

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.

Travers

bushfire & ecology



Tree Assessment

'Stage 3'
Gracewood Retirement Village
1/117 Rutherford Avenue, Kellyville
Lot 100 DP 1163410

December 2017
REF: (A17143T)



Tree Assessment Report

'Stage 3'
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Lot 100 DP 1163410

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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.

Executive Summary

This tree assessment report has been prepared by *Travers bushfire & ecology* to assess the condition and significance of trees located within 'Stage 3' Gracewood Retirement Village 1/117 Rutherford Avenue, Kellyville Lot 100 DP 1163410 in The Hills Shire Council local government area (LGA). These allotments are subject to a proposed development and will be referred to as the 'subject site'.

A safe useful life expectancy (SULE) assessment was originally conducted in May 2nd 2007, September 23rd 2008 & June 1st 2009 and confirmed on the 18th of December 2017. This tree assessment report has been prepared in accordance with Australian Standard *AS4970 (2009) – Amendment No. 1 2010*.

The purpose of this information shall be used to document trees to be removed for development approval compliance and to identify the ecological, historical and visual significance of trees to be removed and/or retained as part of the future development of the site. Those trees to be retained within the development should also be of sufficient condition and form to minimise the risk of tree damage to property or persons.

Impact of the proposed development on trees

An assessment of all trees equal or greater than 15cm Diameter at Breast Height (DBH) was undertaken. 198 trees were assessed within the remnant Cumberland Plain Woodland (CPW) located within the site. Staged development has occurred within the site since 2007 and an updated tree retention and removal plan has been prepared.

The stage 3 development will remove a total of 7 trees (T024, T025, T037, T027 & T048, and T049 & T050). With the exception to T027, all other trees were previously indicated for removal as part of previous studies. T052 was previously indicated for removal is now being retained as part of the Stage 3 development.

It is noted that the SULE assessment identifies that the majority of the trees observed are in fair to good condition. 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 are consistent with the critically endangered ecological community (CEEC) Cumberland Plain Woodland (CPW) which is confirmed from vegetation mapping in the *Native Vegetation Maps of the Cumberland Plain, Western Sydney* (NPWS 2002).

No further trees have been identified as significant except for being a component of the critically endangered ecological community (CEEC) Cumberland Plain Woodland (CPW). The affected tree T024 is a nominated habitat tree but only contains one small hollow and is not considered to be significant.

One trees (T185) within the subject site are visually prominent trees primarily due to their size and being 'larger than most' of the trees observed, however, T185 has been retained as part of previous development applications within the CPW reserve.

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
BPA	bushfire protection assessment
CRZ	critical root zone
DCP	Development Control Plan
DOEE	Commonwealth Department of Environment & Energy
EEC	endangered ecological community
EPA	Environmental Protection Agency
<i>EP&A Act</i>	<i>Environmental Planning and Assessment Act</i>
<i>EPBC Act</i>	<i>Environment Protection and Biodiversity Conservation Act</i>
ESMP	ecological site management plan
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>
<i>RF Act</i>	<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
<i>TSC Act</i>	<i>Threatened Species Conservation Act</i>

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Attached Schedules

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 'Stage 3' Gracewood Retirement Village 1/117 Rutherford Avenue, Kellyville Lot 100 DP 1163410 in The Hills Shire Council local government area (LGA). These allotments are subject to a proposed development and will be referred to as the 'subject site'.

A safe useful life expectancy (SULE) assessment was originally conducted in May 2nd 2007, September 23rd 2008 & June 1st 2009 and confirmed on the 18th of December 2017. This tree assessment report has been prepared in accordance with Australian Standard AS4970 (2009) – *Amendment No. 1 2010*. It identifies the additional trees being removed as a result of the proposed stage 3 development.

This assessment is based on the SULE classification (Barrell, 1993). The purpose of this information shall be used to document trees to be retained or removed for development approval compliance and to identify the ecological, historical and visual significance of trees to be removed and/or retained as part of the future development of the site. Those trees to be retained within the development should also be of sufficient condition and form to minimise the risk of tree damage to property or persons.

