

(REVIEW OF ENVIRONMENTAL FACTORS)

Soil conservation works and construction of a new ancillary construction road, MORUYA

1. Introduction

This report supports a Review of Environmental Factors (REF) prepared for Health Infrastructure NSW pursuant to part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for the undertaking of soil conservation works and the construction of a new ancillary construction road at Lot 2, DP 1281576, Princes Highway, Moruya.

2. The Site

The site of the soil conservation works, and ancillary road works is located on the Princes Highway in the NSW south coast town of Moruya. The site is legally described as Lot 2, DP 1281576 and is a large vacant greenfield site. The soil conservation works will facilitate the ongoing management of the greenfield lot. To the west of the site is Moruya TAFE, and to the north is a small residential subdivision called Mynora Estate.

An aerial figure of the site is shown in Figure 1 below.

BAM Ecology Pty Ltd (T/A Abel Ecology) 2 Samuel 20:18 ACN 626 221 467 – ABN 37 626 221 467 PO Box 495, Springwood, NSW, 2777 Unit 2, 10-11 Ferguson Road Springwood, NSW, 2777 56 Sharp Street Cooma, NSW 2630 T (02) 4751 9487 E info@abelecology.com.au W <u>www.abelecology.com.au</u> W <u>www.snowymonaropdhub.com.au</u>



Key

Site locality: Lot 2, DP 1281576, Princes Highway, Moruya NSW

 $\textcircled{\sc c}$ Spatial Services, NSW. Spatial Information eXchange (SIX) Maps website 2022.

Figure 1: Aerial image of the site.



The works proposed (Figure 2) under this REF include the following:

- 1. Construction of five erosion and sediment basins, ranging between 60m³ and 360m³ in size,
- 2. Site sheds, stockpile areas, hard stand, and
- 3. Construction of an ancillary road into the site to facilitate construction access into the site.

A further detailed description of the proposed works is contained in the Review of Environmental Factors report prepared by Ethos Urban.



Figure 2. Proposed soil conservation and road construction planned for the site – Site Works Plan.



Arboricultural Impact Assessment Report

For

Lot 2, DP1281576

Princes Highway, Moruya NSW 2537

Proposed soil conservation works and the construction of a new ancillary construction road.

Prepared for:	Health Infrastructure
Report No:	AE23-2545-REP-ISS-5
Prepared by:	Abel Ecology
Date:	27 October 2023

BAM Ecology Pty Ltd (T/A Abel Ecology) 2 Samuel 20:18 ACN 626 221 467 – ABN 37 626 221 467

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Disclaimer

No tree is entirely without hazard potential. No responsibility is accepted for any damage or injury that may be caused by any trees on the site. All measures outlined should minimise damage inflicted on the trees if carefully implemented.

This report does not provide an assessment of risk of harm posed from tree hazards. Information may be provided about the structure, function, defects or tree pests and/or diseases, vitality, condition and life expectancy. However, no assessment of targets, frequency of use by potential targets or guidance of risk of harm is included in this report.

This report is an arboricultural impact assessment; it is not a risk assessment.

No internal examination of any kind has been undertaken on any tree described in this report, unless expressly stated. On occasions, a mallet may be used as an auditory guide to assist in determining the presence of internal hollows.

I confirm that I have read the NSW Land and Environment Court Practice Note commencing on 14 May 2007, Division 2, Part 31 of the Uniform Civil Procedure Rules 2005 and the Expert Witness Code of Conduct in Schedule 7 to the Uniform Civil Procedure Rules 2005. I have prepared this advice in accordance with the requirements of the Practice Note and Code of Conduct and believe this report is consistent with the requirements of the Practice Note and the Code of Conduct. I agree to be bound by the Practice Note and Code of Conduct.

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Document History

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List of Abbreviations

Diameter at breast height (~1.4 metres)
Structural Root Zone
Tree Protection Zone
Visual Tree Assessment
Local Government Area
Asset Protection Zone

Note regarding maps in this report

The diagrams/site maps used in this report have been supplied by and are used with the permission of: Land and property Information NSW. Spatial Information eXchange (SIX) website 2023.

With regard to maps provided by the Land Information Centre, Topographic maps used with the permission of © Land and Property Information, NSW.

Glossary

Explanation of Tree assessment terminology and rationale:

Amenity - Trees with recreational, functional, environmental, ecological, social, health or aesthetic value rather than for production purposes (Standards Australia 2007). A desirable or useful feature or facility of a building or place; the pleasantness or attractiveness of a place (Google Dictionary 2023). Assessment of amenity value is partially subjective/qualitative, but it also includes Arboricultural assessments of structure and health of the tree.

Arborist - A person with training to AQF Level 3 in Arboriculture, or above, or equivalent recognized and relevant experience that enables the person to perform the tasks required by the Australian Standards for Arboricultural practice (AS4373-2007 Pruning of amenity trees and AS4970-2009 Protection of trees on development sites).

Australian Qualification Framework (AQF) - A national framework for all educational and training purposes in Australia.

Codominant stems - Stems or trunks of about the same size originating from the same position from the main stem.

Condition - An evaluation of the structural status of the tree including defects that may affect the useful life of an otherwise healthy specimen. Such influencing factors include cavities and decay, weak unions between scaffolds (major branches) or trunks and faults of form or habit.

Coppiced - Cutting a trunk close to ground level in order to stimulate the production of multiple new stems (epicormic shoots).

DBH (Diameter at breast height) –A standard Arboricultural measurement used to calculate the Tree Protection Zone (TPZ), taken at 1.4 m from the ground.

Epicormic Growth - The production of epicormic growth from dormant buds is a response to stress, fire and damage, including poor pruning methods. 'Epi's' can occur on branches, stems and from the rhizome base of the tree. Arising from the cambium (actively growing bark region) they are often weakly attached. Epicormic shoots arising from rhizomes is an adaptive strategy in many Australian native plants including Eucalypts and plants in the Proteacea family, occurring commonly after fire, damage or drought.

Mycorrhizae/Rhizosphere - Mycorrhizae are fungi that grow in symbiotic association with tree roots (especially the fine root hairs) and are attributed with increasing the uptake of nutrients, particularly phosphorus, and reducing infection from soil borne pathogens. They greatly increase the surface area of a tree's root system. Mycorrhizae require aerobic soil conditions and are reduced in number by compaction, waterlogging and overuse of soil fertilisers. Forest litter or similar mulch provides ideal conditions for the proliferation of Mycorrhizae. Rhizosphere is a term describing the peripheral area of a tree's root system where this symbiotic association most commonly occurs.

Remedial (restorative) pruning - Removing damaged, diseased or lopped branches, taking the cut back to undamaged tissue, in order to induce the production of shoots from latent or adventitious buds, from which a new crown will be established.

Stem - Organ supporting the branches, leaves, flowers and fruit, and connecting the upper parts of the tree to the root system; may also be referred to as 'the trunk'.

Visual Tree Assessment (VTA) - using external characteristics as indicators of the internal conditions and structural stability of a tree. It is described by Mattheck and Breloer (1994), the first step of the method is to visually examine a tree to find external symptoms of internal defects. It is generally used in some form by Arborists in Australia for tree assessment.

A full VTA is comprised of three steps. This report does not undertake a full VTA. Only the first step, a visual inspection is described in this report. No internal examination was be undertaken. On occasions, a mallet may be used as an auditory guide for the presence of internal hollows. The assessment described in this report is ground based assessment. No climbing of any tree was done as part of an assessment.

Vitality - Indicates the energy reserves of the tree and is determined by the observed crown colour and density, the percentage of dead/dying branches and epicormic growth, and the tree's response to wounding, disease and decay pathogens. Poor vitality compromises the tree's ability to initiate internal defence systems (including compartmentalisation of damage or decay) is reduced and it can also become predisposed to attack by insects and pathogens. Often used synonymously in Arboricultural writing with 'vigour' or 'health'.

Tree Hazard Potential - An assessment of the risks associated with retaining a tree in its existing or proposed surroundings. Factors to consider are the growth characteristics of the species, tree vitality, condition and the frequency and type of potential targets. The impact the proposed works can have on any individual tree can only be assumed from general principals about trees.

This report does not provide an assessment of risk of harm posed from tree hazards. Information may be provided about the structure, function, defects or tree pests and/or diseases, vitality, condition and life expectancy. However, no assessment of targets, frequency of use by potential targets or guidance of risk of harm is included in this report.

Tree Protection Zone (TPZ) – Based on the DBH measurement of the tree. It specifies an area around the tree to protect the upper parts as well as the underground root system from impacts of development works. Specifications for TPZ may include maintenance actions such as application of mulch and irrigation.

Executive summary

Abel Ecology carried out a tree assessment survey at Lot 2, DP 1281576, Moruya NSW on behalf of Health Infrastructure, Eurobodalla Health Services, to assess the likely impacts of a development proposal on 350 site trees, and to address issues pertaining to tree protection.

The proposal is to conduct soil conservation works in the form of five (5) new erosion and sediment basins, site sheds, stockpile areas, hard stand and a new ancillary access road in an existing exotic pasture greenfield lot.

A total of forty-one (41) trees + a heritage stump will be impacted for the purpose of this proposal, including the protection of twenty-two (22) trees + a heritage stump from root and structural damage, relocation of twelve (12) hollow-bearing fauna habitat trees and removal of seven (7) non-hollow bearing trees. The trees on site are part of a remnant patch of an Endangered Ecological Community (EEC), *Lowland Grassy Woodland in the Southeast Corner Bioregion* which is listed as an Endangered ecological community (NSW), and a Critically Endangered ecological community (Commonwealth).

The proposed erosion and sediment basins are required to intercept and treat site runoff before discharge to adjacent waterways.

Items of concern on the site are as follows (Table 1):

Tree	Problem	Recommendation
Three (3) known trees.	Culturally significant scar trees	Construct tree protection fences at 20m; avoid all work within 20m of these trees.
208, 209, 210, 211, 214, 246, 249, 254, 255, 283, 284, 286, 291, 570, 602, 609, 910, 915, 917, 918, 919, 920. (22 trees) + Heritage Stump	Trees within close proximity to construction	Construct tree protection fences at reduced TPZ.
203, 215, 216, 219, 245, 256, 258, 262, 285, 290, 297, 569. (12 trees)	Habitat trees within the proposal footprint or affected by the proposal.	Relocate.
217, 218, 220, 221, 248, 909, 916. (7 trees)	Within the construction footprint.	Remove or relocate.

Table 1. Items of concern

The following recommendations apply:

- a) Engage a project arborist to ensure and certify that tree protection measures are satisfactorily implemented and to provide advice as applicable. The arborist will inspect the site at least once within every two months during construction, and once upon completion of construction.
- b) Construct tree protection fence(s) at the minimum TPZ radius, measured from the centre of the tree, prior to construction to prevent unnecessary root damage (See Figure 6 showing Tree Protection Fence diagram).
 Construct tree protection fences using chain wire mesh panels to a height of 1.8 metre. Fences are to be held in place with secure footing (Figure 6).
- c) Where root damage is expected anywhere within the tree protection zone of a retained tree, consider installing a 'floating' footpath or road over the impacted area of the TPZ to avoid any disturbance of the soil profile, thus protecting the roots and health of retained trees. We expect this recommendation to apply as a priority to tree 255.
- d) Exclude all site activity from Tree Protection Zones (TPZs) (Table 1) and excluded areas (those areas outside the permitted work zone) during demolition, construction and demobilisation phases (see 'Tree Protection Guidelines' in Appendix 3).
- e) Do not remove tree protection fences until construction is completed, at which time the arborist will sign-off on fence removal and provide further advice as applicable.
- f) Apply mulch 100-150mm deep with a radius of at least two (2) metres, (or to the edge of the calculated tree protection zone where possible) around retained trees prior to construction to stimulate growth of absorbing roots. For trees that will be located beneath fill, apply mulch on top of fill soils.
- g) Re-apply mulch annually to compensate for root loss.
- h) Water trees during periods of low rainfall. This will boost the vitality and adaptability of the trees, creating visual and shade assets that complement the site.
- i) Cleanly cut any roots with a thickness of two (2) cm or more encountered during excavation to reduce damage to roots from tearing, splitting and cracking.
- j) Show tree locations and protective fencing on all construction plans used on site.
- k) Engage a qualified ecologist to inspect hollow-bearing trees before they are removed. The ecologist will provide further advice as applicable.
- I) Potential habitat trees are to be inspected for hollows by a qualified ecologist before removal.
- m) Any trees found to have hollows that have not previously been identified as a habitat tree, must be inspected by a qualified ecologist, and all hollows removed and relocated.

- n) Protective fencing is to be placed at a minimum of the TPZ radius distance around twenty-two (22) identified trees + a heritage stump within or adjacent the permitted site work zone (Refer to Figure 4, Table 1, Table 2 & Table 4) (those in close proximity to the building envelope).
- No construction work or vehicles are to be within 20 metres of the designated scar trees. This 20 metre exclusion zone is to be maintained during demolition, construction and demobilisation phases. Once these works are completed, vehicle activity surrounding these trees are to be minimised.
- p) All site activity must be excluded from TPZs of retained trees during demolition and construction phases (see 'Tree Protection Guidelines' in Appendix 3).
- q) Route all trenching for underground services outside the TPZs of retained trees. If any underground service installation or underground boring will occur within TPZs, engage an arborist to supervise the activity.
- r) Crown pruning must comply with the appropriate class of pruning described in AS4373-2007 *Pruning of amenity trees,* and be undertaken by a qualified arborist practising modern arboricultural methods.
- s) Advice must be sought from a suitably skilled and experienced project arborist wherever roots over 40mm diameter are encountered during excavation. The tearing of roots must be avoided and root pruning undertaken as directed by the nominated arborist.
- t) Any and all landscaping or gardening for the proposal must use species that are native to remnant *Lowland Grassy Woodland in the Southeast Corner Bioregion* vegetation community. Species of this community which are suitable for landscaping include:

-	Acacia implexa	-	Dianella longifolia
-	Angophora floribunda	-	Dianella revoluta
-	Bursaria spinosa	-	Hardenbergia violacea
-	Bossiaea buxifolia	-	Jacksonia scorparia
-	Eucalyptus tereticornis	-	Lomandra longifolia
-	Eucalyptus eugenioides	-	Rubus parvifolius
-	Eucalyptus bosistoana	-	Themeda australis

u) An environmental offset area must be established to ameliorate the impacts of the proposal. The vegetation planted within the offset must be native to the *Lowland Grassy Woodland* vegetation community. Specifications can be finalised with a Vegetation Management Plan (VMP).

1. Introduction

A survey of the proposed development site at Lot 2 in DP 1281576 Princes Highway, Moruya NSW 2537 ('the site' –Figure 1) was undertaken on 12th April 2021 to 15th April 2021, 25th October to 29th October 2021 and 11th July 2022 to 15th July 2022.

The main aim of this survey was to assess the trees on the site and prepare a report that addresses issues pertaining to the 'proposal and tree protection.

This report will provide a description of individual trees and assess the anticipated impact of the 'Soil Conservation and Road Work' development to the trees on the site.

1.1 Site description

For the purpose of this report the site is defined as Lot 2 in DP 1281576 Princes Highway, Moruya NSW 2537 (Figure 1, Figure 2, and Figure 3).

The site is approximately 21.94 ha, and the elevation is approximately 19 metres above sea level.

It is primarily occupied by open grassland with tree stands and has been used for grazing by cattle for many decades.

The highest elevations of the site contain open woodland with relatively dense tree cover, consisting mostly of native trees, with a small number of mature exotics on the south-east corner.

There are four (4) water bodies on site; all are farm stock watering dams. There are two drainage lines directing overland flow, one near the northern boundary connecting one dam, the other near the southern boundary and connecting three dams, all draining to a shallow wetland along the western boundary.

The adjacent properties are a mix of residential, a Tafe and grazing agricultural land uses.

The trees on site are all remnant natives of the *Lowland Grassy Woodland in the Southeast Corner Bioregion* - Endangered ecological community (NSW) - Critically Endangered ecological community (Commonwealth).

1.2 The proposal

The proposal is to perform site soil conservation works in the form of five (5) new erosion and sediment basins, site sheds, stockpile areas, hard stand and a new ancillary access road in an existing exotic pasture greenfield lot.

Up to twelve (12) hollow-bearing fauna habitat trees and seven (7) non-hollow bearing trees will be relocated for the development.

The proposed erosion and sediment basins are required to intercept and treat site runoff before discharge to adjacent waterways.

2. Method

Scope

This Arboricultural Impact Assessment Report addresses the proposed Soil Conservation and Site Road Work only. Any potential future building development would require a further assessment on impacted trees.

Method

Tree assessments were undertaken on 12th, 13th, 14th, 15th April 2021, 25th, 26th, 27th, 28th, and 29th October 2021, and 11th, 12th, 13th, 14th, and 15th July 2022. Dr Danny Wotherspoon, Jesse Cass, Mark Sherring, Nathan Sharman and Mark Mackinnon conducted the field assessment at the site.

Harry Kirk undertook a desktop review of previously collected data and documents to produce this report for the 'Soil Conservation and Road Work'.

Eurobodalla Shire Council TPO/DCP defines a "tree" as;

".....a perennial plant with at least one self-supporting woody or fibrous stems which:

- (i) is 3 metres or more in height or
- (ii) has a trunk circumference of 400 mm or more measured at ground level or
- (iii) has a crown/branch span of 3 metre diameters or more;"

Eurobodalla Shire Council, 2010,

https://www.horizontotaltreeservice.com.au/wp-content/uploads/2017/06/Tree-Preservation-Code.pdf

The vitality and condition of trees were assessed from ground level using the VTA (Visual Tree Assessment) method (Mattheck & Breleor, 1994). Tree heights were determined by visual estimation, using a 5-metre measuring pole for reference. Trees were marked using nails and numbered aluminium tags, which correspond with the tree identification numbers used in this report.

The Tree Protection Zone (TPZ) of each tree was determined using the formula "TPZ = d.b.h. X 12", and Structural Root Zone (SRZ) was calculated using the formula "SRZ radius = (Base Diameter X 50) 0.42 X 0.64". Formulae used to calculate TPZs and SRZs are provided in the *Australian Standard for Protection of Trees On Development Sites AS4970-2009* (Standards Australia, 2010).

Tree locations are shown in Figure 4 and Figure 5. Trees are individually described in Appendix 2.

3. Survey Results

3.1 Condition and vitality of trees on site

The vitality and condition of trees vary considerably across the site, and appear to partially correlate with age class, species and location in the landscape. For example, a grove of Stringybarks on a shallow watercourse on the south-east are in generally fairer condition than adjoining trees of other species. Conversely, most trees on the upper south-east corner on steep slopes have both good vitality and condition. Some large habitat trees have poor vitality/condition while others have healthy foliage and do not show significant signs of decline. These factors have been considered in the assessment.

The soil is shallow over massive granite bedrock.

Trees of low vitality and/or poor structural integrity include the following (Table 2):

Table 2 Trees with poor structure and stability

KEY

A. floribunda = Angophora floribunda

E. eugenioides = *Eucalyptus eugenioides*

E. tereticornis = *Eucalyptus tereticornis*

Tree #	Species	Problem (e.g. history of failure, weed, poor structure/vitality)	Remove/Retain Tree Recommendation
213	<i>E. tereticornis</i> (Habitat Tree)	Poor structure and vitality	Outside construction footprint. Retain as a habitat tree on site.
214	<i>A. floribunda</i> (Habitat Tree)	Poor structure and vitality	Tree within close proximity to construction. Construct tree protection fences at TPZ. Retain as a habitat tree on site.
216	<i>E. tereticornis</i> (Habitat Tree)	Poor structure and vitality	Significant tree within close proximity to construction. Habitat tree that requires root protection within TPZ to retain ecological integrity i.e. elevate road construction above natural ground level, or Relocate as a habitat tree on site.
220	E. tereticornis	Poor structure and vitality	Located within construction footprint. Remove.
222	<i>E. tereticornis</i> (Habitat Tree)	Poor structure and vitality	Outside construction footprint. Retain as a habitat tree on site.
224	<i>E. tereticornis</i> (Habitat Tree)	Poor structure and vitality	Outside construction footprint. Retain as a habitat tree on site.
225	<i>E. tereticornis</i> (Habitat Tree)	Poor structure and vitality	Outside construction footprint. Retain as a habitat tree on site.
234	E. tereticornis (Habitat Tree)	Poor structure and vitality	Retain as a habitat tree on site.
245	<i>E. tereticornis</i> (Habitat Tree)	Poor structure and vitality	Located within construction footprint. Relocate as habitat tree on site.
246	<i>E. tereticornis</i> (Habitat Tree)	Poor structure and vitality	Tree within close proximity to construction. Construct tree protection fences at TPZ. Retain as a habitat tree on site.
247	E. tereticornis (Habitat Tree)	Poor structure and vitality	Outside construction footprint. Retain as a habitat tree on site.
250	E. eugenioides	Poor structure and vitality	Outside construction footprint. Retain tree on site.
251	E. eugenioides	Poor structure and vitality	Outside construction footprint. Retain tree on site.
252	A. floribunda	Poor structure and vitality	Outside construction footprint. Retain tree on site.

