	RET				
T270	Spotted Gum	<i>Corymbia maculata</i>	87	87	94	18	14	80	3b	10.4	3.2	RET		V2		split in trunk
T271	Brush Box	<i>Lophostemon confertus</i>	44	44	46	12	8	70	2a	5.3	2.4	RET				
T272	Bangalay	<i>Eucalyptus botryoides</i>	53	53	53	16	13	75	4c	6.4	2.5	RET				trunk at 60deg
T273	Bangalay	<i>Eucalyptus botryoides</i>	38	38	40	12	8	65	4c	4.6	2.3	RET				trunk at 60deg
T274	Bangalay	<i>Eucalyptus botryoides</i>	43,22	48	45	13	10	70	3a	5.8	2.4	RET				crown offcentre
T275	Brush Box	<i>Lophostemon confertus</i>	82	82	87	16	10	80	2a	9.8	3.1	RET				
T276	Turpentine	<i>Syncarpia glomulifera</i>	60	60	65	8	6	70	2a	7.2	2.8	RET				
T277	Coast Banksia	<i>Banksia integrifolia</i>	12	12	14	6	3	65	3a	1.4	1.4	RET				exposed wood at base
T278	Lemon-scented Gum	<i>Corymbia citriodora</i>	84	84	84	24	17	70	2d	10.1	3.1	RET		V2		some overhanging branches
T279	Turpentine	<i>Syncarpia glomulifera</i>	86	86	88	17	10	70	2a	10.3	3.1	RET				
T280	Turpentine	<i>Syncarpia glomulifera</i>	52	52	53	10	8	70	2a	6.2	2.5	RET				
T281	Lemon-scented Gum	<i>Corymbia citriodora</i>	62	62	64	22	16	80	2a	7.4	2.7	RET		V2		
T282	Turpentine	<i>Syncarpia glomulifera</i>	14,10	17	18	12	3	70	3a	2.1	1.6	RET				divided trunk
T283	Lemon-scented Gum	<i>Corymbia citriodora</i>	23	23	25	12	6	70	3b	2.8	1.8	RET				split in trunk
T284	Lemon-scented Gum	<i>Corymbia citriodora</i>	28	28	30	8	5	65	3b	3.4	2.0	RET				split in trunk, crown offcentre
T285	Cheese Tree	<i>Glochidion ferdinandi</i>	12,12, 11,11	23	30	8	5	40	4a	2.8	2.0	RET				declining
T286	Brush Box	<i>Lophostemon confertus</i>	65	65	65	15	8	70	2a	7.8	2.8	RET				
T287	Cheese Tree	<i>Glochidion ferdinandi</i>	36,25, 15	46	45	12	6	70	2a	5.6	2.4	RET				slightly supressed
T288	Lemon-scented Gum	<i>Corymbia citriodora</i>	18	18	20	10	4	70	2a	2.2	1.7	RET				
T289	Lemon-scented Gum	<i>Corymbia citriodora</i>	41	41	43	15	6	70	2a	4.9	2.3	RET				
T290	Camphor Laurel	<i>Cinnamomum camphora</i>	73	73	78	18	12	70	4c	8.8	3.0	RET		V2		deadwood at base
T291	Lemon-scented Gum	<i>Corymbia citriodora</i>	80	80	90	22	16	70	3b	9.6	3.2	RET		V2		fungus
T292	Turpentine	<i>Syncarpia glomulifera</i>	40	40	40	9	6	50	4a	4.8	2.3	RET				declining supressed
T293	Lemon-scented Gum	<i>Corymbia citriodora</i>	84	84	85	22	14	70	3b	10.1	3.1	RET		V2		wound in trunk at 8m
T294	Lemon-scented Gum	<i>Corymbia citriodora</i>	63	63	65	20	14	70	3c	7.6	2.8	RET		V2		small splits in trunk, crown offcentre
T295	Blueberry Ash	<i>Elaeocarpus reticulatus</i>	14	14	16	8	3	60	3a	1.7	1.5	RET				
T296	Flame Tree	<i>Brachychiton acerifolius</i>	35	35	37	15	4	80	2a	4.2	2.2	RET				
T297	Swamp Mahogany	<i>Eucalyptus robusta</i>	67	67	69	17	12	70	2a	8.0	2.8	RET		V2		
T298	Turpentine	<i>Syncarpia glomulifera</i>	43	43	45	8	4	60	3c	5.2	2.4	RET				crown offcentre
T299	Turpentine	<i>Syncarpia glomulifera</i>	130	130	120	20	15	70	2a	15.6	3.6	RET		V2		
T300	Turpentine	<i>Syncarpia glomulifera</i>	60	60	65	15	8	70	2a	7.2	2.8	RET				