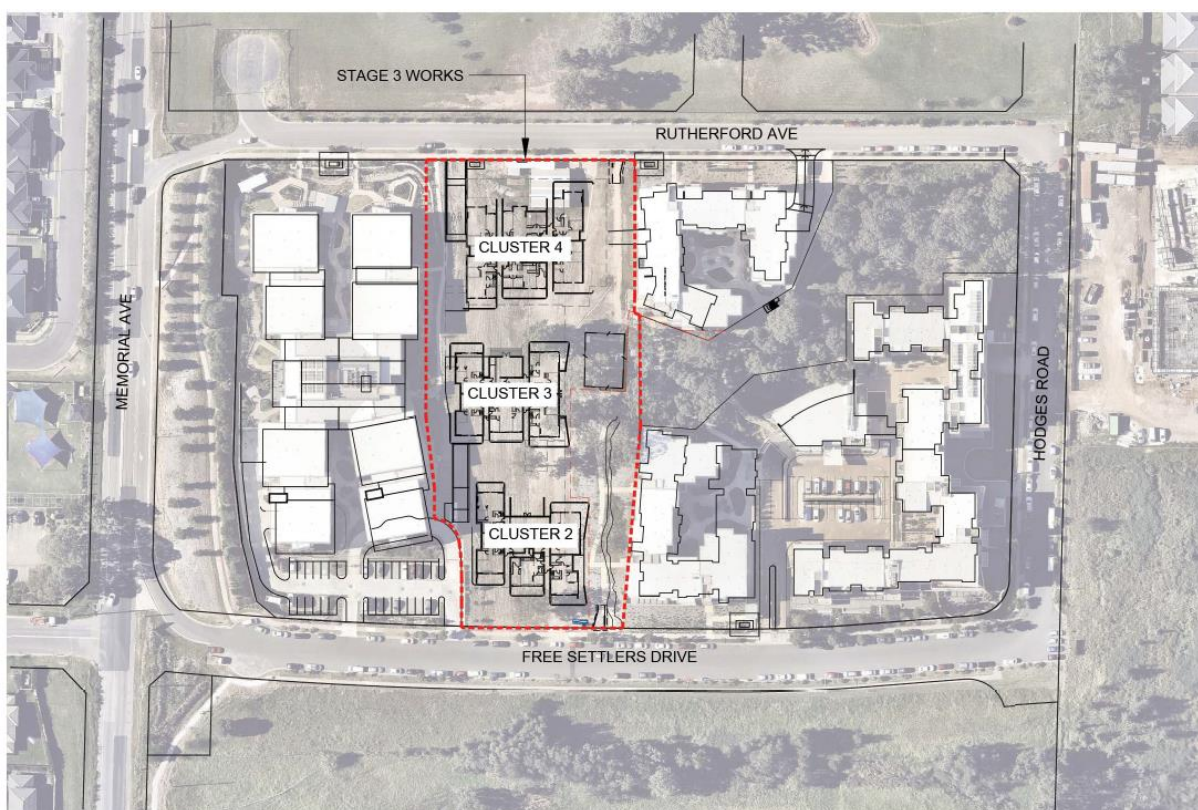


Figure 1 – Proposed development



Survey Methods

2

2.1 Tree survey and condition assessment

A safe useful life expectancy (SULE) assessment was originally conducted in May 2nd 2007, September 23rd 2008 & June 1st 2009 and confirmed on the 18th of December 2017. 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 one-hundred and ninety eight (198) trees within the subject site as well as determine tree locations according to proposed building envelopes and services.

The following survey and assessment was undertaken:

- an inspection of the site and relevant native trees
- aerial photographic interpretation of the study area
- 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 15cm 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 One-hundred and ninety eight (198) trees with a DBH greater than 15cm were assessed within the subject site (see Schedule 1). Trees were numbered T001, T002, T003, etc., through to T139 and a metal tag embossed with the tree number was placed on the trunk for re-identification during future works. Tree tags were attached generally on the northern side of the trees.

3.1 Endangered ecological communities (EECs)

The trees present are consistent with the critically endangered ecological community (CEEC) Cumberland Plain Woodland (CPW) which is confirmed from vegetation mapping in the *Native Vegetation Maps of the Cumberland Plain, Western Sydney* (NPWS 2002). In addition, the CPW vegetation community was determined by a flora survey and ground truthing which identified CPW through analysis of the species composition in the flora survey data.

3.2 Council's significant tree register

The Hills Shire Council Register of Significant Trees does not list any trees of conservation significance within the site. 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

One trees (T185) within the subject site are visually prominent trees primarily due to their size and being 'larger than most' of the trees observed, however, T185 has been retained as part of previous development applications within the CPW reserve. Retained hollow bearing trees within the CPW reserve include T052, T088, T093 & T118.

3.4 Hollow bearing trees

Eleven (11) trees were identified as hollow bearing trees prior to development of the existing lots, 6 of which have been removed due to previous DA's. The Stage 3 impacts one further hollow bearing tree T024 which is a smaller Narrow Leaved Ironbark that contains one small hollow.

A number of dead stags were found in the original site survey but were of no hollow bearing potential. All dead stags have been removed as part of previous cluster buildings.

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.

Some areas within the subject site contain trees that are crowded and/or suppressed, mostly due to regrowth of younger, smaller specimens underneath established larger trees. This has resulted in a number of the trees being given a reduced SULE rating. 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 tree patch 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 lower health or vigour have mostly been given a SULE of 3b as they tend to present safety or nuisance problems and often have a moderate to large amount of deadwood which indicates a decline in health and potential safety concerns now or in the near future, despite the potential for them to remain alive for up to fifteen (15) years or more.

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

4.2 Removal of trees due to proposed development

The stage 3 development will remove a total of 7 trees (T024, T025, T037, T027 & T048, T049 & T050). With the exception to T027, all other trees were previously indicated for removal as part of previous studies. T052 was previously indicated for removal is now being retained as part of the Stage 3 development.

The proposal also includes a new stairwell for cluster 5 adjoining the Cumberland Plain Woodland reserve. The proposed stairway impacts within the tree protection zone of T098 but do not encroach to any significant degree to require additional protection measures.

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 in the case of trees in close proximity to adjoining dwellings or site assets.

With exception to those trees affected by the proposed Stage 3 development, no trees are being removed due to their condition.

4.3 Impact assessment

If less than 10% of the TPZ for any tree is impacted by development, then these trees shall have the TPZ 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. No trees within the subject site are impacted in such a manner, therefore compensatory TPZs are not required.

The impacts on the nominated tree and structural root zones has been considered as part of the stage 3 development.

Whilst the stage 3 development will remove a total of 7 trees (T024, T025, T037, T027 & T048, T049 & T050). With the exception to T027, all other trees were previously indicated for removal as part of previous studies. T052 was previously indicated for removal is now being retained as part of the Stage 3 development.

The Hills Shire Council Register of Significant Trees does not list any trees of conservation significance within the site. 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.

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).



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 2 – 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
55	6.6
60	7.2

Table 2 – Estimated TPZ for trees

DBH (cm)	TPZ (m)
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 3 – Estimated SRZ for trees

BD (cm)	SRZ (m)
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 subject site are provided in Schedule 1.