Tree #	Species	Problem (e.g. history of failure, weed, poor structure/vitality)	Remove/Retain Tree Recommendation
254	E. eugenioides	Poor structure and vitality	Tree within close proximity to construction. Construct tree protection fences at TPZ. Retain tree.
256	<i>E. tereticornis</i> (Habitat Tree)	Poor structure and vitality	Located within construction footprint. Relocate as habitat tree on site.
257	E. tereticornis (Habitat Tree)	Poor structure and vitality	Tree within close proximity to construction. Retain habitat tree.
261	STAG (Habitat Tree)	Dead	Outside construction footprint. Retain tree on site.
262	<i>A. floribunda</i> (Habitat Tree)	Poor structure and vitality	Located within construction footprint. Relocate as a habitat tree on site.
263	E. eugenioides	Poor structure and vitality	Outside construction footprint. Retain tree on site.
264	E. eugenioides	Poor structure and vitality	Outside construction footprint. Retain tree on site.
265	E. eugenioides	Poor structure and vitality	Outside construction footprint. Retain tree on site.
266	E. eugenioides	Poor structure and vitality	Outside construction footprint. Retain tree on site.
267	E. eugenioides	Poor structure and vitality	Outside construction footprint. Retain tree on site.
269	E. eugenioides	Poor structure and vitality	Outside construction footprint. Retain tree on site.
270	E. eugenioides	Poor structure and vitality	Outside construction footprint. Retain tree on site.
272	E. tereticornis (Habitat Tree)	Poor structure and vitality	Outside construction footprint. Retain significant habitat tree.
277	E. eugenioides	Poor structure and vitality	Outside construction footprint. Retain tree on site
278	E. eugenioides	Poor structure and vitality	Outside construction footprint. Retain tree on site
281	STAG (Habitat Tree)	Dead	Outside construction footprint. Retain as a habitat tree on site.
285	STAG (Habitat Tree)	Dead	Located within construction footprint. Relocate as a habitat tree on site.
290	<i>E. tereticornis</i> (Habitat Tree)	Poor structure and vitality	Located within construction footprint. Relocate as a habitat tree on site.
293	<i>E. eugenioides</i> (Habitat Tree)	Poor structure and vitality	Outside construction footprint. Retain habitat tree on site.

Tree #	Species	Problem (e.g. history of failure, weed, poor structure/vitality)	Remove/Retain Tree Recommendation
295	E. tereticornis	Poor structure and vitality	Outside construction footprint. Retain tree on site
299	A. floribunda	Poor structure and vitality	Outside construction footprint. Retain tree on site
320	E. eugenioides	Poor condition	Outside construction footprint. Retain tree on site
330	E. eugenioides	Poor condition and vitality	Outside construction footprint. Retain tree on site
341	STAG (Habitat Tree)	Dead	Outside construction footprint. Retain as a habitat tree on site
345	E. eugenioides	Poor condition and vitality	Outside construction footprint. Retain tree on site
346	E. tereticornis	Poor condition and vitality	Outside construction footprint. Retain tree on site.
349	STAG (Habitat Tree)	Dead	Outside construction footprint. Retain as a habitat tree on site.
355	E. eugenioides	Poor condition and vitality	Outside construction footprint. Retain tree on site.
360	E. eugenioides	Poor condition and vitality	Outside construction footprint. Retain tree on site.
374	E. eugenioides	Poor condition and vitality	Outside construction footprint. Retain tree on site.
375	E. eugenioides	Poor condition and vitality	Outside construction footprint. Retain tree on site.
376	E. eugenioides	Poor condition and vitality	Outside construction footprint. Retain tree on site.
383	E. eugenioides	Poor condition and vitality	Outside construction footprint. Retain tree on site.
384	E. eugenioides	Poor condition and vitality	Outside construction footprint. Retain tree on site.
385	E. eugenioides	Poor condition and vitality	Outside construction footprint. Retain tree on site.
386	E. eugenioides	Poor condition and vitality	Outside construction footprint. Retain tree on site.
387	E. eugenioides	Poor condition and vitality	Outside construction footprint. Retain tree on site.
390	E. eugenioides	Poor condition and vitality	Outside construction footprint. Retain tree on site.
391	E. eugenioides	Poor condition and vitality	Outside construction footprint. Retain tree on site.

Tree #	Species	Problem (e.g. history of failure, weed, poor structure/vitality)	Remove/Retain Tree Recommendation
398	E. eugenioides	Poor condition and vitality	Outside construction footprint. Retain tree on site.
399	E. eugenioides	Poor condition and vitality	Outside construction footprint. Retain tree on site.
400	E. eugenioides	Poor condition and vitality	Outside construction footprint. Retain tree on site.
402	E. eugenioides	Poor condition and vitality	Outside construction footprint. Retain tree on site.
403	E. eugenioides	Poor condition and vitality	Outside construction footprint. Retain tree on site.
409	E. eugenioides	Poor condition and vitality	Outside construction footprint. Retain tree on site.
415	STAG, <i>E.eugenioides</i> (Habitat Tree)	Dead	Outside construction footprint. Retain as a habitat tree on site.
419	<i>E. eugenioides</i> (Habitat Tree)	Poor condition and vitality	Outside construction footprint. Retain as a habitat tree on site.
420	STAG (Habitat Tree)	Dead	Outside construction footprint. Retain as a habitat tree on site.
501	A. floribunda (Habitat Tree)	Poor condition and vitality	Not located within construction footprint. Retain as a habitat tree on site.
505	E. eugenioides	Poor condition and vitality	Not located within construction footprint. Retain Tree.
510	E. eugenioides	Poor condition and vitality	Not located within construction footprint. Retain tree.
511	E. eugenioides	Poor condition and vitality	Not located within construction footprint. Retain tree.
514	E. tereticornis	Poor condition, structure, and vitality	Not located within construction footprint. Retain tree.
518	E. eugenioides	Poor condition and vitality	Not located within construction footprint. Retain tree.
522	E. eugenioides	Poor condition and vitality	Not located within construction footprint. Retain tree.
541	E. tereticornis (Habitat Tree)	Poor condition	Outside construction footprint. Retain as a habitat tree on site.
569	A. floribunda (Habitat Tree)	Poor condition	Located within construction footprint. Relocate as a habitat tree on site.
613	<i>E. eugenioides</i> (Habitat Tree)	Poor condition and vitality	Not located within construction footprint. Retain tree.
616	E. eugenioides	Poor condition and vitality	Not located within construction footprint. Retain tree.

Tree #	Species	Problem (e.g. history of failure, weed, poor structure/vitality)	Remove/Retain Tree Recommendation		
902	E. tereticornis	Poor structure and vitality	Outside construction footprint. Retain as a habitat tree on site.		
903	<i>E. eugenioides</i> (Habitat Tree)	Poor structure and vitality	Outside construction footprint. Retain as a habitat tree on site.		
904	STAG (Habitat Tree)	Dead	Outside construction footprint. Retain as a habitat tree on site.		
905	A. floribunda	Poor structure and vitality	Outside construction footprint. Retain tree on site.		
908	<i>E. tereticornis</i> (Habitat Tree)	Poor structure and vitality	Outside construction footprint. Retain as a habitat tree on site.		
910	E. tereticornis	Poor structure and vitality	Tree within close proximity to construction. Construct tree protection fences at TPZ. Retain tree.		
912	STAG (Habitat Tree)	Dead	Retain as a habitat tree.		
917	<i>E. tereticornis</i> (Habitat Tree)	Poor structure and vitality	Tree within close proximity to construction. Construct tree protection fences at TPZ. Retain as a habitat tree.		
919 STAG (Habitat Tree)		Dead	Tree within close proximity to construction. Construct tree protection fences at TPZ. Retain as a habitat tree.		
920	STAG (Habitat Tree)	Dead	Tree within close proximity to construction. Construct tree protection fences at TPZ. Retain as a habitat tree.		

Tree species identified within and adjacent to the site include the following (Table 3):

Table 3 Tree species identified

Species name	Common name	Count
Acacia implexa	Hickory Wattle	5
Acacia mearnsii	Black Wattle	1
Allocasuarina littoralis	Black She-oak	5
Angophora floribunda	Rough-barked Apple	38
Casuarina glauca	Swamp Sheoak	1
Eucalyptus bosistoana	Coast Grey Box	11
Eucalyptus eugenioides	Thin-leaved Stringybark	134
Eucalyptus sieberi	Silvertop Ash	5
Eucalyptus tereticornis	Forest Red Gum	132
Exocarpus cupressiformis	Native Cherry	2
Grevillea robusta	Silky Oak	1
Ligustrum sinense	Small-leaved Privet	1
Pittosporum undulatum	Sweet Pittosporum	1
	Unidentified species	3
	STAGS (dead)	10
	Total	350

3.2 Trees on adjacent land

Trees on adjacent land are generally remnant natives in road reserves to the north, east and southwest. Adjoining land (road reserve) on the southern boundary has a similar canopy composition and cover to, and is contiguous with, that on the south end of the site.

Forty-one (41) trees + a heritage stump that may be affected by road entries have been assessed in relation to potential impacts for their retention, relocation or removal; these are indicated in the following sections.

4. Anticipated impact of the development to trees on site

4.1 Tree Retention

The following trees are marked for retention and do not occur within construction zones and are recommended to retain:

99	201	202	204	205	206	207	212	213	222	223	224	225	226	227
228	229	230	231	232	233	234	235	236	237	238	239	240	241	242
243	244	247	250	251	252	253	257	259	260	261	263	264	265	266
267	268	269	270	271	272	273	274	275	276	277	278	279	280	281
282	283	287	288	289	292	293	294	296	298	299.				
300	301	302	303	304	305	306	307	308	309	310	311	312	313	314
315	316	317	318	319	320	321	322	323	324	325	326	327	328	329
330	331	332	333	334	335	336	337	338	339	340	341	342	343	344
345	346	347	348	349	350	351	352	353	354	355	356	357	358	359
360	361	362	363	364	365	366	367	368	369	370	371	372	373	374
375	376	377	378	379	380	381	382	383	384	385	386	387	388	389
390	391	392	393	394	395	396	397	398	399.					
400	401	402	403	404	405	406	407	408	409	410	411	412	413	414
415	416	417	418	419	420	421	422.							
501	502	503	504	505	506	507	508	509	510	511	512	513	514	515
516	517	518	519	520	521	522	523	524	525	526	527	528	529	530
531	532	533	534	535	536	537	538	539	540	541	542	543	544	545
546	547	548	549	550	551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568.							

		_												
601	603	604	605	606	607	608	610	611	612	613	614	615	616	617
618	619	620	621	622	623	624	625	626	627	628	629	630	631	632
633	634	635	636	637	638	639	640	641.						
901	902	903	904	905	906	907	908	911	912	913	914.			

4.2 Tree Protection

The following trees occur within (or close to) construction zones and are marked for tree protection measures (included in Table 4 following):

208	209	210	211	214	246	249	254	255	284	286	291
570											
602	609										
910	915	917	918	919	920.						

4.3 Tree removal

The following trees occur within (or close to) construction zones and are marked for removal (included in Table 4 following):

217 218 220 221 248 909 916.

4.4 Tree relocation

The following trees are habitat trees and occur within (or close to) construction zones and are marked for relocation (included in Table 4 following):

203	215	216	219	245	256	258	262	285	290	297	569.
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The following trees in Table 4 are to be removed, relocated or protected:

Tree no.	Species	Remove / Relocate / Retain	Reason
201	Angophora floribunda	Retain	Outside construction footprint. Habitat tree. Six (6) potential hollow sections were counted from ground level.
202	Eucalyptus tereticornis	Retain	Outside construction footprint.
203	Eucalyptus tereticornis	Relocate	Tree within close proximity to construction. Habitat tree. Ten (10) potential hollow sections were counted from ground level.
204	Eucalyptus eugenioides	Retain	Outside construction footprint.
205	Eucalyptus eugenioides	Retain	Outside construction footprint.
206	Angophora floribunda	Retain	Outside construction footprint.
207	Eucalyptus tereticornis	Retain	Outside construction footprint.
208	Eucalyptus eugenioides	Retain	Tree within close proximity to construction. Construct tree protection fences at TPZ.
209	Eucalyptus eugenioides	Retain	Tree within close proximity to construction. Construct tree protection fences at TPZ.
210	Eucalyptus tereticornis	Retain	Tree within close proximity to construction. Construct tree protection fences at TPZ.
211	Eucalyptus eugenioides	Retain	Tree within close proximity to construction. Construct tree protection fences at TPZ.
212	Eucalyptus eugenioides	Retain	Outside construction footprint.
213	Eucalyptus tereticornis	Retain	Outside construction footprint. Habitat tree. Four (4) potential hollow sections were counted from ground level.
214	Angophora floribunda	Retain	Tree within close proximity to construction. Construct tree protection fences at TPZ; Habitat tree. Three (3) potential hollow sections were counted from ground level.
215	Angophora floribunda	Relocate	Inside construction footprint; Habitat tree that requires relocation to maintain ecological integrity. One (1) potential hollow section was counted from ground level.
216	Eucalyptus tereticornis	Relocate	Significant tree within close proximity to construction. Significant habitat tree. Six (6) potential hollow sections were counted from ground level. Habitat tree that requires root protection within TPZ to retain ecological integrity i.e. elevate road construction above natural ground level

Table 4 Trees to be removed, relocated or protected from the construction footprint.

	Tree no.	Species	Remove / Relocate / Retain	Reason
				or
				Relocate as a habitat tree on site.
	217	Eucalyptus tereticornis	Remove	Inside construction footprint.
	218	Eucalyptus tereticornis	Remove	Inside construction footprint.
	219	Angohpora floribunda	Relocate	Inside construction footprint. Three (3) potential hollow sections were counted from ground level.
	220	Eucalyptus tereticornis	Remove	Inside construction footprint.
	221	Eucalyptus tereticornis	Remove	Inside construction footprint.
	222	Eucalyptus tereticornis	Retain	Outside construction footprint; Habitat tree. Three (3) potential hollow sections were counted from ground level.
	223	Angohpora floribunda	Retain	Outside construction footprint; Habitat tree.
	224	Eucalyptus tereticornis	Retain	Outside construction footprint; Habitat tree. Eight (8) potential hollow sections were counted from ground level.
	225	Eucalyptus tereticornis	Retain	Outside construction footprint; Habitat tree. Six (6) potential hollow sections were counted from ground level.
	226	Eucalyptus sieberi	Retain	Outside construction footprint.
	227	Eucalyptus sieberi	Retain	Outside construction footprint.
	229	Eucalyptus sieberi	Retain	Outside construction footprint.
	230	Eucalyptus sieberi	Retain	Outside construction footprint.
	231	Eucalyptus tereticornis	Retain	Outside construction footprint.
	241	Eucalyptus sp. (E. tereticornis ?) juvenile	Retain	Outside construction footprint.
	242	Angohpora floribunda	Retain	Outside construction footprint.
	243	Eucalyptus tereticornis	Retain	Outside construction footprint.
	245	Eucalyptus tereticornis	Relocate	Too close to construction footprint and would be significantly negatively affected; Habitat tree. Two (2) potential hollow sections were counted from ground level.
	246	<i>E. tereticornis</i> (Habitat Tree)	Retain	Tree within close proximity to construction. Construct tree protection fences at reduced TPZ.
	248	Angohpora floribunda	Remove	Inside construction footprint.
	249	E. tereticornis	Retain	Tree within close proximity to construction. Construct tree protection fences at reduced TPZ.

Tree no.	Species	Remove / Relocate / Retain	Reason
254	Eucalyptus eugenioides	Retain	Tree within close proximity to construction. Construct tree protection fences at reduced TPZ.
255	Eucalyptus tereticornis	Retain	Significant tree within close proximity to construction. Construct tree protection fences at reduced TPZ; Habitat tree that requires root protection within TPZ to retain ecological integrity i.e. elevate road construction above natural ground level. Six (6) potential hollow sections were counted from ground level.
256	Eucalyptus tereticornis	Relocate	Inside construction footprint; Habitat tree that requires relocation to retain ecological integrity. Five (5) potential hollow sections were counted from ground level.
257	Eucalyptus tereticornis	Retain	Tree within close proximity to construction. Habitat tree, eight (8) potential hollow sections were counted from ground level.
258	Angohpora floribunda	Relocate	Inside construction footprint; Habitat tree that requires relocation to retain ecological integrity. Five (5) potential hollow sections were counted from ground level.
259	Angohpora floribunda	Retain	Outside construction footprint.
260	Eucalyptus tereticornis	Retain	Outside construction footprint.
262	262 Angohpora floribunda	Relocate	Inside construction footprint; Habitat tree that requires relocation to retain ecological integrity. Two (2) potential hollow sections were counted from ground level.
263	Eucalyptus eugenioides	Retain	Outside construction footprint.
264	Eucalyptus eugenioides	Retain	Outside construction footprint.
265	STAG — Eucalyptus eugenioides	Retain	Outside construction footprint.
266	Eucalyptus eugenioides	Retain	Outside construction footprint.
267	Eucalyptus eugenioides	Retain	Outside construction footprint.
269	Eucalyptus eugenioides	Retain	Outside construction footprint.
270	Eucalyptus eugenioides	Retain	Outside construction footprint.
271	Eucalyptus eugenioides	Retain	Outside construction footprint.
272	Eucalyptus tereticornis	Retain	Outside construction footprint. Significant habitat tree. Twenty-one (21) potential hollow sections were counted from ground level.
281	STAG (Habitat Tree)	Retain	Outside construction footprint. Significant habitat tree. Two (2) potential hollow sections were counted from ground level.

Tree no.	Species	Remove / Relocate / Retain	Reason
282	STAG <i>Eucalyptus eugenioides</i> (Habitat Tree)	Retain	Outside construction footprint. Significant habitat tree. Two (2) potential hollow sections were counted from ground level.
283	Eucalyptus eugenioides	Retain	Tree within close proximity to construction. Construct tree protection fences at reduced TPZ.
284	Eucalyptus tereticornis	Retain	Tree within close proximity to construction. Construct tree protection fences at reduced TPZ; Habitat tree that requires root protection to retain ecological integrity. Three (3) potential hollow sections were counted from ground level.
285	STAG (Habitat Tree)	Relocate	Inside construction footprint; Significant habitat tree. Ten (10) potential hollow sections were counted from ground level.
286	Eucalyptus eugenioides	Retain	Tree within close proximity to construction. Construct tree protection fences at reduced TPZ.
287	Eucalyptus eugenioides	Retain	Outside construction footprint.
288	Eucalyptus eugenioides	Retain	Outside construction footprint.
290	D Eucalyptus tereticornis D Eucalyptus tereticornis	Relocate	Inside construction footprint; Habitat tree that requires relocation to retain ecological integrity. Ten (10) potential hollow sections were counted from ground level.
291		Retain	Tree within close proximity to construction. Construct tree protection fences at reduced TPZ; Habitat tree that requires root protection to retain ecological integrity. Eight (8) potential hollow sections were counted from ground level.
293	Eucalyptus eugenioides	Retain	Outside construction footprint. Habitat tree. Six (6) potential hollow sections were counted from ground level.
294	Eucalyptus tereticornis	Retain	Outside construction footprint. Habitat tree. Five (5) potential hollow sections were counted from ground level.
296	Eucalyptus tereticornis (Significant habitat tree)	Retain	Outside construction footprint. Habitat tree. Six (6) potential hollow sections were counted from ground level.
297	STAG (Significant habitat tree)	Relocate	Inside construction footprint; Significant habitat tree that requires relocation to retain ecological integrity. Four (4) potential hollow sections were counted from ground level.
501	Angopohora floribunda	Retain	Outside construction footprint; Habitat tree. One (1) potential hollow section were counted from ground level.
502	Eucalyptus sp.	Retain	Outside construction footprint.
503	Eucalyptus tereticornis	Retain	Outside construction footprint.