Lot 1 DP1220196, 100 South Creek Road, CROMER

Tag No.	Common name	Scientific name	DBH (cm)	Calc DBH (cm)	BD (cm)	Height (m)	Spread (m)	Vigour (%)	SULE	TPZ radius (m)	SRZ radius (m)	Retain / remove	Reason for removal	Visual sig.	Habitat tree	Comments
T301	Lemon-scented Gum	<i>Corymbia citriodora</i>	16	16	17	8	3	70	2a	1.9	1.6	RET				
T302	Coast Banksia	<i>Banksia integrifolia</i>	18	18	20	8	3	70	2a	2.2	1.7	RET				
T303	Diamond-leaf Pittosporum	<i>Auranticarpa rhombifolia</i>	15	15	17	7	2	80	2a	1.8	1.6	RET				
T304	Lemon-scented Gum	<i>Corymbia citriodora</i>	103	103	120	20	16	80	2a	12.4	3.6	RET		V2		

**Note 1: Visual Significance**

V1 – High significance typically >25m height/ >20m spread / >600mm DBH – Large emergent tree  
V2 – Moderate significance generally 15-25m height/ >10m spread>600mm DBH – Prominent tree typically with a large spread  
V3 – Low significance >10m height/ >10m spread>600mm DBH –Typically a visually attractive low tree with large spread and DBH

**Note 2: Habitat Trees**

The habitat trees recorded within the study area fall under one of three categories:

Category 1: Significant habitat trees (high):

- Large hollow suitable for cockatoos or large forest owls >30cm and/or
- Trees containing two (2) or more good quality medium hollows 10-30cm and/or
- >8 small hollows

Category 2: Significant habitat trees (moderate)

- Trees containing one medium hollow 10-30cm and/or
- 3-8 small hollows

Category 3: Remaining hollow bearing trees generally containing small or low numbers of hollows

**Note 3: SULE Rating (refer to detailed breakdown in Schedule 3)**

- |                 |  |
|-----------------|--|
| <b>1A to 1C</b> | Trees that appear to be retainable at the time of assessment with more than 40 years life expectancy with acceptable risk. |
| <b>2A to 2D</b> | Trees that appear to be retainable at the time of assessment with 15-40 years life expectancy with acceptable risk.        |
| <b>3A to 3D</b> | Trees that appear to be retainable at the time of assessment with 5-15 years life expectancy with acceptable risk.         |
| <b>4A to 4F</b> | Trees with a high level of risk and should be removed within 5 years.  |