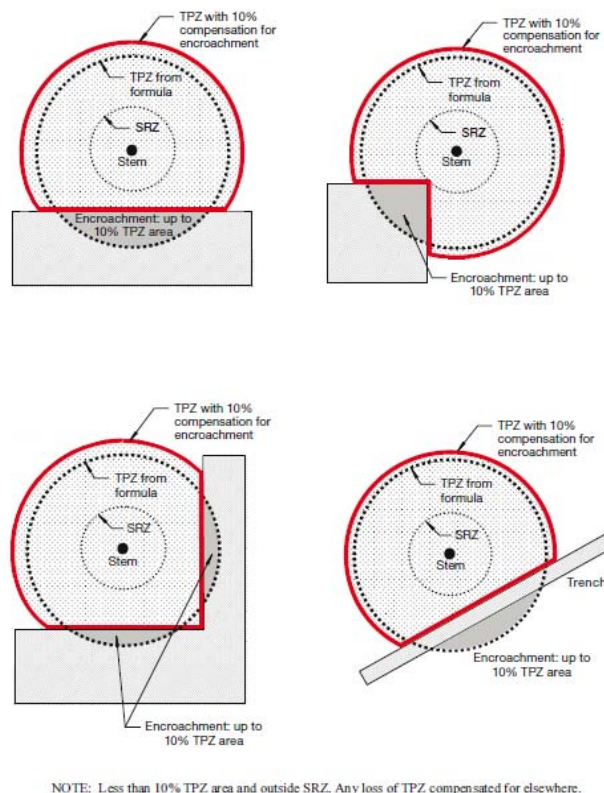
When working in close proximity of any tree to be retained or the nominated TPZ located within or adjacent to potential development areas, the following general management principles should be adopted:

- 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:

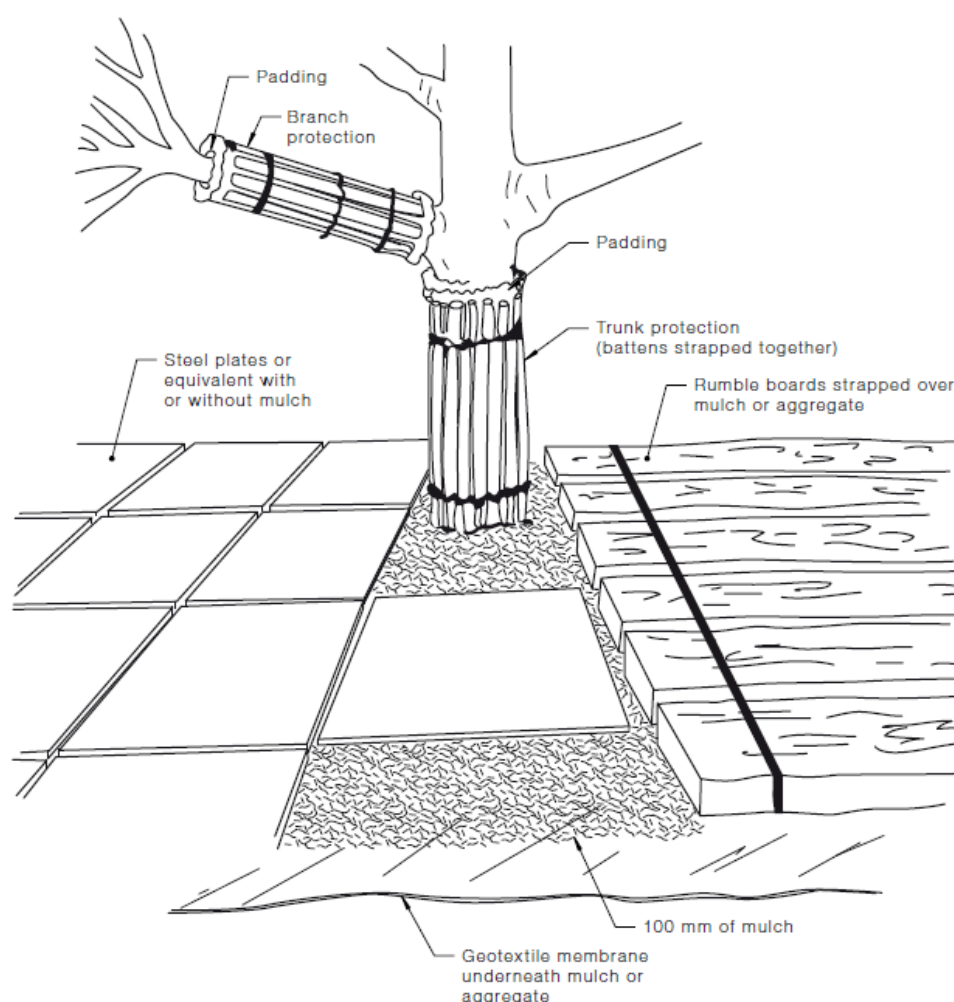
- Installation of a TPZ will be required surrounding any retained tree or group of trees. This TPZ can generally be provided by preserving an area equivalent to that shown in Schedule 1. A SRZ will apply to all retained trees in close proximity to work areas. No more than 10% of the TPZ should be impacted 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 the Native Bushland Reserve 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). Once erected, protective fencing must not be removed or altered without approval by the project arborist. The TPZ is to be fully secured to restrict access onto the protected root zone.

AS 4687 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 Native Bushland Reserve (TPZ) shall be placed at 10 metre intervals along the TPZ fencing. These signs will face towards the development site and shall have lettering that complies with AS 1319. These signs will also specify the severe penalties for harming the Critically Endangered Ecological Community “*Cumberland Plain Woodland*” in any way.