Tree no.	Species	Remove / Relocate / Retain	Reason
504	Eucalyptus tereticornis	Retain	Outside construction footprint.
505	Eucalyptus eugenioides	Retain	Outside construction footprint.
506	Angopohora floribunda	Retain	Outside construction footprint.
507	Angopohora floribunda	Retain	Outside construction footprint.
508	Eucalyptus tereticornis	Retain	Outside construction footprint.
509	Eucalyptus tereticornis	Retain	Outside construction footprint.
510	Eucalyptus eugenioides	Retain	Outside construction footprint.
511	Eucalyptus eugenioides	Retain	Outside construction footprint.
512	Angopohora floribunda	Retain	Outside construction footprint.
513	Eucalyptus bosistoana	Retain	Outside construction footprint.
514	Eucalyptus tereticornis	Retain	Outside construction footprint.
515	Eucalyptus bosistoana	Retain	Outside construction footprint.
516	Angopohora floribunda	Retain	Outside construction footprint.
517	Eucalyptus eugenioides	Retain	Outside construction footprint.
518	Eucalyptus eugenioides	Retain	Outside construction footprint.
519	Acacia mearnsii	Retain	Outside construction footprint.
520	Eucalyptus eugenioides	Retain	Outside construction footprint.
521	Casuarina glauca	Retain	Outside construction footprint.
522	Eucalyptus eugenioides	Retain	Outside construction footprint.
523	Angopohora floribunda	Retain	Outside construction footprint.
524	Angopohora floribunda	Retain	Outside construction footprint.
525	Angopohora floribunda	Retain	Outside construction footprint.
526	Angopohora floribunda	Retain	Outside construction footprint.
527	Eucalyptus eugenioides	Retain	Outside construction footprint.
528	Eucalyptus tereticornis	Retain	Outside construction footprint.
529	Angopohora floribunda	Retain	Outside construction footprint.
530	Angopohora floribunda	Retain	Outside construction footprint.
531	Eucalyptus eugenioides	Retain	Outside construction footprint.
532	Eucalyptus tereticornis	Retain	Outside construction footprint.
533	E. eugenioides	Retain	Outside construction footprint.
569	Angopohora floribunda	Relocate	Too close to construction footprint and would be significantly negatively affected. Habitat tree that requires relocation to retain ecological integrity. Two

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Tree no.	Species	Remove / Relocate / Retain	Reason
			(2) potential hollow section were counted from ground level.
570	Angopohora floribunda	Retain	Tree within close proximity to construction. Construct tree protection fences at reduced TPZ; Habitat tree that requires root protection to retain ecological integrity. Two (2) potential hollow section were counted from ground level.
602	Eucalyptus tereticornis	Retain	Tree within close proximity to construction. Construct tree protection fences at reduced TPZ.
603	Eucalyptus tereticornis	Retain	Outside construction footprint.
607	Eucalyptus tereticornis	Retain	Outside construction footprint.
609	Eucalyptus tereticornis	Retain	Tree within close proximity to construction. Construct tree protection fences at reduced TPZ.
610	Eucalyptus tereticornis	Retain	Outside construction footprint.
611	Eucalyptus tereticornis	Retain	Outside construction footprint.
612	Eucalyptus tereticornis	Retain	Outside construction footprint.
613	Eucalyptus tereticornis	Retain	Outside construction footprint; Habitat tree. One (1) potential hollow sections were counted from ground level.
615	Eucalyptus tereticornis	Retain	Outside construction footprint. Habitat tree. One (1) potential hollow sections were counted from ground level.
616	Eucalyptus tereticornis	Retain	Outside construction footprint; Habitat tree. One (1) potential hollow section were counted from ground level.
617	Eucalyptus tereticornis	Retain	Outside construction footprint.
618	Eucalyptus tereticornis	Retain	Outside construction footprint.
619	Eucalyptus tereticornis	Retain	Outside construction footprint.
620	Eucalyptus tereticornis	Retain	Outside construction footprint.
621	Eucalyptus tereticornis	Retain	Outside construction footprint.
622	Eucalyptus tereticornis	Retain	Outside construction footprint.
623	Eucalyptus tereticornis	Retain	Outside construction footprint.
624	Eucalyptus eugenioides	Retain	Outside construction footprint.
625	Eucalyptus tereticornis	Retain	Outside construction footprint.
626	Eucalyptus tereticornis	Retain	Outside construction footprint.
627	Eucalyptus tereticornis	Retain	Outside construction footprint.
628	Eucalyptus tereticornis	Retain	Outside construction footprint; Habitat tree. Two (2) potential hollow sections were counted from ground level.

Tree no.	Species	Remove / Relocate / Retain	Reason
629	Eucalyptus tereticornis	Retain	Outside construction footprint.
630	Eucalyptus tereticornis	Retain	Outside construction footprint.
631	STAG	Retain	Outside construction footprint.
632	STAG	Retain	Outside construction footprint.
633	Eucalyptus tereticornis	Retain	Outside construction footprint.
634	Eucalyptus tereticornis	Retain	Outside construction footprint.
635	STAG	Retain	Outside construction footprint.
636	Eucalyptus tereticornis	Retain	Outside construction footprint.
637	Eucalyptus tereticornis	Retain	Outside construction footprint.
638	Eucalyptus tereticornis	Retain	Outside construction footprint.
639	Eucalyptus tereticornis	Retain	Outside construction footprint.
640	Eucalyptus tereticornis	Retain	Outside construction footprint.
901	Eucalyptus tereticornis	Retain	Outside construction footprint.
902	Eucalyptus tereticornis	Retain	Outside construction footprint.
908	Eucalyptus tereticornis	Retain	Outside construction footprint. Habitat tree. Two (2) potential hollow sections were counted from ground level.
909	Eucalyptus tereticornis	Remove	Inside construction footprint.
910	Eucalyptus tereticornis	Retain	Tree within close proximity to construction. Construct tree protection fences at TPZ.
914	Eucalyptus tereticornis	Retain	Outside construction footprint. Significant habitat tree
915	Eucalyptus tereticornis	Retain	Tree within close proximity to construction. Construct tree protection fences at TPZ. Significant habitat tree
916	-	Remove	Inside construction footprint.
919	STAG	Protect or relocate	Protect with tree protection fencing. Seven (7) potential hollow sections were counted from ground level.
920	STAG	Protect or relocate	Protect with tree protection fencing. One (1) potential hollow section were counted from ground level.

4.5 Services

Underground services (including water, electricity, gas, septic/sewer, telecommunications/fibre-optics, and stormwater) have not been proposed as part of this development. If underground services were to be proposed, all excavated trenching is to be routed outside the tree protection zones. Where this is not achievable underboring may be an acceptable method after consultation with an arborist.

5. Discussion

This report supports a Review of Environmental Factors (REF) prepared for Health Infrastructure NSW pursuant to part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for the undertaking of soil conservation works and the construction of a new ancillary construction road at Lot 2, DP 1281576, Princes Highway, Moruya. The findings provide an assessment of all trees expected to be impacted by the proposal for Soil Conservation and Site Road Works only.

Any potential future building development would require a further assessment on impacted trees.

Soil Conservation and Site Road Works

Site inspection and field survey identified 350 trees, including 96 confirmed and potential habitat trees on site.

For this proposal a total of twenty-two (22) trees + a heritage stump will require protection from root and structural damage. A total of twelve (12) hollow-bearing fauna habitat trees and associated un-damaged hollow sections will need to be relocated. In addition, seven (7) non-hollow bearing trees will be removed. In total forty-one (41) trees + a heritage stump is impacted by the proposal.

Potential habitat trees were not found to have any visible hollows but were suspected to be potentially hollow bearing. Before removal of trees marked as potential habitat trees, a qualified ecologist must conduct a thoroughly inspection to identify any potential hollows. If any hollows are found, they must be carefully removed and relocated. Subsequently, any trees observed to have a hollow that has not previously been identified as a habitat tree, should be inspected, and have all hollows removed and relocated.

All hollows can be relocated or replaced by a combination of the following methods (Central Coast Council 'Guideline for the Relocation of Large Tree Hollows'):

- Relocating the entire trunk of a habitat tree and re-erecting the trunk with suitable support.
- Removing the hollows and placed (with support) in retained trees or on constructed poles; and or
- Replaced with nest boxes.

The first two of these three methods are preferred, as nest boxes require more long term maintenance, can break down and require replacing. The relocation, installation and management of tree hollows can be discussed and finalised with a Vegetation Management Plan (VMP).

Given that the proposal will impact forty-one (41) trees + a heritage stump, the proposal must include amelioration. The trees on site are part of a remnant patch of an Endangered Ecological Community (EEC), the *Lowland Grassy Woodland*. While the extent of the community is in poor condition due to more than 100 years of grazing practices, the damage or removal of forty-one (41) trees will reduce the extent and health of this community.

An offset tree replacement (planting) area has been determined for the site. The southwest corner of the site has been chosen because it contains sufficient area outside the 'bushfire assessment area' of potential future site development areas and also offers opportunity to link the 'spring forest' in the southeast site corner with the riparian corridor adjacent to the western site boundary. Strategically, plantings in the 'high value offset area' are anticipated to have an increased likelihood of survival and growth rate. The number of trees and diversity required for a sufficient offset can be finalised with a vegetation management plan.

An area of approximately 0.5 Ha is available for offset plantings, located centrally on the existing south-west site access gate and extending partially across the shallow north-south drainage line to the east. Allowing for a separation distance of 10-metres between tree plantings, up to an estimated 500 trees can be considered for planting into this area. Planting strategies, staging and species can be addressed in a Vegetation Management Plan.

Allowing for an attrition rate (plant loss) of up to 20%, that planting of (an estimated) seventy two (72) trees would potentially compensate for loss of nineteen (19) removed trees at approximately a rate of 3:1, with maintenance of plantings to minimise attrition.

The standard practice is to construct tree protection fences at the edge of the TPZ, and majority of trees on site will be adequately protected using this method. However, due to the geology of the site, construction within 10-20 metres of the large habitat trees may compromise their ground-water source. It is for this reason that construction be avoided, where possible, within 20 metres of marked habitat trees.

The proposal will involve construction near numerous large trees and some small trees. Some larger trees will have to be removed because they are too close. Some smaller trees will be able to be retained because their root zones are not larger enough to be impacted by construction. Twenty-two (22) trees + a heritage stump (208, 209, 210, 211, 214, 246, 249, 254, 255, 283, 284, 286, 291, 570, 602, 609, 910, 915, 917, 918, 919, & 920) will need to have tree protection fencing installed at the reduced TPZ. These twenty-two (22) trees + a heritage stump is within 20 metres of construction and will experience some minor root damage. However, they will not be significantly affected by the construction if fencing is erected at the reduced TPZ on the side closest to the construction.

Scar trees are culturally significant aboriginal heritage trees and must be protected. It is therefore imperative that no work be conducted within 20 metres of a scar tree.

The establishment of generous protection areas and maintenance of stringent site controls will be essential in preventing damage to scar trees during construction. Landscaping must also accommodate existing roots and provide favourable conditions for normal root function.

Dead or damaged roots such as those resulting from cattle grazing or vehicle access may indicate increase failure potential. Excavation across a tree's root crown decreases stability by severing roots. Trees can usually survive with only a small operational root system; however, their ability to respond to stress and environmental factors is reduced depending on the extent of root loss (*Matheny & Clark, 1994*).

Roots grow opportunistically in response to a favourable environment. A favourable environment is one that offers adequate supply of oxygen, water, mineral nutrients, physical support, and warmth (Perry, 1982). A large proportion of tree roots are likely to be found in the direction of the nearest watercourse.

Roots cannot grow without oxygen, and they cannot survive in compacted soils. Any activity that buries or cuts roots such as a soil stockpile or service trench will result in death of a corresponding portion of the canopy (*Perry, 1982*). It follows, then, that a large soil stockpile near the base of the tree will remove oxygen for a significant proportion of the root system, and thus impact the live crown.

Trees are commonly observed to survive when more than 50% of their roots are severed (*Hamilton, 1989*). The root ball size of transplanted trees is usually as little as 3-5 times trunk diameter (*Solfjeld & Hansen, 2004; Levinsson, 2015*), which means that a loss of more than 50% root zone is standard practice in the transplant industry. Transplanted trees are managed quite differently to the way established trees are managed on construction sites. Transplanted trees are valuable commodities purchased at great cost, attracting much care, and that level of care can be the difference between a tree that survives construction and one that is killed by it.

Section 3.3.3 of the Australian Standard for tree protection (*Standards Australia, 20*10) says the following with regard to encroaching in TPZs by more than 10%:

1.3 Major encroachment

If the proposed encroachment is greater than 10% of the TPZ or inside the SRZ (see Clause 3.3.5), the project arborist must demonstrate that the tree(s) would remain viable. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ. This may require root investigation by non-destructive methods and consideration of relevant factors listed in Clause 3.3.4.

Levinsson (2015) suggests effective management may be more valuable to tree survival than beginning with a vigorous specimen. In the context of trees on or adjacent to development sites, effective management is simply a matter of adequate protection, mulching, and regular irrigation, as this satisfies the most common limiting factors for tree growth (*Harris et al., 2004; Mauseth, 2009*). Additionally, wood chip and leaf litter mulches are effective and cost-efficient methods for stimulating new root growth and improving soil quality in compacted urban soils (*Scharenbroch, & Watson, 2*014).

Root loss will be compensated by applying mulch to a depth of approximately 100-150 mm around the base of each tree at least one month prior to trenching, and by regularly watering the trees (*Roberts et al, 2006*). This will boost vitality and stimulate the growth of new absorbing roots.

Mycorrhizae are fungi that grow in symbiotic association with tree roots (especially the fine root hairs) and are attributed with increasing the uptake of nutrients, particularly phosphorus, and reducing infection from soil borne pathogens. They greatly increase the surface area of a tree's root system. Mycorrhizae are reduced in number by compaction, waterlogging and overuse of soil fertilisers, as they require aerobic soil conditions, that is, they need oxygen. Forest litter or similar mulch provides ideal conditions for the proliferation of Mycorrhizae (*Harris et al., 2004*).

Adequately insulated soils allow small absorbing roots to grow in the upper 150 mm of soil, whereas exposed soils are prone to become hot enough that roots are restricted to greater depths because absorbing roots cannot survive in the upper layer of soil (*Harris et al., 2004*).

The vast majority of roots are found within the top metre of soil, though this is highly dependent on the soil type. Roots systems are shallow in poorly aerated clay soils, deep in well-aerated sandy soils, and widespread in desert environments, all according to the availability of oxygen, water, and soil nutrients (*Dobson, 1995*).
6. Recommendations

- a) Engage a project arborist to ensure and certify that tree protection measures are satisfactorily implemented and to provide advice as applicable. The arborist will inspect the site at least once within every two months during construction, and once upon completion of construction.
- b) Construct tree protection fence(s) at the minimum radius, measured from the centre of the tree, prior to construction to prevent unnecessary root damage (See Figure 6 showing Tree Protection Fence diagram). Construct tree protection fences using chain wire mesh panels to a height of 1.8 metre. Fences are to be held in place with secure footing (Figure 6).
- c) Where root damage is expected anywhere within the tree protection zone of a retained tree, consider installing a 'floating' footpath or road over the impacted area of the TPZ to avoid any disturbance of the soil profile, thus protecting the roots and health of retained trees. We expect this recommendation to apply as a priority to tree 255.
- d) Exclude all site activity from Tree Protection Zones (TPZs) (Table 1) and excluded areas (those areas outside the permitted work zone) during demolition, construction and demobilisation phases (see 'Tree Protection Guidelines' in Appendix 3).
- e) Do not remove tree protection fences until construction is completed, at which time the arborist will sign-off on fence removal and provide further advice as applicable.
- f) Apply mulch 100-150mm deep with a radius of at least two (2) metres, (or to the edge of the calculated tree protection zone where possible) around retained trees prior to construction to stimulate growth of absorbing roots. For trees that will be located beneath fill, apply mulch on top of fill soils.
- g) Re-apply mulch annually to compensate for root loss.
- h) Water trees during periods of low rainfall. This will boost the vitality and adaptability of the trees, creating visual and shade assets that complement the site.
- i) Cleanly cut any roots with a thickness of two (2) cm or more encountered during excavation to reduce damage to roots from tearing, splitting and cracking.
- j) Show tree locations and protective fencing on all construction plans used on site.
- k) Engage a qualified ecologist to inspect hollow-bearing trees before they are removed. The ecologist will provide further advice as applicable.
- I) Potential habitat trees are to be inspected for hollows by a qualified ecologist before removal.

- m) Any trees found to have hollows that have not previously been identified as a habitat tree, must be inspected by a qualified ecologist, and all hollows removed and relocated. All hollows should be relocated or replaced by a combination of methods found in Central Coast Council 'Guideline for the Relocation of Large Tree Hollows'.
- n) Protective fencing is to be placed at a minimum of the TPZ radius distance around twenty-two (22) identified trees + a heritage stump within or adjacent the permitted site work zone (Refer to Figure 4, Table 1, Table 2 & Table 4) (those in close proximity to the building envelope).
- o) No construction work or vehicles are to be within 20 metres of the designated scar trees. This 20 metre exclusion zone is to be maintained during demolition, construction and demobilisation phases. Once these works are completed, vehicle activity surrounding these trees are to be minimised.
- p) All site activity must be excluded from TPZs of retained trees during demolition and construction phases (see 'Tree Protection Guidelines' in Appendix 3).
- q) Route all trenching for underground services outside the TPZs of retained trees. If any underground service installation or underground boring will occur within TPZs, engage an arborist to supervise the activity.
- r) Crown pruning must comply with the appropriate class of pruning described in AS4373-2007 *Pruning of amenity trees,* and be undertaken by a qualified arborist practising modern arboricultural methods.
- s) Advice must be sought from a suitably skilled and experienced project arborist wherever roots over 40 mm diameter are encountered during excavation. The tearing of roots must be avoided and root pruning undertaken as directed by the nominated arborist.
- t) Any and all landscaping or gardening for the proposal must use species that are native to the remnant *Lowland Grassy Woodland in the Southeast Corner Bioregion* vegetation community. Species of this community which are suitable for landscaping include:
 - Acacia implexa Dianella longifolia
 - Angophora floribunda Dianella revoluta
 - Bursaria spinosa Hardenbergia violacea
 - Bossiaea buxifolia Jacksonia scorparia
 - Eucalyptus tereticornis Lomandra longifolia
 - Eucalyptus eugenioides
 - Eucalyptus bosistoana Themeda australis

Rubus parvifolius

u) An environmental offset area must be established to ameliorate the impacts of the proposal. The vegetation planted within the offset must be native to the *Lowland Grassy Woodland* vegetation community. Specifications can be finalised with a Vegetation Management Plan (VMP).

7. References

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Standards Australia (2010) Protection of Trees on Development Sites (AS 4970-2009 – incorporating Amendment No. 1).

Appendix 1. Figures



Figure 1. Locality map.







Figure 3. Aerial map of site.



Figure 4. Aerial with numbered tree locations.









LEGEND:

- 1 Chain wire mesh panels with shade cloth (if required) attached, held in place with concrete feet.
- 2 Alternative plywood or wooden paling fence panels. This fencing material also prevents building materials or soil entering the TPZ.
- 3 Mulch installation across surface of TPZ (at the discretion of the project arborist). No excavation, construction activity, grade changes, surface treatment or storage of materials of any kind is permitted within the TPZ.
- 4 Bracing is permissible within the TPZ. Installation of supports should avoid damaging roots.

Figure 6. Extract from Section 3 of AS 4970-2009: Protective fencing

Standards Australia (2010) Protection of trees on development sites (AS 4970-2009 – incorporating Amendment No. 1).

Appendix 2. Tree data table

The following tree schedule (Table 6) describes the numbered trees shown in (Figure 4).

KEY		
Ac. implexa	=	Acacia implexa
Alloc. littoralis	=	Allocasuarina littoralis
A. floribunda	=	Angophora floribunda
C. glauca	=	Casuarina glauca
E. tereticornis	=	Eucalyptus tereticornis
E. bosistoana	=	Eucalyptus bosistoana
E. eugenioides	=	Eucalyptus eugenioides
E. cupressiformis	=	Exocarpos cupressiformis
E. sieberi	=	Eucalyptus sieberi
G.robusta	=	Grevillea robusta
L. sinense	=	Ligustrum sinense
P. undulatum	=	Pittosporum undulatum

Table 5 Tree data.

