Ref: kettering.ferry22.sub.aia

ARBORICULTURAL IMPACT ASSESSMENT

NEW VEHICLE ACCESS FOR A PROPOSED 1 LOT SUBDIVISION

22 FERRY ROAD,
KETTERING, 7155

NOVEMBER 2025

Prepared for: PDA SURVEYORS, ENGINEERS & PLANNERS

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EXECUTIVE SUMMARY

This Arboricultural Impact Assessment (AIA) has been prepared for Jane Monks, Planner, PDA Surveyors, Engineers & Planners to support Kingborough Council assessment of the construction of a new vehicular access as part of a proposed 1 residential lot subdivision (DAS-2024-15) at 22 Ferry Rd, Kettering (the site). The proposed new access will be located in an established right of way through 3029a Channel Highway, Kettering.

Nine (9) individual trees within the property of 3029a Channel Highway were assessed & are subject to this report. The subject trees are comprised of the Tasmania/Australian eucalypt species Black Gum *(E. ovata)* and the introduced species Radiata Pine *(Pinus radiata*). The overall vitality & structural condition of the site trees is good with the exception of **tree 1.** This significant large remnant tree (Very High Conservation Value) has diminished physiological capacity and numerous significant structural defects with a probable elevated Likelihood of Failure. If the new access is constructed along the proposed alignment structural testing and a detailed tree risk assessment of **tree 1** should be conducted. Relevant observations regarding the age class, dimensions, health, structural condition, Remaining Life Expectancy & conservation value of the subject trees are presented in the Tree Schedule in **Appendix 2.**

Tree 1 has a sufficiently large trunk diameter (DBH) to be ascribed a "Very High Conservation Value" (VHCV) as described in Kingborough Council Policy 6.10 "Biodiversity Offset Policy" and should be retained and protected wherever practicable as prescribed in "E10.0 - Biodiversity Code" of The Scheme.

RECOMMENDATIONS

1. **Retain all subject trees and protect them accordance with item 6.3 of the Tree Protection Specification(TPS) in Section 6 & the Tree Protection Plan in Appendix 1.**

2. **Establish a new right of way alignment that is completely outside the TPZ of tree 1.**

3. **If the new access is constructed along the proposed alignment construct it above the present surface grade within the TPZ/SRZ of tree 1 employing non-destructive, non-compacting 'no dig' methodology in accordance with item 6.6 of the TPS.**

SUMMARY OF SITE ACTIVITIES REQUIRING ARBORICULTURAL INPUT

In accordance with the *Australian Standard, AS 4970-2025, Protection of Trees on Development Sites*, inspections should be conducted by the project arborist at the following key project stages:

- Prior to any work commencing on-site (including demolition, earthworks, or site clearing) and following the installation of tree protection.
- During any excavations, building works, and any other activities carried out within the TPZ of any tree to be retained & protected.
- A minimum of once every month during the construction phase.
- After all major construction has ceased, following the removal of tree protection.

It shall be the responsibility of the project manager to notify the Project Arborist prior to any works within the TPZ of any protected tree at a minimum of 48 hours' notice. To ensure the tree protection plan is implemented, hold points have been specified in the schedule of work below.

Construction Stage	Hold Point	Activity Summary	Trees Affected
Pre-Construction	1	**Pre-commencement meeting:** Meeting on site with all parties to agree protective measures. ***Will be carried out before any significant site works begin.***	All trees
	2	**Installing/Altering Tree Protection:** Agreed tree protection measures will be installed and checked. Project Arborist advice will be sought before altering the position of tree protection.	All trees
Construction	3	Scheduled inspection of trees by the project arborist should be undertaken every month during the construction period.	All trees
	4	**Excavation and works with SRZ/TPZs:** Project Arborist advice before any works, excavation, or significant roots are cut within TPZs	Tree 1
Post Construction	5	**Removing Tree Protection:** Tree Protection and fencing can only be removed when there is no risk of damage to retained tree	All trees

1.0 INTRODUCTION

1.1 Background

1.1.1 This Arboricultural Impact Assessment (AIA) has been prepared for Jane Monks, Planner, PDA Surveyors, Engineers & Planners to support Kingborough Council assessment of the construction of a new vehicular access as part of a proposed 1 residential lot subdivision (DAS-2024-15) at 22 Ferry Rd, Kettering (the site). The proposed new access will be located in an established right of way through 3029a Channel Highway, Kettering.