TPZ fencing is to be inspected on a regular basis and maintained in good condition. It is recommended that the TPZ fencing be installed as shown in Figure 4. 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.



Figure 4 Recommended location of the temporary (TPZ) fencing (shown as pink line)



Conclusions & Recommendations

6

6.1 Conclusions

The impacts on the nominated tree and structural root zones has been considered as part of the stage 3 development.

The stage 3 development will remove a total of 7 trees (T024, T025, T037, T027 & T048, T049 & T050). With the exception to T027, all other trees were previously indicated for removal as part of previous studies. T052 was previously indicated for removal is now being retained as part of the Stage 3 development.

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). This TPZ shall comprise the Native Bushland Reserve boundaries as shown in Schedule 2.

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 (endemic) trees within the streetscape and any open space areas to maximise local amenity within the development, to consolidate any retained CPW 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. Native vegetation such as Cumberland Plain Woodland (which includes trees, shrubs and ground layer) is listed as a Critically Endangered Ecological Community (CEEC) within the NSW *TSC Act* (1995) and also within the Commonwealth *EPBC Act* (1999). For it to be retained in close proximity to any works it is to be protected by temporary fencing that is to be erected prior to any bulk earthworks or construction phases. Such fencing can be constructed from plastic bunting, post and wire or temporary chain link fence panels.
- iii. TPZs in close proximity to proposed works should be adequately marked and sign-posted as a "Native Bushland Reserve". Signage identifying the Native Bushland Reserve (TPZ) shall be placed at 10 metre intervals along the TPZ fencing. These signs will face towards the development site and shall have lettering that complies with *AS 1319*. These signs will also specify the severe penalties for harming the Critically Endangered Ecological Community "*Cumberland Plain Woodland*" in any way. TPZ fencing and signage should be inspected on a regular basis and maintained in good condition.
- iv. 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.
- v. Stumps are to be ground, not dozed or dug out unless they impact on the installation of services, roads or building works.
- vi. All trenches footings and major earth movement are to avoid TPZs.
- vii. Stockpiling materials and soils within TPZs is forbidden.
- viii. Machinery and other vehicles are to avoid TPZs during all operations.
- ix. Any trenching or construction works unavoidably undertaken within TPZs should be witnessed, supervised and recorded (photographed and documented) by an AQ5 qualified arborist.

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Schedule 1

Tree Assessment Data Table

SCHEDULE 1 – TREE DATA

Tree No.	Scientific Name	Common Name	Remove Retain	DBH (cm)	Height (m)	Spread (m)	Vigour (%)	BD (cm)	TPZ (cm)	SRZ (cm)	SULE	Vis Sign.	Habitat Tree	Comments
T001	<i>Callistemon salignus</i>	Willow Bottlebrush	Removed for Previous DA	22	3	5	90	26	2.6	1.9	1a	V3	NIL	Planting, Very Healthy, Adjacent to subject site
T002	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Removed for Previous DA	60	22	12	70	72	7.2	2.9	2a	V2	NIL	Adjacent to subject site
T003	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Removed for Previous DA	22	14	5.5	90	26	2.6	1.9	1a	V2	NIL	Small deadwood, Adjacent to subject site
T004	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Removed for Previous DA	16	13	4.5	70	19	1.9	1.7	2c	V2	NIL	Small deadwood, suppressed, Adjacent to subject site
T005	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Removed for Previous DA	32	15	3	60	38	3.8	2.2	2d	V2	NIL	Kino at base, good form, Adjacent to subject site
T006	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Removed for Previous DA	38	15	3.5	80	46	4.6	2.4	2a	V2	NIL	Small deadwood, Adjacent to subject site
T007	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Removed for Previous DA	38	17	7	90	46	4.6	2.4	2a	V2	NIL	Small deadwood, Adjacent to subject site
T008	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Removed for Previous DA	90	18	12	90	108	10.8	3.4	2a	V2	NIL	Medium deadwood, Adjacent to subject site
T009	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Removed for Previous DA	32/17	17	3	70	43	4.3	2.3	2a	V2	NIL	Small deadwood, Adjacent to subject site
T010	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Removed for Previous DA	26	15	2	90	31	3.1	2.0	1a	V2	NIL	Few small deadwood, Adjacent to subject site
T011	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Removed for Previous DA	26	15.5	4	90	31	3.1	2.0	1a	V2	NIL	Medium deadwood, Adjacent to subject site
T012	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Removed for Previous DA	34/16	16	6	80	45	4.5	2.4	1a	V3	NIL	Few small/medium deadwood, Adjacent to subject site
T013	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Removed for Previous DA	16	15	4.5	90	5	0.5	0.9	1a	V2	NIL	Adjacent to subject site
T014	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Removed for Previous DA	22	8	3	90	26	2.6	1.9	1a	V3	NIL	Small deadwood, Adjacent to subject site
T015	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Removed for Previous DA	70	16	12	90	84	8.4	3.1	2a	V2	NIL	Adjacent to subject site
T016	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Removed for Previous DA	65/16	18	12	80	11	1.1	1.3	2a	V2	NIL	Kino, small deadwood, Adjacent to subject site
T017	<i>Eucalyptus saligna</i>	Blue Gum	Removed for Previous DA	32	17	11	90	38	3.8	2.2	1a	V2	NIL	Small deadwood, Adjacent to subject site
T018	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Removed for Previous DA	34	12	5	70	41	4.1	2.3	1a	V3	NIL	Small deadwood, Adjacent to subject site
T019	<i>Melaleuca decora</i>	-	RETAIN	20/24/28	7	3	90	50	5.0	2.5	1a	V3	NIL	Adjacent to Site
T020	<i>Eucalyptus eugenioides</i>	Thin-leaved Stringybark	RETAIN	40/30	11	8	30	60	6.0	2.7	3a	V2	NIL	Almost dead epicormics from stem
T021	<i>Eucalyptus eugenioides</i>	Thin-leaved Stringybark	Removed for Previous DA	22	11	14	90	26	2.6	1.9	1a	V2	NIL	Medium deadwood, Adjacent to subject site
T022	<i>Eucalyptus punctata</i>	Grey Gum	Removed for Previous DA	24	5	9	90	29	2.9	2.0	1a	V3	NIL	Healthy
T023	<i>Eucalyptus punctata</i>	Grey Gum	Removed for Previous DA	70	12	10	90	84	8.4	3.1	2a	V2	NIL	Kino, small deadwood
T024	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for stage 3	60	18	11	80	72	7.2	2.9	2d	V2	NIL	Small hollow, Split trunk, medium dead wood
T025	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for stage 3	55	17	3	70	66	6.6	2.8	2a	V2	NIL	Small deadwood
T026	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	42	17	5	80	50	5.0	2.5	2a	V2	NIL	Small deadwood, Adjacent to subject site
T027	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for stage 3	42	18	13	90	50	5.0	2.5	2a	V2	NIL	Small deadwood
T028	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	60	18	12	90	72	7.2	2.9	2a	V2	NIL	Small deadwood
T029	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	50	16	17	80	60	6.0	2.7	2a	V2	NIL	Medium deadwood
T030	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	55	17	11	90	66	6.6	2.8	2a	V2	NIL	Small deadwood
T031	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	55	16	10	90	66	6.6	2.8	2a	V2	NIL	
T032	<i>Melaleuca quinquenervia</i>	Broad-leaved Paperbark	Removed for Previous DA	70	13	5	90	84	8.4	3.1	2a	V2	NIL	Adjacent to subject site
T033	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	50	14	8	70	60	6.0	2.7	2a	V2	NIL	Medium deadwood
T034	<i>Stag</i>	Stag	Removed for Previous DA	65	14	18	0	78	7.8	3.0	4a	V2	NIL	Dead
T035	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	45	11	7	80	54	5.4	2.6	2d	V2	NIL	Medium deadwood
T036	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	110	18	12	90	132	13.2	3.7	3a	V2	NIL	Medium deadwood
T037	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	40	16	7	70	48	4.8	2.4	2c	V2	NIL	Small deadwood, epicormics on trunk
T038	<i>Pinus radiata</i> *	Radiata Pine	Removed for Previous DA	30	7	6	90	36	3.6	2.2	1a	V3	NIL	Small deadwood, Adjacent to subject site
T039	<i>Lophostemon confertus</i>	Brush Box	Removed for stage 3	17	3	2	90	20	2.0	1.7	1a	V3	NIL	Planted, Adjacent to subject site