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
99	E. eugenioides	64	48	5.76	3.96	2.74	Healthy foliage. Small dieback.
201	A. floribunda	149	119	14.28	9.82	3.91	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
202	E. tereticornis	96	81	9.72	6.68	3.25	
203	E. tereticornis	146	126	15.12	10.40	3.88	
204	E. eugenioides	38	33	3.96	2.72	2.20	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
205	E. eugenioides	53	44	5.28	3.63	2.53	
206	A. floribunda	39	32	3.84	2.64	2.23	
207	E. tereticornis	56	53	6.36	4.37	2.59	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
208	E. eugenioides	67	57	6.84	4.70	2.80	
209	E. eugenioides	77	6	0.72	0.50	2.97	
210	E. tereticornis	59	51	6.12	4.21	2.65	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
211	E. eugenioides	39	33	3.96	2.72	2.23	
212	E. eugenioides	26	23	2.76	1.90	1.88	
213	E. tereticornis	141	117	14.04	9.65	3.82	213

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
214	A. floribunda	122	96	11.52	7.92	3.60	
215	A. floribunda	102	84	10.08	6.93	3.34	
216	E. tereticornis	200	170	20.40	14.03	4.43	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
217	E. tereticornis	69	69	8.28	5.69	2.83	
218	E. tereticornis	69	52	7.95	5.46	2.83	
219	A. floribunda	84	79	9.48	6.52	3.08	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
220	E. tereticornis	41	37	4.44	3.05	2.28	
221	E. tereticornis	81	67	8.04	5.53	3.03	
222	E. tereticornis	90	88	10.56	7.26	3.17	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
223	A. floribunda	21	17	2.04	1.40	1.72	
224	E. tereticornis	149	123	14.76	10.15	3.91	
225	E. tereticornis	129	109	13.08	8.99	3.68	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
226	E. sieberi	85	67	8.04	5.53	3.09	
227	E. sieberi	68	57	6.84	4.70	2.81	
228	E. sieberi	51	43	5.16	3.55	2.49	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
229	E.sieberi	57	44	5.28	3.63	2.61	
230	E.sieberi	76	63	7.56	5.20	2.95	
231	E. tereticornis	33	29	3.48	2.39	2.08	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
232	E. tereticornis	42	34	4.08	2.81	2.30	
233	E. tereticornis	24	28	3.36	2.31	1.82	
234	E. tereticornis	120	139	16.68	11.47	3.57	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
235	E. tereticornis	57	53	6.36	4.37	2.61	
236	E. tereticornis	34	27	3.24	2.23	2.10	
237	E. bosistoana	31	27	3.24	2.23	2.02	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
238	E. tereticornis	63	30	3.60	2.48	2.73	
239	E. tereticornis	54	42	5.04	3.47	2.55	
240	E. tereticornis	61	52	6.24	4.29	2.69	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
241	Eucalyptus sp. (E. tereticornis ?) juvenile	29	22	2.64	1.82	1.97	
242	A. floribunda	27	20	2.40	1.65	1.91	
243	E. tereticornis	72	66	7.92	5.45	2.88	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
244	A. floribunda	62	53	6.36	4.37	2.71	
245	E. tereticornis	150	133	15.96	10.97	3.92	
246	E. tereticornis	135	119	14.28	9.82	3.75	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
247	E. tereticornis			0.00	0.00	0.00	
248	A. floribunda	105	84	10.08	6.93	3.38	
249	E. tereticornis	170	142	17.04	11.72	4.14	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
250	E. eugenioides	90	76	9.12	6.27	3.17	
251	E. eugenioides	51	53	6.36	4.37	2.49	
252	A. floribunda	94	89	10.68	7.34	3.22	

/

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
253	A. floribunda	80	72	8.64	5.94	3.01	
254	E. eugenioides	95	84	10.08	6.93	3.24	
255	E. tereticornis	175	154	18.48	12.71	4.19	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
256	E. tereticornis	154	132	15.84	10.89	3.97	
257	E. tereticornis	141	120	14.40	9.90	3.82	
258	A. floribunda			0.00	0.00	0.00	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
259	A. floribunda	68	65	7.80	5.36	2.81	
260	E. tereticornis	54	43	5.16	3.55	2.55	
261	STAG Habitat tree			0.00	0.00	0.00	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
262	A. floribunda	110	95	11.40	7.84	3.44	
263	E. eugenioides	74	66	7.92	5.45	2.92	
264	E. eugenioides	40	31	3.72	2.56	2.25	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
265	STAG	58	40	4.80	3.30	2.63	
266	E. eugenioides	44	38	4.56	3.14	2.34	
267	E. eugenioides	54	46	5.52	3.80	2.55	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
268	E. eugenioides	74	65	7.80	5.36	2.92	
269	E. eugenioides	52	43	5.16	3.55	2.51	264 269 270 271
270	E. eugenioides	46	43	5.16	3.55	2.39	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
271	E. eugenioides	42	37	4.44	3.05	2.30	
272	E. tereticornis (Significant Habitat Tree)	162	138	16.56	11.39	4.05	
273	E. eugenioides	49	29	4.84	3.33	2.45	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
274	Eucalyptus sp. (E. tereticornis?) juvenile	26	24	2.88	1.98	1.88	
275	E. tereticornis	129	118	14.16	9.74	3.68	
276	E. tereticornis (Significant Habitat Tree)	187	164	19.68	13.53	4.30	
Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
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277	E. eugenioides	48	40	4.80	3.30	2.43	
278	E. eugenioides	27	25	3.00	2.06	1.91	
279	E. eugenioides	35	32	3.84	2.64	2.13	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
280	E. eugenioides	33	31	3.72	2.56	2.08	
281	STAG			0.00	0.00	0.00	
282	E. eugenioides	118	97	11.64	8.00	3.55	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
283	E. eugenioides			0.00	0.00	0.00	283
284	E. tereticornis	142	117	14.04	9.65	3.83	284 283
285	STAG	-	-	0.00	0.00	0.00	No photo available

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
286	E. eugenioides	82	72	8.64	5.94	3.04	
287	E. eugenioides	89	78	9.36	6.44	3.15	
288	E. eugenioides	60	53	6.36	4.37	2.67	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
289	E. eugenioides	51	43	5.16	3.55	2.49	
290	E. tereticornis	173	145	17.40	11.96	4.17	
291	E. tereticornis	171	131	15.72	10.81	4.15	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
292	E. eugenioides	49	36	4.32	2.97	2.45	
293	E. eugenioides	91	84	10.08	6.93	3.18	
294	E. tereticornis	164	141	16.92	11.63	4.07	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
295	E. tereticornis	96	84	10.08	6.93	3.25	
296	E. tereticornis	141	124	14.88	10.23	3.82	
297	STAG (E. tereticornis)	140	163	19.56	13.45	3.81	

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
298	Ac. implexa	29	22	2.64	1.82	1.97	
299	A. floribunda	72	61	7.32	5.03	2.88	
300	A. floribunda	167	133	15.96	10.97	4.10	

	Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
ſ			PA	DDOCK T	REES (PER	REVISED	PLAN OC	T721)
	301	E. tereticornis	105	89	10.68	7.34	3.38	Spreading form, many main branches in canopy. Downslope & 30m NW of T304.
	302	E. tereticornis	172	120	14.40	9.90	4.16	HABITAT. Trunk leaning N. Spreading form. Dieback of small branches.
	303	Alloc. littoralis	65	40	4.80	3.30	2.76	Beside T304, with a 3 m <i>Ficus rubiginosa</i> .
	304	E. tereticornis	210	161	19.32	13.28	4.52	HABITAT tree. Central trunk broken off at 9m (dead trunk section), hollows. Branches on N & E sides.
	305	E. bosistoana	210	142	17.04	11.72	4.52	With the second secon
	306	E. tereticornis	165	105	12.60	8.66	4.08	HABITAT. Leaning S toward bdy fence. Canopy stressed, sparse foliage. Hollows at 9 m. One main dead branch on N side.
	307	E. eugenioides	76	55	6.60	4.54	2.95	Spreading form. Small amounts of die back but foliage healthy. Lower trunk curved.
	308	Ac. implexa	53	15	2.72	1.87	2.53	In small depression, with <i>E.tereticornis</i> . Two stems co-dominant from ground. Canopy bias to S, suppressed.
	309	E. tereticornis	74	51	6.12	4.21	2.92	In small depression, by T308. Dead branch on W side. Slight lean to SE.

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
							Slightly suppressed by adjacent T310. Possible small hollows.
310	E. tereticornis	115	91	10.92	7.51	3.51	In small depression, near T309. Spreading form. Some dead medium branches. Fork at 1 m. Several large branches forking. Clumping foliage. Medium dead branch on E side.
311	Ac. implexa	15	19	2.28	1.57	1.49	In small depression, by T310. Leaning SE, suppressed canopy.
312	E. tereticornis	195	142	17.04	11.72	4.38	HABITAT. At least 4 hollows. Some small dieback. Slight lean 5-10 deg S (upslope). Foliage healthy. 4 medium hollows.
313	E. bosistoana	32	28	3.36	2.31	2.05	Near-symmetrical, pendulous form. Some dieback on W side. Leaves near- orbiculate. (Stag upslope)
314	E. bosistoana	32	29	3.48	2.39	2.05	Some clumping foliage, sparse in places. Some dieback on S and W sides. Dead Acacia beside.
315	E. tereticornis	35	24	2.88	1.98	2.13	In small depression. Canopy suppressed on S and E sides. Foliage healthy.
316	E. tereticornis	30	23	2.76	1.90	2.00	In small depression, with T315. Foliage healthy. Slight trunk lean to N.
317	E. eugenioides	90	23	4.46	3.06	3.17	In small depression, with T316. Two co- dominant trunks from near ground level; one trunk forked at 0.4 m. Foliage healthy. Some small dieback on S side.
318	A. floribunda	130	84	10.08	6.93	3.69	POTENTIAL HABITAT. Large spreading form. Stressed, foliage healthy but sparse in places. Some dieback. Slight lean W away from adjacent T319. One vertical dead branch at top.
319	E. tereticornis	210	135	16.20	11.14	4.52	HABITAT. Large spreading form, several main branches. Large drooping dead branch on N side. Several small hollows. Beside T318.

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
320	E. eugenioides	90	65	7.80	5.36	3.17	HABITAT. Leaning 15 deg NE. Some small epicormics. Damage in trunk base (0.5 x 1). Foliage healthy. Upper trunk broken off at 5 m. Stick nest in upper N branch.
321	E. eugenioides	89	61	7.32	5.03	3.15	Trunk lean 5-10 deg NE. Stressed, some foliage clumping. Some dieback of small/medium branches. Canopy bias N.
322	E. eugenioides	45	33	3.96	2.72	2.37	Trunk lean to NE. Canopy suppressed on W side by T321. Stressed, some dieback.
323	E. tereticornis	133	113	13.56	9.32	3.73	HABITAT. At least 3 medium hollows. Healthy foliage. Some small dieback. NOTE - The stag 9 m upslope has a small hollow, used by Kingfishers.
324	E. eugenioides	63	47	5.64	3.88	2.73	Forked at 3 m. Some medium dieback.
325	E. tereticornis	181	143	17.16	11.80	4.25	HABITAT. At least 2 medium hollows. Large main branch at 2.5 m on N side. Some dieback, foliage healthy.
326	STAG	62	48	5.76	3.96	2.71	STAG
327	E. tereticornis	250	135	16.20	11.14	4.86	HABITAT. At least 3 hollows. Main fork at 6.5 m.

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
328	E. eugenioides	40	33	3.96	2.72	2.25	Image: Second systemImage: Second systemLeaning west toward gully. Dieback. Canopy bias to W.With stand of Stringybarks.
329	E. eugenioides	40	31	3.72	2.56	2.25	Leaning W toward gully. Canopy elevated. Dieback.
330	E. eugenioides	50	24	3.60	2.48	2.47	Main stem dead, other stem shorter (5m). Logs nearby.
331	E. eugenioides	39	28	3.36	2.31	2.23	Leaning W toward gully. Stressed. Some dieback.
332	E. eugenioides	41	30	3.60	2.48	2.28	Lean W toward gully. Stressed, upper foliage of epicormics.
333	E. eugenioides	32	22	2.64	1.82	2.05	Stressed, poor foliage, dieback.
334	E. eugenioides	60	37	4.44	3.05	2.67	Upper canopy & trunk biased to W toward gully.
335	E. eugenioides	47	33	3.96	2.72	2.41	Stressed, dieback, sparse foliage. Epicormics.
336	E. eugenioides	49	39	4.68	3.22	2.45	By gully. Dieback, sparse foliage, epicormics. Slight trunk lean W.
337	E. tereticornis	50	34	4.08	2.81	2.47	Canopy elevated. 1 branch at 6 m, E side.
338	E. eugenioides	71	51	6.12	4.21	2.87	By gully. Stressed, sparse foliage, dieback of medium branches.
339	E. eugenioides	60	43	5.16	3.55	2.67	On gully, granite boulders adjacent. Stressed. Clumped foliage. Dieback.
340	E. eugenioides	53	41	4.92	3.38	2.53	On gully, by granite boulders. Small and medium dieback.
341	STAG	56	40	4.80	3.30	2.59	STAG. Dead Mistletoe.
342	E. eugenioides	44	34	4.08	2.81	2.34	Canopy & trunk bias to NW. Some dieback of small branches.

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
343	E. eugenioides	25	14	1.68	1.16	1.85	Stressed, epicormics.
344	E. eugenioides	61	43	5.16	3.55	2.69	Stressed, dieback, upper canopy to W.
345	E. eugenioides	65	50	6.00	4.13	2.67	Stressed, dieback, sparse foliage, epicormics.
346	E. tereticornis	65	56	6.72	4.62	2.76	Stressed, dieback of medium branches, clumping foliage. Large shrub of Small- leaf Privet at base. Bark cracked on lower-mid trunk.
347	E. eugenioides	44	40	4.80	3.30	2.34	Trunk lean W. Some dieback, bark damage from cows.
348	P. undulatum	30	14	1.68	1.16	2.00	Small tree. Healthy foliage.
349	STAG	78	48	5.76	3.96	2.98	HABITAT. STAG. By T348. Fork at 5 m.
350	E. tereticornis	36	27	3.24	2.23	2.15	Upper trunk leaning N. Small amounts dieback.
351	E. eugenioides	54	42	5.04	3.47	2.55	Stressed, upper foliage with some epicormics., dieback.
352	E. eugenioides	63	43	5.16	3.55	2.73	Beside T351. Canopy to N side, suppressed by T351. Canopy & trunk leaning NE
353	E. eugenioides	44	27	3.24	2.23	2.34	Stressed, dieback of medium branches.
354	E. tereticornis	48	32	3.84	2.64	2.43	Canopy elevated. By granite boulders.
355	E. eugenioides	70	54	6.48	4.46	2.85	Stressed, medium dieback, several dead branches, fork at 1 m.
356	E. eugenioides	56	40	4.80	3.30	2.59	Slight lean upslope. Canopy elevated. Some medium dieback.
357	E. eugenioides	51	35	4.20	2.89	2.49	Some medium dieback. First branch at 2.5 m.
358	E. eugenioides	55	42	5.04	3.47	2.57	Some medium dieback. Canopy elevated.
359	G. robusta	14	9	1.08	0.74	1.45	Healthy foliage, symmetrical form.
360	E. eugenioides	66	40	4.80	3.30	2.78	Senescent, sparse foliage, significant dieback, epicormics.
361	E. tereticornis	53	41	4.92	3.38	2.53	Canopy bias downslope to N.
362	E. tereticornis	41	31	3.72	2.56	2.28	Canopy elevated.
363	E. tereticornis	143	105	12.60	8.66	3.85	HABITAT. Spreading form. Used by Brushtailed Possum.
364	E. eugenioides	67	42	5.18	3.56	2.80	Healthy foliage but some small Dieback. Canopy suppressed slightly on NE side by adjacent stag.

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
365	STAG	58	45	5.40	3.71	2.63	STAG
366	E. tereticornis	180	138	16.56	11.39	4.24	HABITAT tree. Dieback. Some trunk damage at base.
367	E. cupressiformis	18	17	2.04	1.40	1.61	Upper canopy of sparse foliage.
368	E. eugenioides	82	10	6.30	4.33	3.04	Stressed, dieback. sparse foliage.
369	Ac. implexa	11	9	1.08	0.74	1.31	Upper canopy, sparse. Beside T370.
370	E. tereticornis	118	91	10.92	7.51	3.55	HABITAT. At least 3 hollows. Foliage healthy, some dieback.
371	L. sinense	9	8	0.96	0.66	1.20	<u>Weed.</u> Spreading shrub at base of T370 (<i>E.tereticornis</i>)
372	E. eugenioides	58	32	4.62	3.18	2.63	Near T370. Some dieback.
373	E. eugenioides	63	33	4.97	3.42	2.73	Ву Т372
374	E. eugenioides	75	54	6.48	4.46	2.93	Stressed, dieback, dead branches in upper canopy.
375	E. eugenioides	60	45	5.46	3.76	2.67	Senescent upper canopy, dieback. Epicormics.
376	E. eugenioides	83	59	7.08	4.87	3.06	Stressed, significant dieback of small & medium branches. Epicormics.
377	E. tereticornis	45	32	3.84	2.64	2.37	Healthy foliage. Fork at 3 m.
378	E. tereticornis	68	52	6.24	4.29	2.81	Some small dieback. Healthy foliage. Fork at 1.2 m, bark damage near fork.
379	E. eugenioides	79	57	6.84	4.70	3.00	Dieback of small branches in upper canopy.
380	E. cupressiformis	13	10	1.20	0.83	1.40	Sparse foliage - not as dense as usually occurs in this species
381	Ac. implexa	43	31	3.72	2.56	2.32	Foliage healthy, some dieback
382	E. tereticornis	40	29	3.48	2.39	2.25	Canopy elevated. Some dieback. Foliage healthy. Fork at 5 m.
383	E. eugenioides	48	37	4.44	3.05	2.43	Stressed, Dieback, epicormics. Upper canopy leaning NW.
384	E. eugenioides	53	34	4.08	2.81	2.53	Stressed, dieback, epicormics
385	E. eugenioides	51	36	4.32	2.97	2.49	Stressed, dieback, epicormics. Slight lean N. Suppressed by adjacent T386.
386	E. eugenioides	62	44	5.28	3.63	2.71	Upper canopy & trunk leaning NW. Stressed, dieback, epicormics.
387	E. eugenioides	45	31	3.72	2.56	2.37	Upper trunk curving 5-15 deg to NW. Stressed, dieback, epicormics. By T386.

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
388	E. eugenioides	83	55	6.60	4.54	3.06	Spreading upper canopy, some dieback of medium branches.
389	E. eugenioides	55	38	4.56	3.14	2.57	Upper canopy bias S, trunk lean S.
390	E. eugenioides	55	47	5.64	3.88	2.57	Upper canopy with significant dieback of medium branches. Epicormics.
391	E. eugenioides	77	52	6.24	4.29	2.97	Stressed, dieback of some medium branches. Canopy suppressed on N side. Slight lean to E.
392	E. eugenioides	78	50	6.00	4.13	2.98	Stressed, dieback of some medium branches. Beside T391.
393	E. eugenioides	70	62	7.44	5.12	2.85	Stressed, dieback of small and medium branches
394	E. eugenioides	74	53	6.36	4.37	2.92	Stressed, dieback of some medium branches. Spreading upper canopy.
395	STAG	39	26	3.12	2.15	2.23	STAG
396	E. eugenioides	73	49	5.88	4.04	2.90	Upper canopy with clumping foliage (from epicormics, healthy). Dieback of medium branches. Fork at 4 m.
397	E. eugenioides	93	64	7.68	5.28	3.21	HABITAT. Trunk lean to S. Stressed, epicormic foliage through upper canopy. One hollow.
398	E. eugenioides	64	45	5.40	3.71	2.74	Stressed, dieback, canopy elevated, biased to E. Epicormic foliage.
399	E. eugenioides	65	44	5.28	3.63	2.76	Sparse canopy. Dieback of some medium branches. Epicormics.
400	E. eugenioides	48	34	4.08	2.81	2.43	Stressed. Sparse branching of upper canopy. Fork at 6m. Canopy suppressed on all sides.
401	E. eugenioides	79	45	5.40	3.71	3.00	Canopy elevated, stressed, epicormics, small amounts dieback.
402	E. eugenioides	54	37	4.44	3.05	2.55	Canopy suppressed on S and E sides. Sparse branching. Stressed, epicormics.
403	E. eugenioides	45	31	3.72	2.56	2.37	HABITAT. One hollow. Few branches, canopy elevated, epicormics.
404	E. eugenioides	80	53	6.36	4.37	3.01	Canopy bias to NW, suppressed on SE side. Some dieback, foliage healthy.
405	E. eugenioides	43	32	3.84	2.64	2.32	Canopy elevated, stressed, some dieback of medium branches.
406	E. eugenioides	57	37	4.44	3.05	2.61	Foliage healthy, some dieback. Trunk lean W.