# Schedule 2

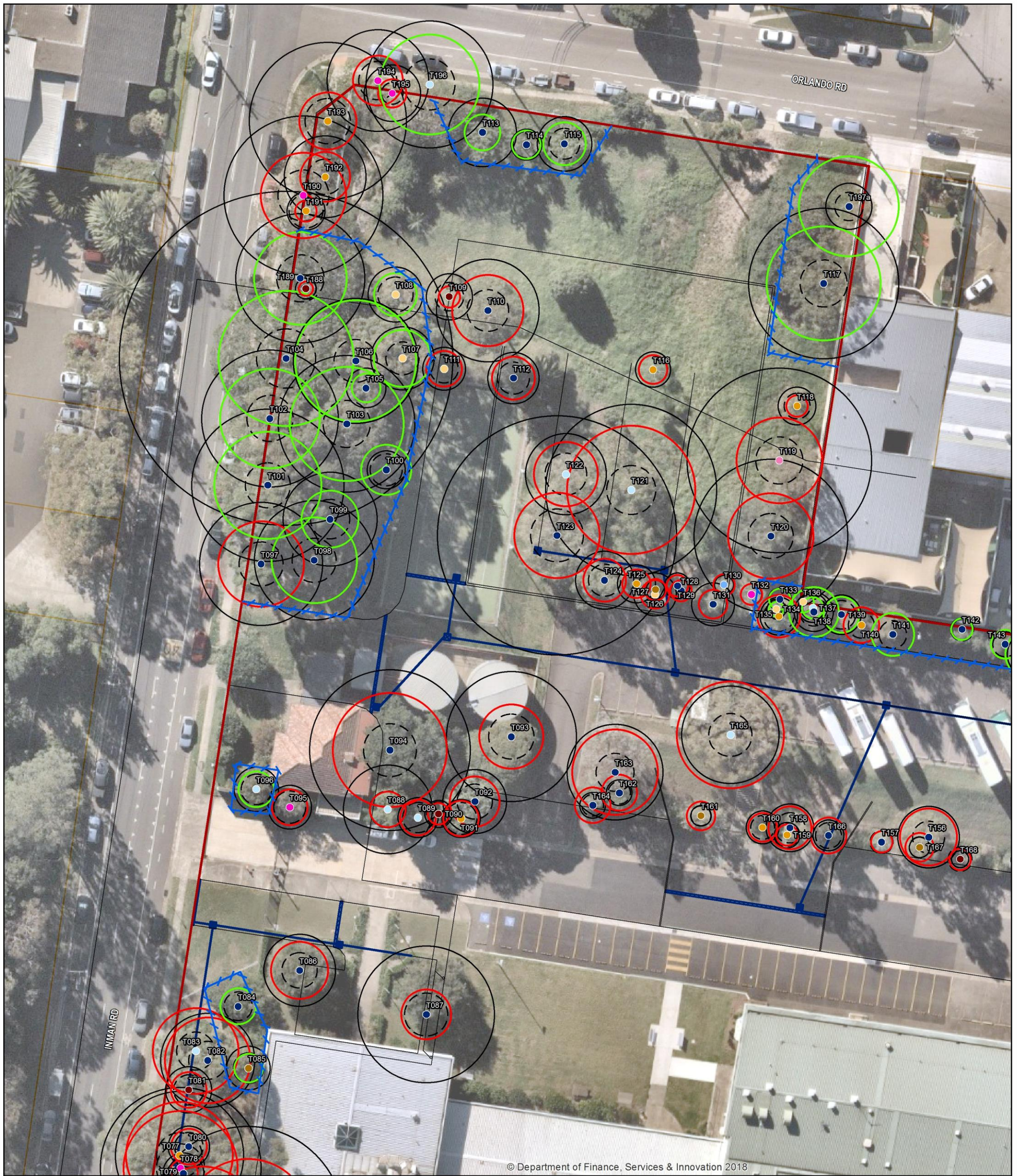
## SULE Assessment Plans







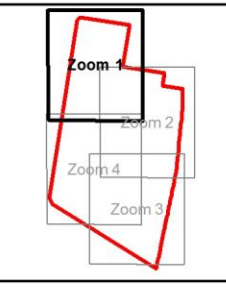




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**Legend**

- Lot boundary (source: LPI)
- Trees to remove
- Trees to retain
- Tree protection zone (TPZ)
- Structural Root Zone (SRZ)
- Temporary tree protection fencing (793m)
- Stormwater pipes/pits

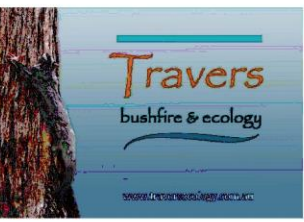


**SULE**

- 1a >40 years life expectancy, sound tree
- 1b >40 years life expectancy, with remedial care
- 1c Tree of historical, commemorative merit or rarity
- 2a 15 - 40 years life expectancy
- 2b >40 years life expectancy, may represent future safety or nuisance problems
- 2c >40 years life expectancy, suppressing better quality trees
- 2d 15 - 40 years, with remedial care
- 3a 5 - 15 years life expectancy
- 3b >15 years life expectancy, may represent further safety or nuisance problems
- 3c May live for 15+ years, should be removed to prevent competition.
- 3d 5 - 15 years life expectancy, requiring significant remedial work
- 4a Dead or dying, suppressed or declining tree (Remove)
- 4b A dangerous tree due to instability (Remove)
- 4c A dangerous tree (Remove)
- 4d A damaged tree, not safe to retain (Remove)
- 4e Tree damaging or may cause damage to existing structures (Remove)
- 4f Will become dangerous after removal of trees classed A-E (Remove)