SCHEDULE 1 – TREE DATA

Tree No.	Scientific Name	Common Name	Remove Retain	DBH (cm)	Height (m)	Spread (m)	Vigour (%)	BD (cm)	TPZ (cm)	SRZ (cm)	SULE	Vis Sign.	Habitat Tree	Comments
T040	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Removed for Previous DA	42	8	7	90	50	5.0	2.5	1a	V3	NIL	Adjacent to subject site
T041	<i>Eucalyptus sclerophylla</i>	Hard-leafed Scribbly Gum	Removed for Previous DA	26	7	4	90	31	3.1	2.0	1a	V3	NIL	Small deadwood
T042	<i>Eucalyptus sclerophylla</i>	Hard-leafed Scribbly Gum	Removed for Previous DA	26	5	4	90	31	3.1	2.0	1a	V3	NIL	Small deadwood
T043	<i>Eucalyptus sclerophylla</i>	Hard-leafed Scribbly Gum	Removed for Previous DA	24	5	4	90	29	2.9	2.0	1a	V3	NIL	Planted
T044	<i>Eucalyptus sclerophylla</i>	Hard-leafed Scribbly Gum	Removed for Previous DA	16	7	4	90	19	1.9	1.7	1a	V3	NIL	Planted, Adjacent to subject site
T045	<i>Eucalyptus sclerophylla</i>	Hard-leafed Scribbly Gum	Removed for Previous DA	20	3	5	90	24	2.4	1.8	1a	V3	NIL	Planted, Adjacent to subject site
T046	<i>Eucalyptus sclerophylla</i>	Hard-leafed Scribbly Gum	Removed for Previous DA	32	12	6	90	38	3.8	2.2	1a	V2	NIL	Planted, Adjacent to subject site
T047	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	32	12	6	90	38	3.8	2.2	1a	V2	NIL	
T048	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for stage 3	52	18	8	90	62	6.2	2.7	2a	V2	NIL	Small deadwood
T049	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for stage 3	110	18	12	90	132	13.2	3.7	3a	V2	NIL	Medium deadwood
T050	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for stage 3	36	12	12	60	43	4.3	2.3	2b	V2	NIL	Poor form leaning west
T051	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	28	12	3	60	34	3.4	2.1	2b	V2	NIL	Poor form, few branches
T052	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	75	23	10	60	90	9.0	3.2	3d	V2	NIL	Large scar, deadwood
T053	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	32	9	2	30	38	3.8	2.2	3c	V3	NIL	Top of trunk split and kino
T054	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	50	16	8	65	60	6.0	2.7	2a	V2	NIL	Poor form and large growth
T055	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	55	16	12	60	66	6.6	2.8	2d	V2	NIL	Cracked base and large scar
T056	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	60	14	6	60	72	7.2	2.9	2d	V2	NIL	Large dead wood and kino
T057	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	40	15	15	70	48	4.8	2.4	2a	V2	NIL	Lots of large deadwood
T058	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	17	8	2	60	20	2.0	1.7	2a	V3	NIL	Kino and poor form
T059	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	26	7	5	90	31	3.1	2.0	1a	V3	NIL	
T060	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	25	6	2	70	30	3.0	2.0	2a	V3	NIL	Lots of small deadwood
T061	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	16	4	2	70	19	1.9	1.7	2a	V3	NIL	Medium deadwood
T062	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	31	15	6	70	37	3.7	2.2	2a	V2	NIL	Small deadwood
T063	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	16	5	4	90	19	1.9	1.7	1a	V3	NIL	Small deadwood
T064	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	17	2	7	70	20	2.0	1.7	1b	V3	NIL	Adjacent to subject site
T065	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	16	6	2	60	19	1.9	1.7	1b	V3	NIL	Lots of small deadwood
T066	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	60	16	12	70	72	7.2	2.9	2c	V2	NIL	Poor form and suppressed
T067	<i>Stag</i>	Stag	Removed for Previous DA	50	17	6	0	60	6.0	2.7	4a	V2	NIL	Dead stag
T068	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	28	14	5	80	34	3.4	2.1	2b	V2	NIL	Large deadwood
T069	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	22	16	4	70	26	2.6	1.9	2a	V2	NIL	Lots of small deadwood
T070	<i>Stag</i>	Stag	Removed for Previous DA	32	0	2	0	38	3.8	2.2	4a	V3	NIL	Dead tree adjacent to subject site
T071	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	18	6	2	90	22	2.2	1.7	1a	V3	NIL	
T072	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	19	7	2	80	23	2.3	1.8	1a	V3	NIL	
T073	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	15	7	2	80	18	1.8	1.6	1a	V3	NIL	
T074	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	22	7	2	80	26	2.6	1.9	1a	V3	NIL	Small deadwood
T075	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	24	7	4	80	29	2.9	2.0	1a	V3	NIL	Small deadwood
T076	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	20	8	5	80	24	2.4	1.8	1a	V3	NIL	
T077	<i>Stag</i>	Stag	Removed for Previous DA	33	10	2	0	40	4.0	2.2	4a	V3	NIL	Dead stag no hollows
T078	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	40	14	6	80	48	4.8	2.4	2a	V2	NIL	Small deadwood
T079	<i>Stag</i>	Stag	Removed for Previous DA	32	10	2	0	38	3.8	2.2	4a	V3	NIL	No hollows