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
407	E. tereticornis	98	80	9.60	6.60	3.28	Canopy bias to E. Suppressed on W side by adjacent <i>E.tereticornis</i> . By small stag.
408	E. tereticornis	45	36	4.32	2.97	2.37	Canopy elevated. Some small-sized dieback, otherwise healthy.
409	E.eugeniodes	75	51	6.12	4.21	2.93	Canopy elevated. Stressed, some dieback. Trunk damage 2-to-4 m. Main branch broken off at trunk at 2 m.
410	Alloc. littoralis	23	15	1.80	1.24	1.79	Fruit. Near wire fence. By T409. Gall on N side. Chewed cones.
411	A. floribunda	144	98	11.76	8.09	3.86	POTENTIAL HABITAT. Some dieback of medium branches.
412	E. eugenioides	154	46	10.37	7.13	3.97	Canopy stressed, epicormics, Dieback. 3 trunks, two from 0.5 m above ground. Near wire fence.
413	E. tereticornis	56	36	4.32	2.97	2.59	Canopy elevated, virgate from. Suppressed by adjacent T412.
414	E. eugenioides	170	93	11.16	7.67	4.14	HABITAT At least 3 hollows. Hollow base. Canopy mostly on E side.
415	STAG E .eugenioides	100	69	8.28	5.69	3.31	HABITAT. STAG with hollows.
416	E. eugenioides	86	64	7.68	5.28	3.11	HABITAT

Tree #SpeciesDBH (cm)TP2 (m)IP2 (m)IP2 (m)SR2 (m)Photo / comment417E. eugenioides38303.602.482.20Some small dieback. Canopy partly suppressed by adjacent large Etereticoriis (habitat)418E. eugenioides21192.281.571.72Narrow shape, some medium-sized branch dieback.419E. eugenioides183152.902.004.27Main tree is dead (looks like a STAG) but one vertical side stem ling from 0.5 m. Downslope of T393 and 3 m W of T421.420STAG125718.605.923.63HABITAT. At least 4(6) small hollows. Next to T300 (Excorption), and a m W of T421.421E. eugenioides99769.126.273.63HABITAT. The least 4(6) small hollows. Next to T300 (Excorption), and a m W of T421.422E. eugenioides47374.443.052.41HaBITAT. Sm high (measured). At to T30 (Excorption), and a m W of T421.422E. eugenioides47374.443.052.41Vertical form. Fork at 4.5 m. Small a mounts dieback, but consputed and sand. Split in true 2.4 m East of T419.422E. eugenioides89667.925.453.15Juper sector of Scleeutide and Scleeutide and the sector of tables and t								
417 E. eugenioides 38 30 3.60 2.48 2.20 Some small dieback. Canopy partly uppressed by adjacent large Electrotroms (habitat) 418 E. eugenioides 21 19 2.28 1.57 1.72 Narrow shape, some medium.sized branch dieback. 419 E. eugenioides 183 15 2.90 2.00 4.27 Main true is dead (looks like a STAG) but one vertical side add (looks like as STAG) but one vertical side add (looks like as STAG) but one vertical side add (looks like as STAG) but one vertical side add (looks like as STAG) but one vertical side add (looks like as STAG) but one vertical side add (looks like as STAG) but one vertical side add (looks like as STAG) but one vertical side add (looks like as STAG	Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
418E. eugenioides21192.281.571.72Narrow shape, some medium-sized branch dieback.419E. eugenioides183152.902.004.27Maltrat. 24 m high (measured). one vertical side stem living from 0.5 m. Downslope of T333 and 3 m W of T421.420STAG125718.605.923.63HABITAT. At least (6) small hollows.421E. eugenioides99769.126.273.30HABITAT. 15 m high (measured). At least 2 small hollows. Sight lean E. Small exposed roots damaged. Split in trunk 2- 4 m. East of T419.422E. eugenioides47374.443.052.41Vertical form. Fork at 4.5 m. Small dieback, canopy bias to h.y.uppressed on S side. Upslope of 358.421TREES IN NORTH ROAD RESERVETREES OF TABLEYTREES OF TABLEYTREES OF TABLEY501A. floribunda89667.925.453.15Julia Alia Alia Alia Alia Alia Alia Alia A	417	E. eugenioides	38	30	3.60	2.48	2.20	Some small dieback. Canopy partly suppressed by adjacent large <i>E.tereticornis</i> (habitat)
419E. eugenioides183152.902.004.27HABITAT. 24 m high (measured). Main tree is dead (looks like a STAG) but one vertical side stem living from 0.5 m. Downslope of T333 and 3 m V of T421.420STAG125718.605.923.63HABITAT. At least 4(6) small hollows. Next to T380 (<i>Exocarpos</i>).421E. eugenioides99769.126.273.30HABITAT. 16 m high (measured). At least amounts dieback, epicormics, large exposed roots damaged. Split in truck 2-4 at mounts dieback. Canopy bias to N, suppressed on s side. Upslope of 358.422E. eugenioides47374.443.052.41Vertical form. Fork at 4.5 m. Small dieback. Canopy bias to N, suppressed on s side. Upslope of 358.501A. floribunda89667.925.453.15Justice of the second s	418	E. eugenioides	21	19	2.28	1.57	1.72	Narrow shape, some medium-sized branch dieback.
42057AG125718.605.923.63HABITAT. At least 4(6) small hollows. Next to T380 (<i>Exocarpos</i>).421 <i>E. eugenioides</i> 99769.126.273.30HABITAT. 15 m high (measured). At least 2 small hollows. Slight lean E. Small amounts dieback, epicormics, large exposed roots damaged. Split in trunk 2-4 m. East of T419.422 <i>E. eugenioides</i> 47374.443.052.41Vertical form. Fork at 4.5 m. Small dieback. Canopy bias to N, suppressed on S side. Upslope of 358.420 TREES IN NORTH ROAD RESERVETREES 1- 532 FAST OF KEIGHTLEY STREET 501A. floribunda89667.925.453.15Jalita Singular and the set of t	419	E. eugenioides	183	15	2.90	2.00	4.27	HABITAT. 24 m high (measured). Main tree is dead (looks like a STAG) but one vertical side stem living from 0.5 m. Downslope of T393 and 3 m W of T421.
421 E. eugenioides 99 76 9.12 6.27 3.30 HABITAT. 15 m high (measured). At least 2 small hollows. Slight lean E. Small amounts dieback, epicormics, large exposed roots damaged. Split in trunk 2-4 m. East of T419. 422 E. eugenioides 47 37 4.44 3.05 2.41 Vertical form. Fork at 4.5 m. Small dieback. Canopy bias to N, suppressed on 5 detection of 58. 7 TREES IN NORTH ROAD RESERVE TREES 501 - 532 EAST OF KEIGHTLEY STREET 501 A. floribunda 89 66 7.92 5.45 3.15 Just an environ of the section	420	STAG	125	71	8.60	5.92	3.63	HABITAT. At least 4(6) small hollows. Next to T380 (<i>Exocarpos</i>).
422E. eugenioides47374.443.052.41Vertical form. Fork at 4.5 m. Small dieback. Canopy bias to N, suppressed on S side. Upslope of 358.Image: Transform Contract of the second of t	421	E. eugenioides	99	76	9.12	6.27	3.30	HABITAT. 15 m high (measured). At least 2 small hollows. Slight lean E. Small amounts dieback, epicormics, large exposed roots damaged. Split in trunk 2- 4 m. East of T419.
Image: Normal base in the image: Normal	422	E. eugenioides	47	37	4.44	3.05	2.41	Vertical form. Fork at 4.5 m. Small dieback. Canopy bias to N, suppressed on S side. Upslope of 358.
Image: TREES IN NORTH ROAD RESERVE TREES 501 – 532 EAST OF KEIGHTLEY STREET S01 A. floribunda 89 66 7.92 5.45 3.15 S01 A. floribunda 89 66 7.92 5.45 3.15 Image: Anitability of the state of t								
501 A. floribunda 89 66 7.92 5.45 3.15 HABITAT. Main trunk dead, decaying.		TREES IN NORTH	ROAD RES	SERVE		TREES 5	01 – 532	EAST OF KEIGHTLEY STREET
	501	A. floribunda	89	66	7.92	5.45	3.15	HABITAT Main trunk dead. decaying
502Eucalyptus sp.1391.080.741.40Sapling. Beside T501.	F02	Fucalvatus sa	13	9	1.08	0.74	1.40	Epicormic foliage on S and E sides.

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
503	E. tereticornis	58	40	4.80	3.30	2.63	At 1m from fence. Some medium dieback.
504	E. tereticornis	82	69	8.28	5.69	3.04	Spreading canopy. Some medium-size branch dieback. Beside T505. Near bdy fence.
505	E. eugenioides	49	41	4.92	3.38	2.45	Stressed, medium dieback. Epicormic foliage. Branches over bdy fence.
506	A. floribunda	15	10	1.20	0.83	1.49	Sapling
507	A. floribunda	18	14	1.68	1.16	1.61	Small amount trunk damage. Leaning S.
508	E. tereticornis	78	56	6.72	4.62	2.98	Spreading canopy. Pendulous branches on N side. Some small dieback. On N bdy of Road reserve.
509	E. tereticornis	41	17	5.49	3.77	2.28	Canopy bias to S. Some small dieback. Suppressed by T504.
510	E. eugenioides	100	41	6.63	4.56	3.31	Two trunks from ground. Stressed. Significant dieback of medium branches. By bdy fence of Road reserve.
511	E. eugenioides	70	41	7.13	4.90	2.85	Significant dieback of medium branches. Leaning 5deg E over bdy fence. Damage in trunk at 1 m.
512	A. floribunda	17	13	1.56	1.07	1.57	Small tree on N bdy of Road reserve.
513	E. bosistoana	50	37	4.44	3.05	2.47	Slight lean to N. Trunk damage 0-1.5 m. Top curved to N. Small dieback. On N bdy of Road reserve.
514	E. tereticornis	32	23	3.36	2.31	2.05	Beside T513. Contorted branching. Spreading canopy, poor form, small dieback, epicormics. Small <i>A.floribunda</i> to 2.5 m beside.
515	E. bosistoana	33	21	4.39	3.02	2.08	Trunk curving N then vertical. Fork at 1.2 m. Canopy elevated. By N bdy of Road reserve.
516	A. floribunda	18	14	1.68	1.16	1.61	Small tree suppressed by adjacent T517. Fair/Poor foliage. On N bdy of Road reserve.
517	E. eugenioides	52	46	5.52	3.80	2.51	Spreading form. On N bdy of Road reserve.

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
518	E. eugenioides	54	40	4.80	3.30	2.55	Stressed, sparse foliage, dieback of several medium branches. On N bdy of Road reserve.
519	Acacia mearnsii	17	13	1.56	1.07	1.57	Bipinnate, flowering. Trunk broken at 2.2 m, pendulous to ground. Dieback. Beside T517.
520	E. eugenioides	50	36	4.32	2.97	2.47	Leaning S. Medium-branch dieback. On bdy fence of Road reserve.
521	C. glauca	19	13	1.56	1.07	1.65	Planted. Single stem, Healthy foliage.

Tree #	Species	Base Diam. (cm)	DBH (cm)	TPZ (m)	Red. TPZ (m)	SRZ (m)	Photo / comment
522	E. eugenioides	55	45	5.40	3.71	2.57	Stressed, sparse foliage, trunk damage, epicormics, several dead medium-size branches. Slight lean N. Nest at ~10 m.
523	A. floribunda	12	9	1.08	0.74	1.36	Small tree. Foliage healthy but suppressed by T522 beside.
524	A. floribunda	11	7	0.84	0.58	1.31	Sapling 3.5 m
525	A. floribunda	15	8	0.96	0.66	1.49	Sapling 3.5 m
526	A. floribunda			0.00	0.00	0.00	Sapling 3.5 m
527	E. eugenioides	40	23	3.74	2.57	2.25	Some dieback of smaller branches. Fork at 1 m. On boundary fence of Road reserve.
528	E. tereticornis	54	43	5.16	3.55	2.55	Canopy biased to S. Small dieback. On boundary fence of Road reserve.
529	A. floribunda	18	14	1.68	1.16	1.61	Sapling beside T528
530	A. floribunda	14	11	1.32	0.91	1.45	Sapling, top broken off. By footpath.
531	E. eugenioides	28	21	2.52	1.73	1.94	Slight trunk lean S over fence. some small dieback. With 2 small saplings of <i>A</i> . <i>floribunda</i> beside. On boundary fence of Road reserve.
532	E. tereticornis	57	45	5.40	3.71	2.61	On footpath, beside boundary fence of Road reserve. Some small dieback.

	TREES IN NORTH	ROAD RES	SERVE		TREES 5 WEST O	33 – 568 F KEIGH	3 TLEY STREET
533	E. eugenioides	95	73	8.76	6.02	3.24	Spreading canopy. Some Medium-size dead branches. Healthy foliage. On boundary fence of Road reserve.
534	E. bosistoana	41	18	2.16	1.49	2.28	Regrowth stem from stump, near- symmetrical form. By T533.
535	E. tereticornis	23	20	2.54	1.75	1.79	Sapling beneath T533. Sparse foliage.
536	E. bosistoana	47	35	4.20	2.89	2.41	Mid-branches pruned on N side. Canopy suppressed by adjacent trees.
537	E. eugenioides	85	62	7.47	5.14	3.09	Trunk damage. Large branch pruned to trunk at 2.5 m. Upper trunk lean E. Some small amounts dieback.
538	E. bosistoana	83	51	6.12	4.21	3.06	538 539 540 538 539 540 538 539 540 538 539 540 538 539 540 538 539 540 538 539 540 538 539 540 538 539 540 538 539 540 539 539 540 539 539 540 539 539 540 539 539 540 539 539 540 539 539 540 539 539 540 539 539 540 539 539 539 539 539 539 539 539 539 539 539 539 539 539 539 539 539 539 539 539 539 539 539 539 539 539 5
539	E. tereticornis	39	28	3.36	2.31	2.23	Foliage healthy. Beside T538.
540	E. eugenioides	45	10	1.82	1.25	2.37	3 stems from cut stump. Beside T539. On bdy fence of Road reserve.

541	E. tereticornis	100	85	10.20	7.01	3.31	HABITAT Large hollow in trunk. Old tree, trunk broken off at 5 m, small branches. Some small dieback. Leaning SW over bdy fence of Road reserve.
542	E. tereticornis	75	50	6.00	4.13	2.93	Canopy bias to E. Fork at 5 m. Foliage healthy, some small dieback. Dense <i>Cenchrus clandestinus</i> (Kikuyu) & Vinca major groundcover.
543	E. bosistoana	72	57	6.84	4.70	2.88	Upper trunk lean 5-10 deg to W. On bdy fence of Road reserve.
544	E. bosistoana	46	41	4.92	3.38	2.39	By informal track. About 5 m S of the N bdy of Road reserve.
545	E. tereticornis	93	83	9.96	6.85	3.21	Fork at 2.5 m. Many branches in upper canopy, foliage healthy. Beside T544.
546	E. tereticornis	55	41	4.92	3.38	2.57	Many branches in canopy. Suppressed on E side by T545. <i>Cenchrus clandestinus</i> (Kikuyu) & Vinca major groundcover.
547	E. tereticornis	51	40	4.80	3.30	2.49	Many branches in canopy, leaning N.
548	E. tereticornis	95	29	5.69	3.91	3.24	3 trunks from ground level. Suppressed by adjacent trees.

549	E. tereticornis	110	90	10.80	7.43	3.44	With Allocasuarina littoralis beside.Spreading canopy.5-10 deg lean E over fence.
550	Alloc. littoralis	18	12	1.44	0.99	1.61	Suppressed beneath T549. Lean N. Galls.
551	Alloc. littoralis	65	21	3.83	2.64	2.76	About 5 m tall. Leaning S over bdy fence. Partly suppressed by T549.
552	STAG Alloc. littoralis	22	19	2.28	1.57	1.75	Stag beside T551
553	E.eugeniodes	65	50	6.00	4.13	2.76	Foliage healthy but some dieback of lower branches. On bdy fence. Stump to 0.5 m beside.
554	E. eugenioides	30	20	2.80	1.92	2.00	Suppressed beneath T553. Beside T553. Forked from ground level.
555	E. eugenioides	35	19	2.58	1.77	2.13	Two stems, as regrowth. Suppressed. Foliage sparse, epicormics.
556	E. eugenioides	70	56	6.72	4.62	2.85	Spreading form. Dieback of small branches. By fence. Dense weed understorey (Sailor Boy, Cotoneaster, Kikuyu).
557	E. tereticornis	44	35	4.20	2.89	2.34	Slight Trunk lean S. Suppressed by adjacent T562 (Stringybark)
558	E. tereticornis	16	11	1.32	0.91	1.53	Near fence. Lean E. About 6 m.
559	E. tereticornis	19	16	1.92	1.32	1.65	Near fence. Slight lean E.
560	E. tereticornis	26	16	1.92	1.32	1.88	On fence. Lean E over fence.
561	A. floribunda	33	22	2.64	1.82	2.08	Suppressed. By fence.

562	E. eugenioides	100	84	10.08	6.93	3.31	Spreading form, multitrunked.
563	E. tereticornis	81	8	2.17	1.49	3.03	Coppice regrowth. 4 Stems from stump.
564	E. eugenioides	155	112	13.44	9.24	3.98	HABITAT Large tree by roadside. Spreading canopy. Significant trunk damage on N side, hollow in base. Near road edge.
565	E. tereticornis	190	162	19.44	13.37	4.33	HABITAT Large remnant. Leaning SE over fence. Some dead medium branches.
566	E. eugenioides	85	70	9.14	6.28	3.09	Two trunks co-dominant from ground. Fork at 3m. Some dieback of medium branches. <i>E.tereticornis</i> sapling beside.
567	A. floribunda	64	55	6.60	4.54	2.74	Healthy tree. Near bus stop.
568	A. floribunda	52	39	4.68	3.22	2.51	Healthy tree. Some low pendulous branches. On fence, near bus stop.

569	A. floribunda	60	50	6.00	4.13	2.67	HABITAT Upper trunk bent over, suppressed by adjacent large remnant A. floribunda (T570)
570	A. floribunda	100	65	7.80	5.36	3.31	HABITAT Large hollow in mid-trunk. Leaning NE. On NE corner of site.
601	E. tereticornis	110	70	11.06	7.61	3.44	Two trunks from 0.5 m
602	E. tereticornis	90	75	9.00	6.19	3.17	On fence
603	E. tereticornis	95	85	10.20	7.01	3.24	Near fence
604	E. tereticornis	65	60	7.20	4.95	2.76	Several metres N of fence
605	E. tereticornis	100	85	10.20	7.01	3.31	HABITAT. Three (3) potential hollow sections were counted from ground level.