- 3b >15 years life expectancy, may represent further safety or nuisance problems
- 3c May live for 15+ years, should be removed to prevent competition.
- 3d 5 - 15 years life expectancy, requiring significant remedial work
- 4a Dead or dying, suppressed or declining tree (Remove)
- 4b A dangerous tree due to instability (Remove)
- 4c A dangerous tree (Remove)
- 4d A damaged tree, not safe to retain (Remove)
- 4e Tree damaging or may cause damage to existing structures (Remove)
- 4f Will become dangerous after removal of trees classed A-E (Remove)

Aerial source: Nearmap



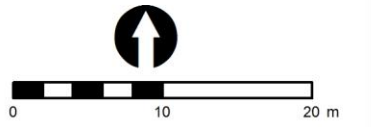
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18EG03\_T002

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**Tree Retention & Removal Plan (Zoom 1)**

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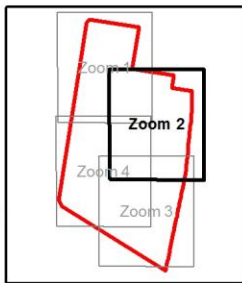
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#### Legend

- Lot boundary (source: LPI)
- Trees to remove
- Trees to retain
- Tree protection zone (TPZ)
- Structural Root Zone (SRZ)
- Temporary tree protection fencing (793m)
- Stormwater pipes/pits

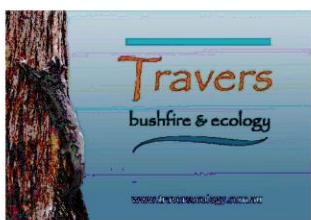


#### SULE

- 1a >40 years life expectancy, sound tree
- 1b >40 years life expectancy, with remedial care
- 1c Tree of historical, commemorative merit or rarity
- 2a 15 - 40 years life expectancy
- 2b >40 years life expectancy, may represent future safety or nuisance problems
- 2c >40 years life expectancy, suppressing better quality trees
- 2d 15 - 40 years, with remedial care
- 3a 5 - 15 years life expectancy
- 3b >15 years life expectancy, may represent further safety or nuisance problems
- 3c May live for 15+ years, should be removed to prevent competition.
- 3d 5 - 15 years life expectancy, requiring significant remedial work
- 4a Dead or dying, suppressed or declining tree (Remove)
- 4b A dangerous tree due to instability (Remove)
- 4c A dangerous tree (Remove)
- 4d A damaged tree, not safe to retain (Remove)
- 4e Tree damaging or may cause damage to existing structures (Remove)
- 4f Will become dangerous after removal of trees classed A-E (Remove)

- 3b >15 years life expectancy, may represent further safety or nuisance problems
- 3c May live for 15+ years, should be removed to prevent competition.
- 3d 5 - 15 years life expectancy, requiring significant remedial work
- 4a Dead or dying, suppressed or declining tree (Remove)
- 4b A dangerous tree due to instability (Remove)
- 4c A dangerous tree (Remove)
- 4d A damaged tree, not safe to retain (Remove)
- 4e Tree damaging or may cause damage to existing structures (Remove)
- 4f Will become dangerous after removal of trees classed A-E (Remove)