T080	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	42	13	4	70	50	5.0	2.5	2c	V3	NIL	Poor form
T081	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	45	15	7	80	54	5.4	2.6	2d	V2	NIL	Large deadwood

SCHEDULE 1 – TREE DATA

Tree No.	Scientific Name	Common Name	Remove Retain	DBH (cm)	Height (m)	Spread (m)	Vigour (%)	BD (cm)	TPZ (cm)	SRZ (cm)	SULE	Vis Sign.	Habitat Tree	Comments
T082	<i>Stag</i>	Stag	Removed for Previous DA	35	9	1	0	42	4.2	2.3	4a	V3	NIL	
T083	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	40	14	6	80	48	4.8	2.4	2a	V2	NIL	Small deadwood, Adjacent to subject site
T084	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	28	7	2	70	34	3.4	2.1	2c	V3	NIL	Suppressed and poor form, Adjacent to subject site
T085	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	18	8	2	85	22	2.2	1.7	1a	V3	NIL	Small deadwood
T086	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	16	8	3	90	19	1.9	1.7	2a	V3	NIL	Medium deadwood
T087	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	17	8	3	90	20	2.0	1.7	2a	V3	NIL	Medium deadwood
T088	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	38	17	5	70	46	4.6	2.4	2c	V2	NIL	Poor form
T089	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	24	9	3	80	29	2.9	2.0	2a	V3	NIL	Medium deadwood
T090	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	40	15	7	80	48	4.8	2.4	2a	V2	NIL	Large deadwood
T091	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	33	15	4	70	40	4.0	2.2	1a	V2	NIL	
T092	<i>Eucalyptus eugenioides</i>	Thin-leaved Stringybark	RETAIN	28	15	10	70	34	3.4	2.1	2a	V2	NIL	Large deadwood
T093	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	38	16	6	60	46	4.6	2.4	2c	V2	NIL	Poor form - large deadwood
T094	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	41	14	5	60	49	4.9	2.5	2d	V2	NIL	Poor form – medium deadwood
T095	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	50	15	11	80	60	6.0	2.7	2b	V2	NIL	Poor form – large deadwood
T096	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	34	15	7	70	41	4.1	2.3	2a	V2	NIL	Large deadwood
T097	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	70	17	10	70	84	8.4	3.1	2a	V2	NIL	Large deadwood
T098	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	65	17	10	70	78	7.8	3.0	2a	V2	NIL	
T099	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	22	6	2	90	26	2.6	1.9	1a	V3	NIL	
T100	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	22	9	2	90	26	2.6	1.9	1a	V3	NIL	
T101	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	32	8	2	90	38	3.8	2.2	1a	V3	NIL	Small deadwood
T102	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	22	6	2	90	26	2.6	1.9	1a	V3	NIL	Small deadwood
T103	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	17	7	2	90	20	2.0	1.7	1a	V3	NIL	Small deadwood
T104	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	17	7	2	90	20	2.0	1.7	1a	V3	NIL	Small deadwood
T105	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	32	12	4	80	38	3.8	2.2	1a	V2	NIL	Small deadwood
T106	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	34	12	4	70	41	4.1	2.3	1a	V2	NIL	Small deadwood
T107	<i>Angophora floribunda</i>	Rough-barked Apple	Removed for Previous DA	30	12	3	90	36	3.6	2.2	1a	V2	NIL	Small deadwood
T108	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	18	5	2	80	22	2.2	1.7	2b	V3	NIL	Large deadwood and poor form
T109	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	17	5	2	90	20	2.0	1.7	1a	V3	NIL	Small deadwood
T110	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	20	6	2	60	24	2.4	1.8	1a	V3	NIL	Lots of small deadwood
T111	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	22	7	2	80	26	2.6	1.9	1a	V3	NIL	Small deadwood
T112	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	24	7	2	80	29	2.9	2.0	1a	V3	NIL	Small deadwood
T113	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	22	10	4	90	26	2.6	1.9	1a	V3	NIL	Small deadwood
T114	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	40	10	4	90	48	4.8	2.4	1a	V3	NIL	Medium deadwood
T115	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	26	9	4	80	31	3.1	2.0	1a	V3	NIL	
T116	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	24	10	3	80	29	2.9	2.0	1a	V3	NIL	Small deadwood
T117	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	26	10	2	70	31	3.1	2.0	1a	V3	NIL	Medium deadwood
T118	<i>Stag</i>	Stag	RETAIN	33	15	2	0	40	4.0	2.2	4a	V2	NIL	Adjacent to subject site
T119	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	18	8	2	90	22	2.2	1.7	1a	V3	NIL	Small deadwood
T120	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	110	18	12	80	132	13.2	3.7	3a	V2	NIL	Large deadwood
T121	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	33	11	3	90	40	4.0	2.2	1a	V3	NIL	Small deadwood
T122	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	34	11	3	90	41	4.1	2.3	1a	V3	NIL	Small deadwood