606	A. floribunda	70	60	7.20	4.95	2.85	HABITAT. Two (2) potential hollow sections were counted from ground level.
607	E. tereticornis	60	50	6.00	4.13	2.67	HABITAT. Many branches in canopy, healthy, symmetrical.
608	E. tereticornis	95	60	10.62	7.30	3.24	Spreading form, good shade
609	E. tereticornis	75	70	8.40	5.78	2.93	Near fence
610	E. tereticornis	85	75	9.69	6.66	3.09	Healthy tree
611	E. tereticornis	100	90	10.80	7.43	3.31	Fork at 2 m. By fence.
612	E. tereticornis	80	75	9.00	6.19	3.01	By fence. Strong lean NW. Trunk wound at base.
613	E. eugenioides	85	75	9.00	6.19	3.09	HABITAT. 1 hollow. Broken trunk, many side branches.
614	E. tereticornis	70	60	7.20	4.95	2.85	Trunk wound at 1.2 m
615	E. tereticornis	75	65	7.80	5.36	2.93	Spreading form, over fence. Main upper trunk dead, decaying. Several medium- size dead branches.
616	E. eugenioides	85	80	9.60	6.60	3.09	Trunk damage, hollow. At 30 m from fence.
617	E. tereticornis	85	70	8.40	5.78	3.09	Healthy tree
618	E. tereticornis	95	60	9.37	6.44	3.24	Two trunks from 0.4 m
619	E. tereticornis	70	60	7.20	4.95	2.85	Healthy tree
620	E. tereticornis	55	45	5.40	3.71	2.57	Beside <i>E.eugenioides</i>
621	E. tereticornis	60	40	5.37	3.69	2.67	Two trunks co-dominant from nr ground
622	E. tereticornis	65	70	8.40	5.78	2.76	Fork at 2 m
623	E. tereticornis	95	75	9.00	6.19	3.24	Near fence
624	E. tereticornis	90	80	9.60	6.60	3.17	Fork at 2 m
625	E. eugenioides	45	35	4.20	2.89	2.37	Trunk curving N beneath T20
626	E. tereticornis	85	65	7.80	5.36	3.09	Canopy elevated, spreading
627	E. tereticornis	60	50	6.00	4.13	2.67	Fastigiate form
628	E. tereticornis	55	45	5.40	3.71	2.57	POTENTIAL HABITAT. 2 hollows. TBC
629	E. tereticornis	30	20	2.40	1.65	2.00	Healthy tree
630	E. tereticornis	55	45	5.40	3.71	2.57	Healthy tree
631	E. tereticornis	65	55	6.60	4.54	2.76	Healthy tree
632	STAG	30	20	2.40	1.65	2.00	Leaning NW 35 deg onto E tereticornis
633	E. tereticornis	45	35	4.20	2.89	2.37	Beneath adjacent trees (will be suppressed over time)
634	E. eugenioides	35	25	3.00	2.06	2.13	Healthy tree

635	STAG	70	50	6.00	4.13	2.85	POTENTIAL HABITAT. 3 hollows. TBC
636	E. tereticornis	60	50	6.00	4.13	2.67	Fork at 2.5 m
637	E. tereticornis	60	50	6.00	4.13	2.67	Healthy tree
638	E. tereticornis	65	30	4.69	3.22	2.76	Two trunks from ground
639	E. tereticornis	40	35	4.20	2.89	2.25	Healthy tree
640	E. tereticornis	35	25	3.00	2.06	2.13	Healthy tree
641	Ang.?/Euc.?	90	75	9.00	6.19	3.17	HABITAT. Two (2) potential hollow sections were counted from ground level. (In N-S road reserve)
901	E. tereticornis	59	55	6.60	4.54	2.65	
902	E. tereticornis	48	31	4.93	3.39	2.43	

903	E. eugenioides	105	89	10.68	7.34	3.38	
904	STAG			0.00	0.00	0.00	
905	A. floribunda	133	102	12.24	8.42	3.73	

906	E. eugenioides	23	20	2.40	1.65	1.79	
907	A. floribunda	41	36	4.32	2.97	2.28	
908	E. tereticornis	148	129	15.48	10.64	3.90	

909	E. tereticornis	53	50	6.00	4.13	2.53	
910	E. tereticornis	100	91	10.92	7.51	3.31	
911	E. tereticornis	106	106	12.72	8.75	3.39	
912	STAG (Significant habitat tree)			0.00	0.00	0.00	No photo available

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913	E. tereticornis	77	73	8.76	6.02	2.97	
914	E. tereticornis	185	155	18.60	12.79	4.29	
915	E. tereticornis (significant habitat tree)	152	134	16.08	11.06	3.95	

917	E. tereticornis	82	73	8.76	6.02	3.04	
918	A. floribunda	165	152	18.24	12.54	4.08	
919	STAG (Significant Habitat tree)			3			
920	STAG (Significant Habitat tree)			3			

Table 6 Tree Size and Condition Assessment.

TH – Tree Height	SH – Stem Height	TL – Stem Lean (degrees – direct	tion)
M – Mature	J – Juvenile	Exc - Excellent	
N - North	S – South	W – west	E - East

Ac. implexa	=	Acacia implexa
Alloc. littoralis	=	Allocasuarina littoralis
A. floribunda	=	Angophora floribunda
C. glauca	=	Casuarina glauca
E. tereticornis	=	Eucalyptus tereticornis
E. bosistoana	=	Eucalyptus bosistoana
E. eugenioides	=	Eucalyptus eugenioides
E. cupressiformis	=	Exocarpos cupressiformis
E. sieberi	=	Eucalyptus sieberi
G.robusta	=	Grevillea robusta
L. sinense	=	Ligustrum sinense
P. undulatum	=	Pittosporum undulatum

Notes

For trees on the verge (offsite), full data was not recorded (e.g., spread, vitality, condition);

the species were recorded so as to indicate the tree count and the likely vegetation community.

Tre	Creation	-	Car	nopy V	Vidth	(m)	T U (m)	Remo	Remove/ Relocate/Retain		\ //+	Chryster	Cond
e#	species	11	Ν	S	Е	W	т п (m)	Action	Reason	Cl	VIL	Struct	Conu
99	E. eugenioides	-	6	5	5	5	15 - 20	Retain	Outside construction.	-	-	-	-
201	A. floribunda	-	10	3	4	8	23	Retain	Habitat tree; Outside construction.	М	Good	Good	Good
202	E. tereticornis	-	6	8	7	7	19	Retain	Outside construction.	М	Good	Good	Good
203	E. tereticornis	E	10	7	8	6	28	Relocate	Habitat tree; affected by construction. Significant habitat tree.	M	Good	Fair	Fair
204	E. eugenioides	Ν	5	4	7	5	12	Retain	Outside construction.	М	Good	Good	Fair
205	E. eugenioides	-	4	6	4	6	16	Retain	Outside construction.	М	Good	Good	Good
206	A. floribunda	-	6	3	6	5	16	Retain	Outside construction.	М	Good	Good	Good
207	E. tereticornis	-	6	6	4	5	18	Retain	Outside construction.	М	Good	Good	Fair
208	E. eugenioides	_	7	4	4	7	10	Retain	Tree within close proximity to construction. Construct tree protection fences at TPZ.	М	Good	Good	Fair
209	E. eugenioides	E	5	7	7	4	10	Retain	Tree within close proximity to construction. Construct tree protection fences at TPZ.	M	Good	Good	Fair
210	E. tereticornis	6 S	4	7	6	5	15	Retain	Tree within close proximity to construction. Construct tree protection fences at TPZ.	M	Good	Good	Good
211	E. eugenioides	-	4	6	5	4	9	Retain	Tree within close proximity to construction. Construct tree protection fences at TPZ.	M	Good	Poor	Fair
212	E. eugenioides	-	1	4	2	6	9	Retain	Outside construction.	М	Good	Poor	Fair
213	E. tereticornis	-	9	9	9	7	26	Retain	Outside construction, Habitat tree.	М	Fair	Fair	Poor
214	A. floribunda	20 S	6	5	5	6	15	Retain	Tree within close proximity to construction. Construct tree protection fences at TPZ, Habitat tree.	Μ	Fair	Poor	Fair
215	A. floribunda	16 S	6	6	5	9	16	Relocate	Habitat tree; affected by construction.	М	Fair	Poor	Fair

Tre	Species	-	Car	nopy V	Vidth	(m)	T U (m)	Remo	ve/ Relocate/Retain	Age	. <i>C</i> .	Character	Cond
e #	Species	· 1L	Ν	S	Е	W	TH (m)	Action	Reason	Cl	VIT	Struct	Cona
216	E. tereticornis	-	10	10	9	7	30	Relocate	Significant tree within close proximity to construction. Habitat tree that requires root protection within TPZ to retain ecological integrity i.e. elevate road construction above natural ground level, or Relocate as a habitat tree on site.	М	Fair	Fair	Poor
217	Eucalyptus sp.	-	6	7	6	8	12	Remove	Inside construction.	Μ	Good	Good	Good
218	E. tereticornis	-	5	6	5	4	11	Remove	Inside construction.	М	Good	Good	Good
219	A. floribunda	12 E	6	5	5	2	10	Relocate	Habitat tree; affected by construction.	М	Fair	Poor	Fair
220	E. tereticornis	-	2	5	2	2	9	Remove	Inside construction.	М	Fair	Poor	Poor
221	E. tereticornis	-	8	8	7	7	11	Remove	Inside construction.	М	Good	Fair	Good
222	E. tereticornis	-	7	9	9	6	13	Retain	Outside construction.	М	Fair	Poor	Poor
223	A. floribunda	-	1	1	1	1	6	Retain	Outside construction.	J	Good	Good	Good
224	E. tereticornis	-	13	5	8	11	28	Retain	Outside construction, Habitat tree.	М	Poor	Fair	Poor
225	E. tereticornis	-	10	6	7	7	28	Retain	Outside construction.	М	Fair	Good	Poor
226	E. sieberi	-	9	4	10	8	12	Retain	Outside construction.	М	Good	Good	Good
227	E. sieberi	-	8	10	6	7	18	Retain	Outside construction.	М	Good	Good	Good
228	E. sieberi	-	4	6	3	5	14	Retain	Outside construction.	М	Good	Good	Good
229	E. sieberi	-	5	3	5	4	19	Retain	Outside construction.	Μ	Fair	Good	Fair
230	E. sieberi	-	5	8	9	8	19	Retain	Outside construction.	М	Good	Good	Good
231	E. tereticornis	-	2	7	1	5	12	Retain	Outside construction.	Μ	Fair	Poor	Poor
232	E. tereticornis	-	2	5	5	3	13	Retain	Outside construction.	М	Good	Good	Good
233	E. tereticornis	-	3	2	3	2	6	Retain	Outside construction.	J	Good	Good	Good
234	E. tereticornis	-	10	6	11	7	28	Retain	Retain as site habitat tree.	М	Poor	Poor	Poor
235	E. tereticornis	-	5	6	6	5	10	Retain	Outside construction.	М	Good	Good	Good
236	E. tereticornis	-	1	5	5	1	11	Retain	Outside construction.	М	Good	Fair	Fair
237	E. bosistoana.	-	4	3	8	2	11	Retain	Outside construction.	М	Fair	Poor	Poor
238	E. tereticornis	-	2	3	1	5	11	Retain	Outside construction.	М	Good	Poor	Poor
239	E. tereticornis	-	4	6	6	4	12	Retain	Outside construction.	М	Good	Fair	Fair
240	E. tereticornis	-	6	5	6	6	15	Retain	Outside construction.	М	Good	Good	Good

Tre e #	Species	TL	Canopy Width (m)				TU (m)	Remove/ Relocate/Retain		Age	\/i+	Chruch	Cond
			Ν	S	E	W	т н (m)	Action	Reason	Cl	VIC	Struct	Cond
241	Eucalyptus sp. (tereticornis?) juvenile	-	2	2	2	2	9	Retain	Outside construction.	J	Good	Fair	Fair
242	A. floribunda	-	1	1	1	1	8	Retain	Outside construction.	J	Good	Good	Fair
243	E. tereticornis	-	6	7	6	7	14	Retain	Outside construction.	М	Good	Good	Good
244	A. floribunda	-	7	6	5	4	15	Retain	Outside construction.	Μ	Fair	Poor	Fair
245	E. tereticornis	16 SW	8	14	9	11	27	Relocate	Habitat tree; affected by construction.	М	Fair	Fair	Fair
246	E. tereticornis	_	5	10	10	8	27	Retain	Habitat tree; Tree within close proximity to construction. Construct tree protection fences at TPZ.	Μ	Poor	Poor	Poor
247	E. tereticornis	-	11	5	2	11	26	Retain	Outside construction.	М	Poor	Poor	Poor
248	A. floribunda	-	9	10	8	8	19	Remove	Inside construction.	М	Good	Good	Fair
249	E. tereticornis	-	10	6	10	8	26	Retain	Habitat tree; Tree within close proximity to construction. Construct tree protection fences at TPZ.	Μ	Fair	Good	Fair
250	E. eugenioides	-	9	7	7	9	19	Retain	Outside construction.	М	Fair	Poor	Poor
251	E. eugenioides	-	8	7	6	1	10	Retain	Outside construction.	Μ	Fair	Poor	Poor
252	A. floribunda	39 NE	8	0	9	5	18	Retain	Outside construction.	М	Fair	Poor	Poor
253	A. floribunda	-	7	4	4	7	17	Retain	Outside construction.	М	Good	Fair	Fair
254	E. eugenioides	-	7	8	5	6	16	Retain	Tree within close proximity to construction. Construct tree protection fences at TPZ.	Μ	Poor	Fair	Poor
255	E. tereticornis	-	14	12	12	11	28	Retain	Habitat tree; Tree within close proximity to construction. Construct tree protection fences at TPZ + install tree root protection measures.	М	Good	Good	Fair
256	E. tereticornis	-	11	11	7	8	29	Relocate	Habitat tree; affected by construction.	М	Poor	Fair	Poor
257	E. tereticornis	-	6	4	8	1	27	Retain	Habitat tree; Tree within close proximity to construction.	М	Fair	Poor	Poor
Tre	Species	TI	Car	nopy V	Vidth	(m)	T11 (m)	Remo	ve/ Relocate/Retain	Age	\ <i>\</i> !+	Chruch	Cond
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e #	species	11	N	S	E	W	т н (m)	Action	Reason	Cl	Vit	Struct	Cond
258	A. floribunda	-	9	5	6	6	15	Relocate	Habitat tree; affected by construction.	М	Good	Good	Good
259	A. floribunda	-	5	7	5	6	11	Retain	Outside construction.	М	Good	Fair	Fair
260	E. tereticornis	-	5	6	4	6	12	Retain	Outside construction.	М	Good	Fair	Fair
261	STAG	-	-	-	-	-	15	Retain	Outside construction.	-	-	-	STAG
262	A. floribunda	-	9	8	6	2	15	Relocate	Habitat tree; affected by construction.	М	Good	Poor	Fair
263	E. eugenioides	-	9	4	6	6	13	Retain	Outside construction.	М	Fair	Fair	Poor
264	E. eugenioides	-	4	1	2	5	11	Retain	Outside construction.	М	Poor	Poor	Poor
265	STAG E. eugenioides	-	-	-	-	-	-	Retain	Outside construction.	-	-	-	-
266	E. eugenioides	-	3	5	4	1	16	Retain	Outside construction.	М	Poor	Poor	Poor
267	E. eugenioides	-	8	1	7	1	12	Retain	Outside construction.	М	Fair	Poor	Poor
268	E. eugenioides	-	7	8	9	6	12	Retain	Outside construction.	М	Fair	Fair	Fair
269	E. eugenioides	-	7	2	2	8	17	Retain	Outside construction.	М	Fair	Poor	Poor
270	E. eugenioides	-	7	2	2	4	17	Retain	Outside construction.	М	Fair	Poor	Poor
271	E. eugenioides	-	4	2	7	6	11	Retain	Outside construction.	М	Fair	Fair	Fair
272	E. tereticornis	-	11	11	11	11	26	Retain	Outside construction. Significant habitat tree.	М	Fair	Good	Fair
273	E. eugenioides	-	4	4	4	3	17	Retain	Outside construction.	М	Good	Fair	Fair
274	E. tereticornis? juvenile	-	3	3	3	2	12	Retain	Outside construction.	J	Good	Fair	Good
275	E. tereticornis	-	12	6	9	5	25	Retain	Outside construction.	М	Fair	Fair	Fair
276	E. tereticornis	-	9	8	9	13	26	Retain	Outside construction. Significant habitat tree.	М	Fair	Fair	Fair
277	E. eugenioides	-	4	1	3	3	16	Retain	Outside construction.	М	Fair	Poor	Poor
278	E. eugenioides	-	2	2	2	1	16	Retain	Outside construction.	М	Fair	Poor	Poor
279	E. eugenioides	-	4	3	3	4	16	Retain	Outside construction.	М	Good	Poor	Fair
280	E. eugenioides	-	4	3	5	4	16	Retain	Outside construction.	М	Fair	Poor	Fair
281	STAG	-	-	-	-	-	-	Retain	Outside construction. Habitat tree.				STAG
282	E. eugenioides	-	7	7	9	9	21	Retain	Outside construction.	М	Good	Good	Good
283	E. eugenioides	-	7	7	7	8	13	Retain	Tree within close proximity to construction. Construct tree	М	Good	Good	Good

Tre	Creation		Car	nopy V	Vidth	(m)	T U (m)	Remo	ove/ Relocate/Retain	Age) <i>(</i> (+	Chryster	Cond
e #	Species		Ν	S	Е	W	TH (M)	Action	Reason	Cl	VIC	Struct	Cond
									protection fences at TPZ.				
284	E. tereticornis	_	8	8	10	12	26	Retain	Tree within close proximity to construction. Construct tree protection fences at TPZ. Habitat tree.	Μ	Good	Good	Good
285	STAG	-						Relocate	Habitat tree; affected by construction. Inside construction footprint.	-	-	-	STAG
286	E. eugenioides	-	4	11	6	8	20	Retain	Tree within close proximity to construction. Construct tree protection fences at TPZ.	Μ	Fair	Fair	Fair
287	E. eugenioides	-	8	7	6	9	17	Retain	Outside construction.	М	Good	Fair	Good
288	E. eugenioides	-	9	4	9	8	16	Retain	Outside construction.	М	Good	Fair	Fair
289	E. eugenioides	-	7	6	6	7	18	Retain	Outside construction.	М	Fair	Fair	Fair
290	E. tereticornis	-	8	3	11	6	35	Relocate	Habitat tree; affected by construction.	М	Poor	Poor	Poor
291	E. tereticornis	-	8	12	12	8	26	Retain	Tree within close proximity to construction. Construct tree protection fences at TPZ. Habitat tree.	Μ	Fair	Fair	Fair
292	E. eugenioides	-	5	3	9	3	14	Retain	Outside construction.	М	Good	Fair	Fair
293	E. eugenioides	-	4	2	3	2	13	Retain	Outside construction. Habitat tree.	М	Poor	Poor	Poor
294	E. tereticornis	-	11	11	10	9	26	Retain	Outside construction. Habitat tree.	М	Good	Fair	Fair
295	E. tereticornis	-	9	8	8	8	21	Retain	Outside construction.	М	Poor	Poor	Poor
296	E. tereticornis	-	13	12	12	14	26	Retain	Outside construction. Habitat tree.	М	Fair	Good	Fair
297	STAG	-	9	7	10	5	27	Relocate	Habitat tree; affected by construction.	-	-	-	STAG
298	Ac. implexa	-	5	2	1	6	10	Retain	Outside construction.	J	Fair	Fair	Fair
299	A. floribunda	-	6	2	2	2	17	Retain	Outside construction.	М	Fair	Poor	Poor
300	A. floribunda	-	10	9	10	8	22	Retain	Outside construction.	М	Fair	Fair	Fair
				P	ADDO	CK TR	EES (ADDI	TIONAL, PEF	R REVISED PLAN JUL22)				
301	E. tereticornis	-	4	5	5	5	15 - 20	Retain	Outside construction.	М	Good	Good	Good

Tre			Car	nopy N	Vidth	(m)	T 11 ()	Remo	ove/ Relocate/Retain	Age	. <i>n</i> .	.	
e #	Species	· 1L	Ν	S	Е	W	TH (m)	Action	Reason	Cl	Vit	Struct	Cond
302	E. tereticornis	5 N	8	5	4.5	4	15 - 20	Retain	Outside construction.	М	Good	Good	Fair
303	Alloc. littoralis	-	3.5	1.5	4.5	3	3 - 5	Retain	Outside construction.	М	Good	Good	Good
304	E. tereticornis	-	1.5	0.5	1	1.5	5 - 10	Retain	Outside construction.	М	Fair	Poor	Poor
305	E. bosistoana	3 N	8	3.5	7	3.5	20 - 25	Retain	Outside construction.	М	Good	Fair	Fair
306	E. tereticornis	5-8 S	0.5	8	8	0.5	15 - 20	Retain	Outside construction.	М	Fair	Fair	Fair
307	E. eugenioides	-	3	4.5	3	2.5	10 - 15	Retain	Outside construction.	М	Good	Good	Good
308	Ac. implexa	-	1	3.5	4	1	3 - 5	Retain	Outside construction.	Μ	Good	Fair	Fair
309	E. tereticornis	3-5 SE	4.5	4	4	4.5	5 - 10	Retain	Outside construction.	М	Good	Good	Good
310	E. tereticornis		8	7	6	6	15 - 20	Retain	Outside construction.	Μ	Good	Good	Good
311	Ac. implexa	5-8 SE	1	2	1.5	0.5	3 - 5	Retain	Outside construction.	М	Good	Fair	Good
312	E. tereticornis	-	3	10	7	7	20 - 25	Retain	Outside construction.	М	Good	Fair	Fair
313	E. bosistoana	-	2	2	2	1.5	3 - 5	Retain	Outside construction.	SM	Good	Good	Good
314	E. bosistoana	-	2.2	2	1.5	2.2	5 - 10	Retain	Outside construction.	SM	Good	Good	Good
315	E. tereticornis	-	1.5	0.5	0.5	2	5 - 10	Retain	Outside construction.	М	Good	Good	Good
316	E. tereticornis	3 N	2	2.2	1.2	2	3 - 5	Retain	Outside construction.	М	Good	Good	Good
317	E. eugenioides	-	1	2.2	2	2	5 - 10	Retain	Outside construction.	М	Good	Good	Good
318	A. floribunda	3 W	7	8	2	8	15 - 20	Retain	Outside construction.	М	Good	Good	Good
319	E. tereticornis	-	9	6	8	4	20 - 25	Retain	Outside construction.	М	Good	Good	Good
320	E. eugenioides	15 N	4	1.2	1.5	2	10 - 15	Retain	Outside construction.	М	Good	Fair	Fair
321	E. eugenioides	5- 10 N	4.5	3	5	5.5	10 - 15	Retain	Outside construction.	М	Fair	Fair	Fair
322	E. eugenioides	3-5 NE	2	2	2	1.2	10 - 15	Retain	Outside construction.	М	Good	Fair	Fair
323	E. tereticornis	-	9	5	5	9	20 - 25	Retain	Outside construction.	М	Good	Good	Good
324	E. eugenioides	-	4	6	6	4	15 - 20	Retain	Outside construction.	Μ	Good	Good	Good
325	E. tereticornis	-	8	8	9	9	20 - 25	Retain	Outside construction.	М	Good	Good	Good
326	STAG E.eugenioides	-	4	1	3	3	15 - 20	Retain	Outside construction.	-	-	-	STAG
327	E. tereticornis	-	9	5	9	8	20 - 25	Retain	Outside construction.	М	Good	Good	Good
328	E. eugenioides	3 W	3	2	2	4	10 - 15	Retain	Outside construction.	М	Good	Fair	Fair
329	E. eugenioides	3 W	3	3	1	5	10 - 15	Retain	Outside construction.	М	Fair	Fair	Fair
330	E. eugenioides	-	0.5	0.5	0.5	0.5	10 - 15	Retain	Outside construction.	М	Fair	Poor	Poor
331	E. eugenioides	3 W	2	4	1	1	10 - 15	Retain	Outside construction.	М	Fair	Fair	Fair