Aerial source: Nearmap



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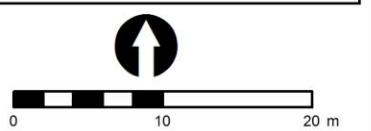
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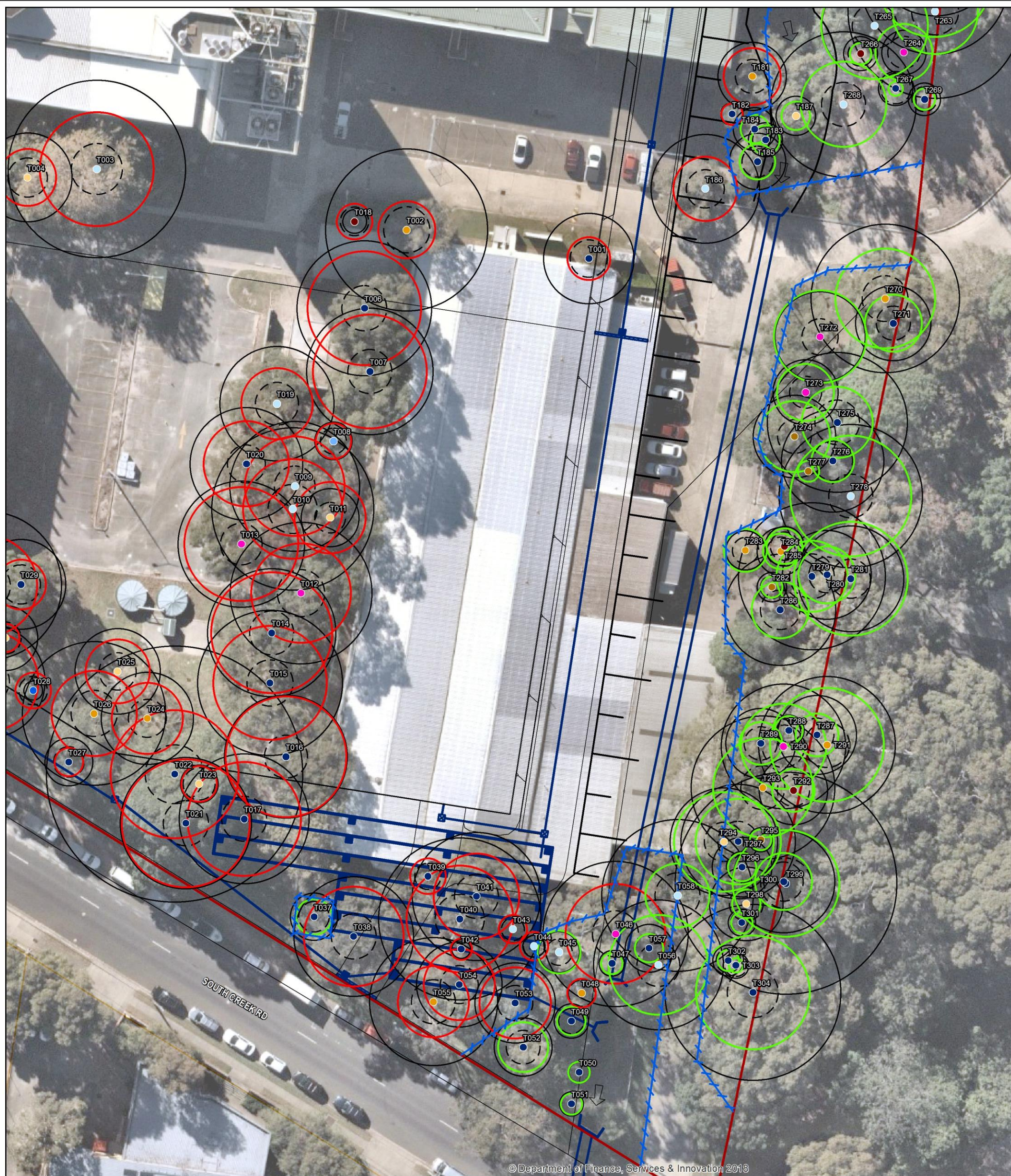
### Tree Retention & Removal Plan (Zoom 2)

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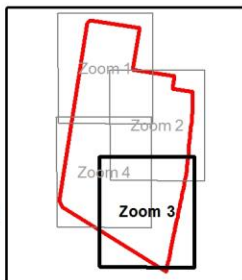




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### Legend

-  Lot boundary (source: LPI)
-  Trees to remove
-  Trees to retain
-  Tree protection zone (TPZ)
-  Structural Root Zone (SRZ)
-  Temporary tree protection fencing (793m)
-  Stormwater pipes/pits