SCHEDULE 1 – TREE DATA

Tree No.	Scientific Name	Common Name	Remove Retain	DBH (cm)	Height (m)	Spread (m)	Vigour (%)	BD (cm)	TPZ (cm)	SRZ (cm)	SULE	Vis Sign.	Habitat Tree	Comments
T123	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	40	14	7	80	48	4.8	2.4	2a	V2	NIL	Large deadwood
T124	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	39	4	1	60	47	4.7	2.4	2c	V3	NIL	Poor form
T125	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	42	12	7	70	50	5.0	2.5	2a	V2	NIL	Lots of small deadwood
T126	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	24	11	2	90	29	2.9	2.0	1a	V2	NIL	Small deadwood
T127	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	24	12	5	80	29	2.9	2.0	1a	V2	NIL	Small deadwood
T128	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	26	13	5	80	31	3.1	2.0	1a	V2	NIL	Small deadwood
T129	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	25	11	4	80	30	3.0	2.0	1a	V3	NIL	Small deadwood
T130	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	23	11	4	80	28	2.8	1.9	1a	V3	NIL	Small deadwood
T131	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	19	11	3	90	23	2.3	1.8	1a	V3	NIL	Small deadwood
T132	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	55	17	11	70	66	6.6	2.8	2a	V2	NIL	Large deadwood
T133	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	20	12	5	90	24.0	2.4	1.8	1a	V3	NIL	
T134	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	10 / 15	9	4	80	21.6	2.2	1.7	1a	V3	NIL	Minor suppression from 127
T135	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	15	11	4	70	18.0	1.8	1.6	2a	V2	NIL	Suppressed by younger surrounding growth
T136	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	20	9	5	90	24.0	2.4	1.8	1a	V3	NIL	
T137	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	20	6	5	50	24.0	2.4	1.8	2a	V3	NIL	Snapped off crown
T138	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	15	8	4	70	18.0	1.8	1.6	2a	V3	NIL	Suppressed by larger surrounding canopy
T139	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	15	8	5	70	18.0	1.8	1.6	2a	V3	NIL	Suppressed by surrounding canopy
T140	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	25	9	5	80	30.0	3.0	2.0	1a	V3	NIL	
T141	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	25	9	5	60	30.0	3.0	2.0	2a	V3	NIL	Suppressed canopy to SE by 120
T142	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	25	9	6	90	30.0	3.0	2.0	1a	V3	NIL	
T143	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	15	8	4	80	18.0	1.8	1.6	2c	V3	NIL	Will later compete with 144
T144	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	20	8	5	80	24.0	2.4	1.8	1a	V3	NIL	
T145	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	15 / 4	7	4	80	18.6	1.9	1.6	1a	V3	NIL	
T146	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	20	8	3	70	24.0	2.4	1.8	2c	V2	NIL	Suppressed by 145
T147	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	15	8	3	60	18.0	1.8	1.6	1a	V3	NIL	Suppressed by 148
T148	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	15	10	4	70	18.0	1.8	1.6	2c	V3	NIL	Suppressed by 147 & 149
T149	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	25	12	7	80	30.0	3.0	2.0	1a	V2	NIL	
T150	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	20	10	4	80	24.0	2.4	1.8	1a	V3	NIL	
T151	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	20	13	5	70	24.0	2.4	1.8	2c	V2	NIL	Suppressed lower canopy
T152	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	20	7	5	70	24.0	2.4	1.8	2c	V3	NIL	Lichen growth, lower broken limbs
T153	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	15	8	4	70	18.0	1.8	1.6	1a	V3	NIL	
T154	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	20	10	5	80	24.0	2.4	1.8	1a	V3	NIL	
T155	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	15 / 20	9	6	80	30.0	3.0	2.0	1a	V3	NIL	
T156	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	20	10	2	60	24.0	2.4	1.8	2c	V3	NIL	Unbalanced canopy, suppressed to N & E
T157	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	15	9	2	60	18.0	1.8	1.6	2c	V3	NIL	Unbalanced & suppressed canopy
T158	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	15	9	3	70	18.0	1.8	1.6	2c	V3	NIL	Cambium damage 1m from base, small kino
T159	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	25 / 25	10	5	80	42.4	4.2	2.3	1a	V2	NIL	
T160	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	15 / 20	9	5	90	30.0	3.0	2.0	1a	V3	NIL	
T161	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	25	7	5	80	30.0	3.0	2.0	1a	V3	NIL	
T162	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	15	7	4	80	18.0	1.8	1.6	1a	V3	NIL	
T163	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	35	14	8	90	42.0	4.2	2.3	1a	V2	NIL	