Tre	Constant	-	Car	nopy V	Vidth	(m)	T U ()	Remo	ove/ Relocate/Retain	Age	\ <i>/</i> *+	Character	Const
e #	Species	· 1L	Ν	S	Е	W	TH (m)	Action	Reason	Cl	VIT	Struct	Cond
332	E. eugenioides	3 W	3	1	1	3	5 - 10	Retain	Outside construction.	М	Fair	Fair	Fair
333	E. eugenioides	-	2	3	2	1	5 - 10	Retain	Outside construction.	М	Fair	Fair	Fair
334	E. eugenioides	3-5 W	3	3	4	4	10 - 15	Retain	Outside construction.	М	Good	Fair	Fair
335	E. eugenioides	-	3	2	1	0.5	10 - 15	Retain	Outside construction.	М	Fair	Good	Fair
336	E. eugenioides	3 W	2	4	1	2	10 - 15	Retain	Outside construction.	М	Fair	Good	Fair
337	E. tereticornis	-	4	3	3	3	15 - 20	Retain	Outside construction.	М	Good	Fair	Fair
338	E. eugenioides	-	5	2	3	4	15 - 20	Retain	Outside construction.	М	Fair	Good	Fair
339	E. eugenioides	-	4	3	3	3	15 - 20	Retain	Outside construction.	М	Fair	Good	Fair
340	E. eugenioides	-	5	5	4	5	15 - 20	Retain	Outside construction.	М	Good	Good	Good
341	STAG E.eugenioides	-	4	1	1	1	10 - 15	Retain	Outside construction.	-	-	-	STAG
342	E. eugenioides	3-5 NW	4	1	1	4	10 - 15	Retain	Outside construction.	М	Good	Good	Good
343	E. eugenioides	-	2	0.5	0.5	0.5	5 - 10	Retain	Outside construction.	М	Fair	Good	Fair
344	E. eugenioides	-	5	4	4	2	10 - 15	Retain	Outside construction.	М	Fair	Good	Fair
345	E. eugenioides	-	2	1	1	1	10 - 15	Retain	Outside construction.	М	Fair	Good	Fair
346	E. tereticornis	-	5	5	4	3	15 - 20	Retain	Outside construction.	М	Fair	Fair	Fair
347	E. eugenioides	3 W	2	5	2	3	5 - 10	Retain	Outside construction.	М	Fair	Fair	Fair
348	P.undulatum	-	2	1.5	1.5	1.5	3 - 5	Retain	Outside construction.	М	Exc	Exc	Exc
349	STAG E.eugenioides	-	5	2	2	2	15 - 20	Retain	Outside construction.	-	-	-	STAG
350	E. tereticornis	3 N	4	3	2	5	10 - 15	Retain	Outside construction.	М	Good	Good	Good
351	E. eugenioides		5	4	4	4	10 - 15	Retain	Outside construction.	М	Fair	Good	Fair
352	E. eugenioides	3-5 NE	4	1	1	4	10 - 15	Retain	Outside construction.	М	Good	Good	Good
353	E. eugenioides	-	2	4	2	2	10 - 15	Retain	Outside construction.	М	Good	Good	Good
354	E. tereticornis	-	3	3	3	3	15 - 20	Retain	Outside construction.	М	Good	Good	Good
355	E. eugenioides	-	5	6	4.5	3	15 - 20	Retain	Outside construction.	М	Fair	Good	Fair
356	E. eugenioides	3 S	5	5	3	4	15 - 20	Retain	Outside construction.	М	Good	Fair	Fair
357	E. eugenioides		4	4	3	4	15 - 20	Retain	Outside construction.	М	Good	Good	Good
358	E. eugenioides	-	4	4	4	3	15 - 20	Retain	Outside construction.	М	Good	Good	Good
359	G.robusta	-	1	1	1	1	3 - 5	Retain	Outside construction.	М	Good	Exc	Good
360	E. eugenioides	-	1.5	1.5	1	2	5 - 10	Retain	Outside construction.	М	Poor	Fair	Poor
361	E. tereticornis	1 N	4	3	2	5	10 - 15	Retain	Outside construction.	М	Good	Good	Good
362	E. tereticornis	-	2	3	3	3	10 - 15	Retain	Outside construction.	М	Good	Good	Good
363	E. tereticornis	-	9	9	7	9	15 - 20	Retain	Outside construction.	М	Good	Good	Good

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Tre			Car	nopy V	Vidth	(m)	T 11 ()	Remo	ve/ Relocate/Retain	Age	. <i>n</i> .	.	
e #	Species	· 1L	Ν	S	Е	W	TH (m)	Action	Reason	Cl	Vit	Struct	Cond
364	E. eugenioides	-	5	4	5	4	10 - 15	Retain	Outside construction.	М	Good	Good	Good
365	STAG E. eugenioides	-	4	3	3	3	10 - 15	Retain	Outside construction.	-	-	-	STAG
366	E. tereticornis	-	10	9	6	6	20 - 25	Retain	Outside construction.	М	Good	Good	Good
367	E.cupressiformi s	-	1	1	1	1	3 - 5	Retain	Outside construction.	J	Fair	Fair	Fair
368	E. eugenioides	-	5	4	4	5	10 - 15	Retain	Outside construction.	М	Fair	Good	Fair
369	Ac. implexa	-	1	0.5	0	1	3 - 5	Retain	Outside construction.	J	Good	Good	Good
370	E. tereticornis	-	10	9	10	10	15 - 20	Retain	Outside construction.	М	Good	Good	Good
371	L. sinense	-	2	2	1.5	1	< 3	Retain	Outside construction.	М	-	-	-
372	E. eugenioides	-	4	4.5	2	3	5 - 10	Retain	Outside construction.	М	Good	Good	Good
373	E. eugenioides	-	5	3	5	3	10 - 15	Retain	Outside construction.	М	Good	Good	Good
374	E. eugenioides	-	5	4	5	4	15 - 20	Retain	Outside construction.	М	Fair	Fair	Fair
375	E. eugenioides	-	3	2.5	3	3.5	15 - 20	Retain	Outside construction.	М	Fair	Fair	Fair
376	E. eugenioides	-	5	4	5	5	15 - 20	Retain	Outside construction	М	Poor	Fair	Poor
377	E. tereticornis	-	3	3	3	3	10 - 15	Retain	Outside construction	М	Good	Good	Good
378	E. tereticornis	-	5	5	4	5	10 - 15	Retain	Outside construction	М	Good	Good	Good
379	E. eugenioides	-	4	4	6	5	15 - 20	Retain	Outside construction	М	Good	Good	Good
380	E.cupressiformi s	-	0.5	0.5	0.5	0.5	3 - 5	Retain	Outside construction	J	Good	Good	Good
381	Ac. implexa	-	1	4	4	4	10 - 15	Retain	Outside construction	М	Good	Good	Good
382	E. tereticornis	-	3	2	2	2	5 - 10	Retain	Outside construction	М	Good	Good	Good
383	E. eugenioides	3-5 NW	2	2	1	4	15 - 20	Retain	Outside construction	М	Fair	Fair	Fair
384	E. eugenioides		4	1	1	2	10 - 15	Retain	Outside construction	М	Fair	Fair	Fair
385	E. eugenioides	3 N	4	0	2	3	15 - 20	Retain	Outside construction	М	Fair	Fair	Fair
386	E. eugenioides	5 NW	5	6	3	5	15 - 20	Retain	Outside construction	М	Fair	Fair	Fair
387	E. eugenioides	5- 15 NW	2	2	1	2	15 - 20	Retain	Outside construction	М	Fair	Fair	Fair
388	E. eugenioides	-	6	7	5	5	15 - 20	Retain	Outside construction	М	Good	Good	Good
389	E. eugenioides	3-5 SE	0	6	5	1	15 - 20	Retain	Outside construction	М	Good	Good	Good
390	E. eugenioides	-	3	6	4	3	15 - 20	Retain	Outside construction	М	Fair	Fair	Fair
391	E. eugenioides	3 E	6	5	5	3	15 - 20	Retain	Outside construction	М	Fair	Fair	Fair
392	E. eugenioides	-	5	4	2	3	15 - 20	Retain	Outside construction	М	Fair	Fair	Fair
393	E. eugenioides	-	5	4	4	4.5	15 - 20	Retain	Outside construction	М	Fair	Fair	Fair

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Tre			Car	nopy V	Vidth	(m)	T 11 ()	Remo	ove/ Relocate/Retain	Age	. <i>n</i> .	.	
e #	Species	· 11	Ν	S	Е	W	TH (m)	Action	Reason	Cl	Vit	Struct	Cond
394	E. eugenioides	-	7	4	4	5	15 - 20	Retain	Outside construction	М	Fair	Good	Fair
395	STAG E.eugenioides	-	3	2	2	2	5 - 10	Retain	Outside construction	-	-	-	STAG
396	E. eugenioides	-	4	6	3	6	15 - 20	Retain	Outside construction	М	Good	Fair	Fair
397	E. eugenioides	3 S	2	7	6	5	15 - 20	Retain	Outside construction	М	Fair	Good	Fair
398	E. eugenioides	-	6	3	4	3	15 - 20	Retain	Outside construction	М	Fair	Fair	Fair
399	E. eugenioides	-	4	2	1	3	15 - 20	Retain	Outside construction	М	Fair	Fair	Fair
400	E. eugenioides	-	3	2	4	2	15 - 20	Retain	Outside construction	М	Fair	Fair	Fair
401	E. eugenioides	-	7	4	3	4	15 - 20	Retain	Outside construction	М	Fair	Fair	Fair
402	E. eugenioides	-	5	1	1	4	15 - 20	Retain	Outside construction	М	Fair	Fair	Fair
403	E. eugenioides	-	2	2	2	1	15 - 20	Retain	Outside construction	М	Good	Fair	Fair
404	E. eugenioides	1 NW	6	5	4	6	15 - 20	Retain	Outside construction	М	Good	Good	Good
405	E. eugenioides		3	1	1	3	15 - 20	Retain	Outside construction	М	Fair	Fair	Fair
406	E. eugenioides	3-5 W	6	5	3	3	15 - 20	Retain	Outside construction	М	Good	Good	Good
407	E. tereticornis	1 E	\$7. 00	2	5	6	15 - 20	Retain	Outside construction	М	Good	Fair	Good
408	E. tereticornis	-	3	4	3	3	15 - 20	Retain	Outside construction	М	Good	Good	Good
409	E.eugeniodes	-	3	4	3	2	15 - 20	Retain	Outside construction	М	Good	Fair	Fair
410	Alloc. littoralis	-	2	2	2	2	3 - 5	Retain	Outside construction	М	Good	Good	Good
411	A. floribunda	-	7	8	6	5	20 - 25	Retain	Outside construction	М	Good	Fair	Fair
412	E. eugenioides	-	7	8	7	7	15 - 20	Retain	Outside construction	М	Fair	Fair	Fair
413	E. tereticornis	-	6	2	3	4	15 - 20	Retain	Outside construction	М	Good	Good	Fair
414	E. eugenioides	-	5	6	4	3	20 - 25	Retain	Outside construction	М	Good	Good	Good
415	STAG E.eugenioides	-	6	2	3	3	20 - 25	Retain	Outside construction	М	-	-	STAG
416	E. eugenioides	-	3	3	3	2	10 - 15	Retain	Outside construction	М	Good	Good	Good
417	E. eugenioides	-	4	3	3	3	10 - 15	Retain	Outside construction	М	Good	Good	Good
418	E. eugenioides		1	1	1	1	10 - 15	Retain	Outside construction	М	Good	Good	Good
419	E. eugenioides	-	2	1	2	2	20 - 25	Retain	Habitat tree; Outside construction	М	Good	Poor	Poor
420	STAG	-	4	5	4	2	15 - 20	Retain	Habitat tree; Outside construction	-	-	-	STAG
421	E. eugenioides	-	4	4	5	4	10 - 15	Retain	Habitat tree; Outside construction	М	Good	Fair	Fair
422	E. eugenioides	-	4	2	4	3	10 - 15	Retain	Outside construction	М	Good	Good	Good
901	E. tereticornis	-	6	5	8	5	16	Retain	Outside construction	М	Fair	Fair	Fair

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Tre	Constant	-	Car	nopy V	Vidth	(m)	T U (m)	Remo	ve/ Relocate/Retain	Age	\ <i>C</i> +	Charles	Cond
e #	Species	11	Ν	S	Е	W	TH (m)	Action	Reason	Cl	VIT	Struct	Cond
902	E. tereticornis	-	2	5	4	4	11	Retain	Outside construction	М	Poor	Poor	Poor
903	E. eugenioides	-	6	3	10	2	19	Retain	Habitat tree; Outside construction.	М	Poor	Poor	Poor
904	STAG	-	-	-	-	-	-	Retain	Habitat tree; Outside construction.	-	-	-	STAG
905	A. floribunda	-	2	2	4	2	11	Retain	Habitat tree; Outside construction.	М	Fair	Poor	Poor
906	E. eugenioides	-	2	2	2	2	9	Retain	Outside construction.	J	Fair	Fair	Fair
907	A. floribunda	-	2	2	4	4	11	Retain	Outside construction.	М	Fair	Fair	Fair
908	E. tereticornis	-	6	4	4	6	19	Retain	Outside construction	М	Fair	Poor	Fair
909	E. tereticornis	-	5	4	6	5	12	Remove	Inside construction.	М	Fair	Fair	Poor
910	E. tereticornis	-	9	10	9	7	14	Retain	Tree within close proximity to construction. Construct tree protection fences at TPZ.	М	Fair	Poor	Poor
911	E. tereticornis	-	10	12	10	10	15	Retain	Outside construction.	М	Fair	Fair	Poor
912	STAG	-						Retain	Outside construction.	-	-	-	STAG
913	E. tereticornis	-	8	7	8	8	19	Retain	Outside construction	М	Fair	Fair	Poor
914	E. tereticornis	-	7	9	13	11	24	Retain	Outside construction	М	Fair	Fair	Poor
915	E. tereticornis	-	7	7	7	6	25	Retain	Tree within close proximity to construction. Construct tree protection fences at TPZ. Significant habitat tree.	Μ	Fair	Good	Fair
916	-	-	-	-	-	-	-	Remove	Inside construction.	-	-	-	-
917	E. tereticornis	-	5	3	3	7	27	Retain	Tree within close proximity to construction. Construct tree protection fences at TPZ.	M	Poor	Poor	Poor
918	A. floribunda	-	9	4	7	6	17	Retain	Tree within close proximity to construction. Construct tree protection fences at TPZ.	М	Fair	Fair	Fair
919	STAG	-	-	-	-	-	25	Retain	Tree within close proximity to construction. Construct tree	-	-	-	STAG

Tre			Car	nopy N	Vidth	(m)		Remo	ove/ Relocate/Retain	Age		.	
e #	Species	' IL	N	S	E	W	IH (m)	Action	Reason	Cl	Vit	Struct	Cond
									protection fences at TPZ. Habitat tree.				
920		-	-	-	-	-	25	Retain	Tree within close proximity to construction. Construct tree protection fences at TPZ. Habitat tree.	-	-	-	STAG
					TREES	S EAST	OF KEIGH	TLEY STREET	T (IN ROAD RESERVE)				
501	A. floribunda	-	2	2	1	3	3 - 5	Retain	Outside construction. Habitat tree.	J	Fair	Poor	Poor
502	Eucalyptus sp.	-	0.5	1	1	1	3 - 5	Retain	Outside construction.	J	Exc	Exc	Exc
503	E. tereticornis	-	4	5	4	3	15 - 20	Retain	Outside construction.	М	Good	Good	Good
504	E. tereticornis	-	8	6	8	7	15 - 20	Retain	Outside construction	М	Good	Good	Good
505	E. eugenioides	-	3	5	4	3	5 - 10	Retain	Outside construction	М	Good	Fair	Fair
506	A. floribunda	-	0.5	0.5	0.5	0.5	3 - 5	Retain	Outside construction	J	Exc	Exc	Exc
507	A. floribunda	3-5 SE	0.5	0.5	0.5	2	3 - 5	Retain	Outside construction	J	Exc	Good	Good
508	E. tereticornis	-	7	7	7	7	15 - 20	Retain	Outside construction	М	Good	Good	Good
509	E. tereticornis	-	2	7	4	6	5 - 10	Retain	Outside construction	М	Good	Good	Good
510	E. eugenioides	-	5	6	4	6	10 - 15	Retain	Outside construction	М	Fair	Fair	Fair
511	E. eugenioides	-	6	6	6	5	15 - 20	Retain	Outside construction	М	Fair	Fair	Fair
512	A. floribunda	-	1	2	1	1	3 - 5	Retain	Outside construction	J	Exc	Exc	Exc
513	E. bosistoana	1-2 N	5	4	4	4	10 - 15	Retain	Outside construction	М	Good	Fair	Fair
514	E. tereticornis		4	6	4	3	10 - 15	Retain	Outside construction	М	Good	Fair	Fair
515	E. bosistoana	3-5 N	4	3	2	2	10 - 15	Retain	Outside construction	М	Good	Fair	Fair
516	A. floribunda	-	0.5	0.5	0.5	0.5	3 - 5	Retain	Outside construction	J	Fair	Fair	Fair
517	E. eugenioides	-	5	5	5	3	10 - 15	Retain	Outside construction	М	Good	Good	Good
518	E. eugenioides	-	4	4	5	5	10 - 15	Retain	Outside construction	М	Fair	Fair	Fair
519	Acacia mearnsii	-	1.5	1.5	1.5	1.5	3 - 5	Retain	Outside construction	J	Exc	Fair	Fair
520	E. eugenioides	3-5 SE	4	5	3	3.5	15 - 20	Retain	Outside construction	М	Good	Good	Good
521	C. glauca	-	1	1.5	1	1	3 - 5	Retain	Outside construction	J	Exc	Exc	Exc
522	E. eugenioides	1-2 N	7	5	5	3	15 - 20	Retain	Outside construction	М	Fair	Fair	Fair
523	A. floribunda	-	0.5	0.5	0.5	0.5	3 - 5	Retain	Outside construction	J	Exc	Good	Good
524	A. floribunda	-	0.5	0.5	0.5	0.5	3 - 5	Retain	Outside construction	J	Exc	Exc	Exc