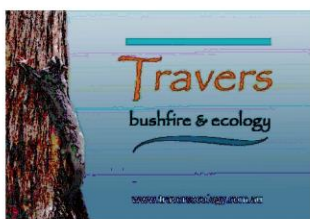


**SULE**

- 1a >40 years life expectancy, sound tree
- 1b >40 years life expectancy, with remedial care
- 1c Tree of historical, commemorative merit or rarity
- 2a 15 - 40 years life expectancy
- 2b >40 years life expectancy, may represent future safety or nuisance problems
- 2c >40 years life expectancy, suppressing better quality trees
- 2d 15 - 40 years, with remedial care
- 3a 5 - 15 years life expectancy

- 3b >15 years life expectancy, may represent further safety or nuisance problems
- 3c May live for 15+ years, should be removed to prevent competition.
- 3d 5 - 15 years life expectancy, requiring significant remedial work
- 4a Dead or dying, suppressed or declining tree (Remove)
- 4b A dangerous tree due to instability (Remove)
- 4c A dangerous tree (Remove)
- 4d A damaged tree, not safe to retain (Remove)
- 4e Tree damaging or may cause damage to existing structures (Remove)
- 4f Will become dangerous after removal of trees classed A-E (Remove)

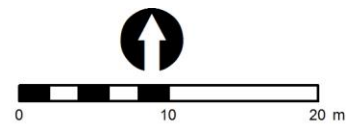
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## TITLE

### Tree Retention & Removal Plan (Zoom 3)

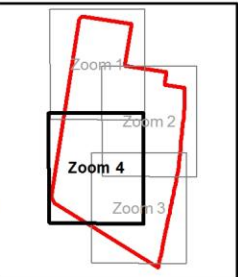
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**Legend**

- Lot boundary (source: LPI)
- Trees to remove
- Trees to retain
- Tree protection zone (TPZ)
- Structural Root Zone (SRZ)
- Temporary tree protection fencing (793m)
- Stormwater pipes/pits



**SULE**

- 1a >40 years life expectancy, sound tree
- 1b >40 years life expectancy, with remedial care
- 1c Tree of historical, commemorative merit or rarity
- 2a 15 - 40 years life expectancy
- 2b >40 years life expectancy, may represent future safety or nuisance problems
- 2c >40 years life expectancy, suppressing better quality trees
- 2d 15 - 40 years, with remedial care
- 3a 5 - 15 years life expectancy
- 3b >15 years life expectancy, may represent further safety or nuisance problems
- 3c May live for 15+ years, should be removed to prevent competition.
- 3d 5 - 15 years life expectancy, requiring significant remedial work
- 4a Dead or dying, suppressed or declining tree (Remove)
- 4b A dangerous tree due to instability (Remove)
- 4c A dangerous tree (Remove)
- 4d A damaged tree, not safe to retain (Remove)
- 4e Tree damaging or may cause damage to existing structures (Remove)
- 4f Will become dangerous after removal of trees classed A-E (Remove)

- 3b >15 years life expectancy, may represent further safety or nuisance problems
- 3c May live for 15+ years, should be removed to prevent competition.
- 3d 5 - 15 years life expectancy, requiring significant remedial work
- 4a Dead or dying, suppressed or declining tree (Remove)
- 4b A dangerous tree due to instability (Remove)
- 4c A dangerous tree (Remove)
- 4d A damaged tree, not safe to retain (Remove)
- 4e Tree damaging or may cause damage to existing structures (Remove)
- 4f Will become dangerous after removal of trees classed A-E (Remove)

Aerial source: Nearmap



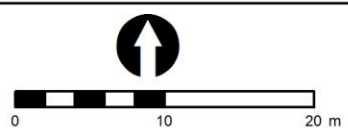
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**Tree Retention & Removal Plan (Zoom 4)**

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# Schedule 3

## SULE Ratings and Terminology



# SULE Ratings and Terminology

**SULE** (an acronym for **safe useful life expectancy**). Particular consideration is given to the following points when making the final SULE assessment for each tree;

- obvious past influences (suppression)
- present health and condition, and future potential in current position
- estimated age at assessment in relation to the life expectancy for the species
- observed and potential structural defects which may influence potential life expectancy
- potential remedial work which may allow retention in the existing location.