SCHEDULE 1 – TREE DATA

Tree No.	Scientific Name	Common Name	Remove Retain	DBH (cm)	Height (m)	Spread (m)	Vigour (%)	BD (cm)	TPZ (cm)	SRZ (cm)	SULE	Vis Sign.	Habitat Tree	Comments
T164	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	200 / 5 / 10	6	6	90	240.4	24.0	4.8	1a	V3	NIL	
T165	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	25	9	6	90	30.0	3.0	2.0	1a	V3	NIL	
T166	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	15	7	2	50	18.0	1.8	1.6	3a	V3	NIL	Suppressed unbalanced & overshadowed canopy
T167	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	20	9	3	70	24.0	2.4	1.8	1a	V3	NIL	Small low deadwood
T168	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	20	8	3	80	24.0	2.4	1.8	1a	V3	NIL	
T169	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	15 / 4	8	4	60	18.6	1.9	1.6	2a	V3	NIL	Thin canopy suppression around & above
T170	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	10 / 15	7	3	70	21.6	2.2	1.7	1a	V3	NIL	
T171	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	25	8	6	70	30.0	3.0	2.0	1a	V3	NIL	
T172	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	20	7	4	60	24.0	2.4	1.8	2c	V3	NIL	Unbalanced canopy
T173	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	30	9	6	80	36.0	3.6	2.2	1a	V3	NIL	
T174	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	25	7	3	50	30.0	3.0	2.0	3c	V3	NIL	Unbalanced canopy
T175	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	25	9	5	80	30.0	3.0	2.0	1a	V3	NIL	Small deadwood
T176	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	20	8	3	70	24.0	2.4	1.8	2c	V3	NIL	Suppressed canopy
T177	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	20 / 3 / 4	7	3	60	24.9	2.5	1.8	2c	V3	NIL	
T178	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	15	5	4	80	18.0	1.8	1.6	1a	V3	NIL	
T179	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	50	18	16	70	60.0	6.0	2.7	2a	V2	NIL	
T180	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	20	6	4	50	24.0	2.4	1.8	3c	V3	NIL	Suppressed & unbalanced canopy, small cambium damage
T181	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	20	7	4	80	24.0	2.4	1.8	1a	V3	NIL	Small deadwood
T182	<i>Stag</i>	stag	Removed for Previous DA	15	9	2	0	18.0	1.8	1.6	4a	V3	NIL	
T183	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	60	19	12	70	72.0	7.2	2.9	2a	V2	NIL	Some small deadwood
T184	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	50	19	12	70	60.0	6.0	2.7	2a	V2	NIL	Small deadwood, previous medium deadwood
T185	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	40	17	9	70	48.0	4.8	2.4	2a	V1	NIL	
T186	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	15	8	4	70	18.0	1.8	1.6	1a	V3	NIL	Canopy suppressed by 76
T187	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	15	6	2	50	18.0	1.8	1.6	3c	V3	NIL	Close overshadowing & surrounding competing canopy
T188	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	15	8	2	50	18.0	1.8	1.6	2c	V3	NIL	Unbalanced & suppressed canopy
T189	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	15 / 10	9	4	10	21.6	2.2	1.7	4a	V3	NIL	Almost dead, epicormic growth
T190	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	15	7	2	0	18.0	1.8	1.6	4a	V3	NIL	
T191	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	15	7	2	20	18.0	1.8	1.6	4a	V3	NIL	No canopy leaves all epicormic growth
T192	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	60	20	17	80	72.0	7.2	2.9	2a	V2	NIL	Small deadwood only
T193	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Removed for Previous DA	18	10	4	80	22	2.2	1.7	1a	V3	NIL	Slight suppression due to larger surrounding trees
T194	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	23	11	4	90	28	2.8	1.9	1a	V2	NIL	Good form. Mistletoe at 2.5m
T195	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	RETAIN	25	12	4	75	30	3.0	2.0	2a	V2	NIL	Slight bend in trunk at 4m
T196	<i>Eucalyptus punctata</i>	Grey Gum	RETAIN	23	9	3	35	28	2.8	1.9	3b	V2	NIL	Moderate dieback and overly suppressed, Adjacent to subject site
T197	<i>Eucalyptus punctata</i>	Grey Gum	RETAIN	25	13	5	90	30	3.0	2.0	1a	V2	NIL	Good form, Adjacent to subject site
T198	<i>Eucalyptus sclerophylla</i>	Hard-leaved Scribbly Gum	RETAIN	20 / 20	6	3.5	60	34	3.4	2.1	2a	V2	NIL	Poorer form. Some minor cambium damage at base, adjacent to subject site

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)

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

Schedule 2

SULE Assessment Plans

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.

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.

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.

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.