Tre			Car	nopy V	Vidth	(m)	TH ()	Remo	ve/ Relocate/Retain	Age	. <i>n</i> .	.	
e #	Species	· 1L	Ν	S	E	W	TH (m)	Action	Reason	Cl	Vit	Struct	Cond
525	A. floribunda	-	0.5	0.5	0.5	0.5	3 - 5	Retain	Outside construction	J	Exc	Exc	Exc
526	A. floribunda	-	0.5	0.5	0.5	0.5	3 - 5	Retain	Outside construction	J	Exc	Exc	Exc
527	E. eugenioides	-	6	4	3	3	10 - 15	Retain	Outside construction	М	Good	Good	Good
528	E. tereticornis	-	6	6	6	3	15 - 20	Retain	Outside construction	М	Good	Good	Good
529	A. floribunda	-	1	1	1	1	3 - 5	Retain	Outside construction	J	Exc	Exc	Exc
530	A. floribunda	-	0.5	0.5	0.5	0.5	3 - 5	Retain	Outside construction	J	Exc	Fair	Fair
531	E. eugenioides	-	4	5	4	1	10 - 15	Retain	Outside construction	М	Good	Good	Good
532	E. tereticornis	-	5	4	5	4	15 - 20	Retain	Outside construction	М	Good	Good	Good
					TREES	WEST	T OF KEIGH	ITLEY STREE	T (IN ROAD RESERVE)				
533	E. eugenioides	-	6	7	5	7	15 - 20	Retain	Outside construction	М	Good	Good	Good
534	E. bosistoana	-	1	1	1	1	3 - 5	Retain	Outside construction	J	Good	Fair	Fair
535	E. tereticornis	-	1	1	1	2	3 - 5	Retain	Outside construction	J	Exc	Exc	Exc
536	E. bosistoana	-	4	3	4	4	5 - 10	Retain	Outside construction	М	Good	Fair	Fair
537	E. eugenioides	3-5 E	5	5	5	5	15 - 20	Retain	Outside construction	М	Good	Fair	Fair
538	E. bosistoana	-	8	11	5	7	15 - 20	Retain	Outside construction	М	Good	Good	Good
539	E. tereticornis	-	3	6	4	3	15 - 20	Retain	Outside construction	М	Good	Good	Good
540	E. eugenioides	-	-	-	-	-	3 - 5	Retain	Outside construction	J	Exc	Fair	Fair
541	E. tereticornis	-	2	3	3	3	5 - 10	Retain	Outside construction	М	Good	Poor	Poor
542	E. tereticornis	-	3	5	6	4	15 - 20	Retain	Outside construction	М	Good	Good	Good
543	E. bosistoana	5- 10 W	4	4	6	7	15 - 20	Retain	Outside construction	М	Good	Fair	Good
544	E. bosistoana	-	6	7	6	5	15 - 20	Retain	Outside construction	М	Good	Good	Good
545	E. tereticornis	-	5	6	6	4	15 - 20	Retain	Outside construction	М	Good	Fair	Fair
546	E. tereticornis	-	7	4	3	6	15 - 20	Retain	Outside construction	М	Good	Fair	Fair
547	E. tereticornis	-	5	3	3	2	10 - 15	Retain	Outside construction	М	Good	Fair	Fair
548	E. tereticornis	-	7	5	5	6	5 - 10	Retain	Outside construction	М	Good	Fair	Fair
549	E. tereticornis	-	8	6	6	7	20 - 25	Retain	Outside construction	М	Good	Good	Good
550	Alloc. littoralis	3-5 N	3	0	3	1.5	3 - 5	Retain	Outside construction	J	Exc	Fair	Fair
551	Alloc. littoralis	3-5 S	4	5	4	3.5	3 - 5	Retain	Outside construction	J	Exc	Good	Good
552	STAG Alloc.littoralis	-	-	-	-	-	3 - 5	Retain	Outside construction	-	-	-	STAG
553	E.eugeniodes	-	6	7	5	4	15 - 20	Retain	Outside construction	М	Good	Fair	Fair
554	E. eugenioides	-	3	4	1	2	5 - 10	Retain	Outside construction	М	Good	Fair	Fair

Tre	Constant	-	Car	nopy N	Vidth	(m)	T U (m)	Remo	ve/ Relocate/Retain	Age	\ <i>/</i> *+	Church	Const
e #	Species	· 1L	Ν	S	E	W	TH (m)	Action	Reason	Cl	Vit	Struct	Cond
555	E. eugenioides	-	0.5	0.5	0.5	0.5	3 - 5	Retain	Outside construction	J	Fair	Fair	Fair
556	E. eugenioides	-	6	6	3	4	15 - 20	Retain	Outside construction	М	Good	Good	Good
557	E. tereticornis	1-2 S	2.5	5	4	1	15 - 20	Retain	Outside construction	М	Good	Good	Good
558	E. tereticornis	3 E	2	2	1	0	5 - 10	Retain	Outside construction	М	Good	Good	Good
559	E. tereticornis	1-2 E	2	2	1	1	5 - 10	Retain	Outside construction	М	Good	Good	Good
560	E. tereticornis	3-5 E	0	3	3	3	5 - 10	Retain	Outside construction	Μ	Good	Good	Good
561	A. floribunda	-	2	4	2	3	3 - 5	Retain	Outside construction	М	Good	Fair	Fair
562	E. eugenioides	-	8	6	8	6	15 - 20	Retain	Outside construction	М	Good	Fair	Fair
563	E. tereticornis	-	2	1.5	1.5	2	3 - 5	Retain	Outside construction	J	Exc	Fair	Fair
564	E. eugenioides	-	8	6	6	8	15 - 20	Retain	Outside construction	М	Good	Good	Good
565	E. tereticornis	3-5 SE	9	6	10	10	20 - 25	Retain	Outside construction.	Μ	Good	Fair	Fair
566	E. eugenioides	-	10	5	7	8	15 - 20	Retain	Outside construction.	М	Good	Fair	Fair
567	A. floribunda	-	5	3	5	4	15 - 20	Retain	Outside construction	М	Good	Good	Good
568	A. floribunda	-	4	4	4	5	15 - 20	Retain	Outside construction	М	Good	Good	Good
569	A. floribunda	-	1	6	4	1	5 - 10	Relocate	Habitat tree; affected by construction	М	Good	Fair	Fair
570	A. floribunda	3-5 NE	4	2	2	4	15 - 20	Retain	Tree within close proximity to construction. Construct tree protection fences at TPZ.	М	Good	Good	Fair
	•			TREES	IN NC	DRTH-I	EAST ROAL	D RESERVE (I	EAST OF 'CASWELL STREE	Γ')			
601	E. tereticornis	-	7	7	5	5	15 - 20	Retain	Outside construction.	(M)	-	-	-
602	E. tereticornis	-	6	6	5	4	15 - 20	Retain	Tree within close proximity to construction. Construct tree protection fences at TPZ.	(M)	-	-	-
603	E. tereticornis	-	6	7	6	7	15 - 20	Retain	Outside construction	(M)	-	-	-
604	E. tereticornis	-	6	6	5	6	15 - 20	Retain	Outside construction	(M)	-	-	-
605	E. tereticornis	-	6	7	7	6	15 - 20	Retain	Habitat tree; outside construction.	(M)	-	-	-
606	A. floribunda	-	3	2	2	5	15 - 20	Retain	Habitat tree; outside construction.	(M)	-	-	-
607	E. tereticornis	-	4	4	4	4	15 - 20	Retain	Outside construction	(M)	-	-	-

Tre	Species	-	Car	nopy V	Vidth	(m)	T U (m)	Remo	ove/ Relocate/Retain	Age	\ <i>/</i> :+	Chruch	Cond
e#	Species		N	S	E	W	TH (M)	Action	Reason	Cl	VIC	Struct	Cond
608	E. tereticornis	-	6	6	6	6	15 - 20	Retain	Outside construction	(M)	-	-	-
609	E. tereticornis	-	2	8	4	3	15 - 20	Retain	Tree within close proximity to construction. Construct tree protection fences at TPZ.	(M)	-	-	-
610	E. tereticornis	-	5	8	7	6	15 - 20	Retain	Outside construction.	(M)	-	-	-
611	E. tereticornis	-	6	8	6	6	15 - 20	Retain	Outside construction.	(M)	-	-	-
612	E. tereticornis	>20 NW	9	3	4	5	10 - 15	Retain	Outside construction.	(M)	-	-	-
613	E. eugenioides	-	2	1.5	1.5	2	5 - 10	Retain	Habitat tree; outside construction.	(M)	-	-	-
614	E. tereticornis	-	6	5	4	7	15 - 20	Retain	Outside construction	(M)	-	-	-
615	E. tereticornis	-	4	6	5	5	15 - 20	Retain	Outside construction. Habitat tree.	(M)	-	-	-
616	E. eugenioides	-	4	4	4	4	10 - 15	Retain	Habitat tree; outside construction.	(M)	-	-	-
617	E. tereticornis	-	5	4	6	6	15 - 20	Retain	Outside construction	(M)	-	-	-
618	E. tereticornis	-	4	7	7	6	15 - 20	Retain	Outside construction.	(M)	-	-	-
619	E. tereticornis	-	6	6	4	4	15 - 20	Retain	Outside construction	(M)	-	-	-
620	E. tereticornis	-	4	3	3	3	15 - 20	Retain	Outside construction	(M)	-	-	-
621	E. tereticornis	-	6	5	4	5	15 - 20	Retain	Outside construction.	(M)	-	-	-
622	E. tereticornis	-	7	6	5	5	15 - 20	Retain	Outside construction.	(M)	-	-	-
623	E. tereticornis	-	7	9	5	6	15 - 20	Retain	Outside construction.	(M)	-	-	-
624	E. tereticornis	-	6	7	5	6	15 - 20	Retain	Outside construction.	(M)	-	-	-
625	E. eugenioides	3- 15 N	5	3	1	0	10 - 15	Retain	Outside construction	(M)	-	-	-
626	E. tereticornis		6	5	5	5	20 - 25	Retain	Outside construction	(M)	-	-	-
627	E. tereticornis		3	2.5	1.5	2.5	20 - 25	Retain	Outside construction	(M)	-	-	-
628	E. tereticornis		4	3	2	5	15 - 20	Retain	Habitat tree; outside construction.	(M)	-	-	-
629	E. tereticornis		3	3	4	2	10 - 15	Retain	Outside construction	(M)	-	-	-
630	E. tereticornis		5	5	5	5	15 - 20	Retain	Outside construction	(M)	-	-	-
631	E. tereticornis		4	5	4	5	15 - 20	Retain	Outside construction	(M)	-	-	-
632	STAG	35 NW	-	-	-	-	-	Retain	Habitat tree; outside construction.	(M)	-	-	-
633	E. tereticornis	-	3	3	4	6	10 - 15	Retain	Outside construction	(M)	-	-	-
634	E. eugenioides	-	3	3	3	4	10 - 15	Retain	Outside construction	(M)	-	-	-

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Tre	Species	т	Car	nopy V	Vidth	(m)	TH (m)	Remo	ve/ Relocate/Retain	Age	\ <i>\</i> !:+	Chruch	Cond
e#	species	11	Ν	S	Е	W	т п (m)	Action	Reason	Cl	VIL	Struct	Cond
635	STAG	-					-	Retain	Habitat tree; outside construction.	(M)	-	-	-
636	E. tereticornis	-	4	5	5	6	10 - 15	Retain	Outside construction	(M)	-	-	-
637	E. tereticornis	-	4	3	4	5	15 - 20	Retain	Outside construction	(M)	-	-	-
638	E. tereticornis	-	3	3	3	6	10 - 15	Retain	Outside construction	(M)	-	-	-
639	E. tereticornis	-	3	3	5	3	10 - 15	Retain	Outside construction	(M)	-	-	-
640	E. tereticornis	-	3	2	3	3	5 - 10	Retain	Outside construction		-	-	-
641	Ang.?/Euc.?	-	-	-	-	-	15-20	Retain	Habitat tree; outside construction.	М	-	-	-

All trees in the north-east Road Reserve (east of 'Caswell Street', adjoining the north-east corner of the site) were visually assessed from within the site boundary; this section was not traversed for tree assessment.

By contrast, the Road Reserve of 'Albert Street' (either side of Keightley Street) was systematically traversed to assess all trees in that section.

Most trees assessed in the section have been assigned to the 'Mature' age class. Some trees in the dense stand on the west end of the section appeared suppressed by adjoining canopy, although trunk diameters were often >20cm).

The 'Mature' age class designation is based on:

- observed trunk d.b.h. (typically >30cm and often > 40cm),
- height (> 80% were in the '10-15m' height class), and
- presence of fruit on, or at the base of, several trees.

Several large trees east of 'Caswell Street' (in the adjoining open grassy paddock north of the site) appear to be remnants of the original vegetation community. They are in various states of health, with structural characters typically including dieback (small amounts), low-hanging branches, minor low-trunk damage in some (recovered), and base diameter typically >70cm (three being 1-metre or greater – T601, T605, T611).

Many of them are large Forest Red Gum (*Eucalyptus tereticornis*); these are potential habitat trees.

Appendix 3. Tree Protection guidelines

A Pre-construction/Demolition phase

The following methods are to be implemented to minimise potential damage to retained trees, e.g., from soil compaction and site activity. Trees are to be protected at all stages of the development, and growing conditions are to be improved within the Tree Protection Zone (TPZ). These guidelines are consistent with AS4970-2009 Protection of trees on development sites.

- A 1. All site workers are to be aware of relevant tree protection requirements. Nominated trees will be removed or transplanted as per the tree protection plan. An arborist is to supervise tree removal, pruning and transplanting and certify the completed works.
- A 2. All trees not nominated for retention are to be removed prior to any construction activity. Approved tree pruning and removal operations near retained trees are to be carried out in a way that avoids soil compaction and damage to canopy, trunk or roots. Works are to be supervised by an arborist or the person responsible for site management.
- A 3. Stumps are to be ground, not dozed or dug out, if in the vicinity of retained trees. Machinery (other than stump machines) is to be kept beyond the nominated protection zones of retained trees during all operations.
- A 4. Tree protection fencing is to be in place before the introduction of machinery or other materials to the site and before commencement of works. Fencing is to be located to at least the canopy dripline, be of sturdy construction and retained in-situ during works unless altered by the project arborist. All site activities are excluded from this zone. Refer to Appendix 2 for specific minimum setback distances. AS4687 specifies applicable fencing requirements.
- A 5. The TPZ is to be mulched using material compatible with 'AS4454-2003 Composts, soil conditioners and mulches', e.g., decomposed leaf litter, and maintained at 50-100 mm depth. Some areas, e.g., turf, may not require mulch. Temporary irrigation may be required. Weeds are to be removed and controlled.
- A 6. Pruning is to be undertaken by suitably qualified, skilled and insured people to comply with AS4373-2007,
 Australian Standard: Pruning of Amenity Trees. Initial pruning provides adequate clearances and general crown maintenance. Flexible branches are to be tied back, not pruned.

- B Construction phase (Maintain tree protection fencing)
- B 1. Where access is required within a TPZ, temporary ground protection measures will be required (e.g., metal plates, rumble boards or exterior-grade ply over aggregate) capable of supporting the required load without deflection. Trunk protection may be required, e.g., battens wrapped around the trunk to a height of 2 metres.
- B 2. Material stockpiles or dumps, parking, excavation, site sheds, preparation of chemicals, fires, wash down areas or similar are to be located clear of TPZs. Areas designated for such requirements are not to divert drainage water into tree protection areas.
- B 3. Machine trenching is to be excluded from the TPZ of retained trees. Any required root excavation inside a TPZ is to be done by hand and intact roots >40 mm in diameter are to be retained. Services are to be installed 100 mm clear of such roots. Damaged roots **must** be cut cleanly with sharp implements (backhoe blades and similar are excluded), with no root dressings or paints. Trenches are to be backfilled promptly to minimise soil desiccation. Underbore if no suitable alternative location is possible. All works within the TPZ are to be supervised by an arborist.

Appendix 4. Tree Protection Zone and Structural Root Zone

Extract from Section 3 of AS 4970-2009.



Appendix 5. Encroachment into Tree Protection Zones

Extract from Appendix D of AS 4970-2009.

Encroachment into the tree protection zone (TPZ) is sometimes unavoidable. Figure D1 provides examples of TPZ encroachment by area, to assist in reducing the impact of such incursions. TPZ with 10% compensation for encroachment TPZ with 10% compensation for encroachment TPZ from TPZ from formula formula SRZ SRZ Stem Stem Encroachment: up to... 10% TPZ area Encroachment: up to 10% TPZ area TPZ with 10% compensation for encroachment TPZ with 10% compensation for encroachment TPZ from TPZ from formula formula SRZ SBZ Stem Stem Trench Encroachment: up to 10% TPZ area Encroachment: up to 10% TPZ area NOTE: Less than 10% TPZ area and outside SRZ. Any loss of TPZ compensated for elsewhere. FIGURE D1 EXAMPLES OF MINOR ENCROACHMENT INTO TPZ

Appendix 6. Company Profile

Abel Ecology has been in the flora and fauna consulting business since 1991, starting in the Sydney Region, and progressively more state wide in New South Wales since 1998, and now also in Victoria. During this time extensive expertise has been gained with regard to Master Planning, Environmental Impact assessments including flora and fauna, bushfire reports, Vegetation Management Plans, Management of threatened species, Review of Environmental Factors, Species Impact Statements and as Expert Witness in the Land and Environment Court. We have done consultancy work for industrial and commercial developments, golf courses, civil engineering projects, tourist developments as well as residential and rural projects. This process has also generated many connections with relevant government departments and city councils in NSW. Our team consists of five scientists and two administrative staff, plus casual assistants as required.

Licences

NPWS s132C Scientific licence number is SL100780

NPWS GIS data licence number is CON95034

DG NSW Dept of Primary Industries Animal Care and Ethics Committee Approval

DG NSW Dept of Primary Industries Animal Research Authority expires

The Consultancy team

Dr Danny Wotherspoon

BSc, DipEd, MA, PhD, Grad Dip Bushfire Protection, MECA NSW, MEPLA, MNELA, MESA, MEIANZ, White card. Danny has practised as an ecological and bushfire consultant since 1991.

He is a consulting ecologist to private developers, State Government agencies and various City Councils on a regular basis, for development applications, government projects, and as expert witness in the NSW Land and Environment Court.

Danny's PhD researched fragmented vegetation and fauna habitat use. He has special expertise in fauna habitat use. Danny has presented invited papers at international conferences since 2001 in Australia, China, South Africa, Sri Lanka and Israel on his PhD and other research, including golf course habitat management. Danny's scientific papers have been published in both international and Australian academic journals.

Mark Mackinnon

Qualifications: B Env. Sci. (Hons), Accredited Practitioner Level 3 - Bushfire Planning & Design (BPAD), Accreditation number 36395. MEIANZ, White Card Graduate Diploma of Bushfire Protection

Mark is a passionate and enthusiastic scientist who thrives in the field of natural resource management. In the last 10 years, Mark has worked for a number of inter-state government agencies and environmental consultancies. He has experience in threatened species, fire ecology, bushfire management, pest plant and animals, and landscape restoration. In particular he specializes in ornithology and bushfire management. Mark has a number of specialized field-based skills including simple and complex tree climbing, working at heights, general firefighter departmental fire accreditation, venomous snake and reptile handling, immunization to handle bat species, and an A - class bird banding licence with mist-net endorsement. Mark is also skilled in ArcGIS mapping, first-aid, four -wheel-driving.

Mark Sherring

BM, MAABR, Cert. Hort., Cert. Bush Regen, Cert. Rural Ops, White Card. Member of the Australian Association of Bush Regenerators

Mark has extensive knowledge and experience of plant species in New South Wales. He has built up his expert knowledge on NSW native plant species over the many years that he has practised as a Botanist. He is regularly asked to contribute to the extensive (ongoing) flora surveys of the Sydney Basin and Blue Mountains carried out by the Royal Botanic Gardens, Sydney. Mark has extensive field survey experience, having worked for over ten years in various plant-related roles. His role in Abel Ecology is to provide expert advice on flora and on the full range of flora management issues encountered and in the design and management of environmental monitoring projects.

Dr Stephanie Clark

Qualifications: B Sc (Hons), PhD

Stephanie has over 30 years experience in the collection, identification and taxonomy of marine, estuarine, freshwater and terrestrial molluscs. She has conducted numerous targeted surveys for endangered and threatened species (particularly land and freshwater molluscs) in both Australia and the United States. She is particularly interested in the systematics, taxonomy, morphology (external and internal), population and conservation genetics and conservation of molluscs particularly terrestrial (especially the Helicoidea) and freshwater (especially the Hydrobiidae and related families) groups.

Jesse Cass

BSc (Zoology), MEScM (enrolled) White Card, Working Safely at Heights Trainee Botanist

Jesse has a bachelor degree and is currently studying his Masters of Environmental Science and Management, online at UNE, as a pathway for a PhD. He is practicing and learning plant identification, as well as fauna identification within the Sydney Basin. His role in Abel Ecology is to provide assistance on field visits and report writing, while gaining knowledge and experience in flora identification.