An outline of the four relevant SULE categories and their subgroups used in this report is as follows:

---

**1 Long SULE** (trees that appear to be retainable at the time of assessment for more than 40 years with an acceptable level of risk)

- A** A structurally sound tree, located where potential future growth can be accommodated.
- B** A damaged or defective tree that could be made suitable in the long term (40+ years), where remedial care is given.
- C** A tree of particular significance (historical / commemorative merit or rarity) that warrants extensive efforts in securing long term retention.

---

**2 Medium SULE** (trees that appear to be retainable at the time of assessment, for 15 - 40 years with an acceptable level of risk)

- A** A tree predicted to only live between 15 and 40 years
- B** A tree that may live for more than 40 years, but should be removed to prevent safety or nuisance problems
- C** A tree that may live for more than 40 years, but should be removed to prevent competition with more suitable individuals, or to provide space for new planting
- D** A damaged or defective tree that could be made suitable in the medium term (15-40 years), where remedial care is given.

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**3 Short SULE** (trees that appear to be retainable at the time of assessment for 5 - 15 years with an acceptable level of risk)

- A** A tree predicted to only live between 5 - 15 years
- B** A tree that may live for more than 15 years, but should be removed to prevent safety or nuisance problems
- C** A tree that may live for more than 15 years, but should be removed to prevent competition with more suitable individuals or to provide space for new planting
- D** A damaged or defective tree that could only be made suitable in the short term (5-15 years), and would require significant remedial work.

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**4 Removals** (Trees with a high level of risk that should be removed within the next 5 years)

- A** A dead, dying, suppressed or declining tree

- B** A dangerous tree made so through instability or recent loss of neighbouring trees
- C** A dangerous tree made so through structural defects (cavities, decay, included bark, wounds or poor form)
- D** A damaged tree that is clearly not safe to retain
- E** A tree that is damaging, or may cause damage, to existing structures within 5 years
- F** A tree that will become dangerous after removal of neighbouring trees for the reasons given in A to E.

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*SULE ratings given to any tree in this report assumes that appropriate maintenance (if required) will be provided by a qualified arborist. Incorrect tree work practices can significantly accelerate tree suppression and increase hazard potential*

### **EXPLANATION OF TERMINOLOGY USED**

**DBH** - An acronym for bole or trunk diameter at breast height (1.4m from ground level).

**Health** - An indication of the vigour of a tree and is determined by the observed crown colour, density, presence of insect attack, the percentage of dead or dying branches and the amount of epicormic growth. The health of the canopy and that of the root system is interdependent and significant loss of tree vigour can result through both root and canopy (pruning, suppression) damage.

Suppressed, unhealthy trees have reduced ability to initiate internal defence systems (by the process of compartmentalisation) thus predisposing them to attack by insects and pathogenic decay organisms which increase the potential to drop dangerous branches.

**Cambium** - The part of the tree situated between the bark and the true wood of a tree. This area is where the tree transports water, nutrients and waste products to and from the roots and leaves. It is this area that is targeted when “ring-barking” a tree in order to disrupt the nutrient transport system of the tree and cause its death.

**Condition** - An evaluation of the structural integrity of a tree, including defects that may affect the useful life of an otherwise healthy individual. Such influencing factors include cavities and decay, weak unions between branches or trunks and faults of form or habit.

**Fungal Attack** - Many fungi have evolved to break down wood and return its nutrients to the biocycle of the environment. Fungi usually gain access to the wood through the actions of borers, or from physical damage resulting in exposed wood. Trees suffering from fungal attack may be severely weakened on a structural basis but may not show any external signs of the weakness. This can result in a catastrophic structural failure of a branch or trunk when subjected to stress such as a windy day.

**Kino** - A dark reddish exudate, rich in polyphenols (tannins), developed in the cambial region of eucalypts often as a result of injury; incorrectly called gum (Boland *et.al.* 1992).

**Deadwood** - The mature crown of a eucalypt maintains itself by the continual production of new crown units, which die in turn. Thus there will always be some dead branches in a healthy mature crown (Florence, 1996). Minor deadwood refers to dead branchlets, Major deadwood refers to main branches from the trunk.