1.1.2 The purpose of this report is to determine the potential impact of the proposed works on relevant trees growing in the vicinity of the proposed works and where appropriate, make recommendations for amendments to the design or construction methods to minimise adverse impacts on them.

1.1.3 This report has been prepared in accordance and with reference to the objectives of the *Kingborough Interim Planning Scheme 2015* (The Scheme) and the *Australian Standard for Protection of Trees on Development Sites AS4970- 2025* (The Standard). This report complies with '*2.2.5 Arboricultural Impact Assessment*' of The Standard and Kingborough Council's *Guidelines for a Tree Plan v2 - 2024*

1.1.4 I conducted a site inspection on 24th September 2025. Relevant inspection methods and background administrative information are presented in **Appendix 4**.

1.2 Documents & Plans Referenced

1.2.1 The conclusions and recommendations in this report are based on the findings from the site inspection, discussions with the client, and analysis of the following plans and documents:

- **Plan of Subdivision** Drawing: 5268MS-1D; Prepared by: PDA; Dated: 06 October 2025
- **Planning Report "***22 Ferry Road, Kettering – 1 Lot Subdivision"* Prepared by PDA; Dated: October 2025

1.3 Report Limitations

1.3.1 All plans are based on provided information, are illustrative and intended for design purposes only. They should only be used relating to tree issues and are not suitable for any other purpose. Although all data have been verified as far as possible there is no guarantee, nor responsibility for the accuracy of information provided by others.

1.3.2 Although a basic visual tree health and structural condition assessment was conducted as part of the site tree inspections, many factors may contribute to tree failure and cannot always be predicted and accordingly a tree's internal structural condition may not always correlate to visible external indicators. Where relevant, further detailed structural assessment of specific trees is recommended in the Section 3 & the Tree Schedule in Appendix 2.

1.3.3 There is no warranty or guarantee, expressed or implied that problems or deficiencies regarding the subject tree(s) or the site may not arise in the future. Information contained in this report covers only the subject tree(s) assessed and reflects their health and structural condition at the time of inspection.

2.0 THE SITE

***Figure 1**: The site at 22 Ferry Rd, Kettering (yellow outline). 3029a Channel Highway, over which the new access will be constructed via an existing Right of Way is indicated with red shading(Source –www.maps.thelist.tas.gov.au)*

Address	22 Ferry Road, Kettering	
	3029a Ferry Rd, Kettering	
Planning Scheme (The Scheme)	*Kingborough Interim Planning Scheme 2015*	
Status	22 Ferry Road	Modified & developed
	3029a Ferry Rd	Modified & Undeveloped
PID : Title Ref	22 Ferry Road	9957477 : 110610/4
	3029a Ferry Rd	2140285 : 164701/1
Zoning	12: Low Density Residential	
Scheme Code Overlays	22 Ferry Road	- Biodiversity Protection Area (part)
	3029a Ferry Rd	- Biodiversity Protection Area - Bushfire Prone Areas

3.0 THE SUBJECT TREES

3.0.1 Nine (9) individual trees within the property of 3029a Channel Highway were assessed & are subject to this report. The subject trees are comprised of the Tasmania/Australian eucalypt species Black Gum *(E. ovata)* and the introduced species Radiata Pine *(Pinus radiata*. The overall vitality & structural condition of the site trees is good with the exception of **tree 1.** This significant large remnant tree (Very High Conservation Value) has diminished physiological capacity and numerous significant structural defects (figure 1) with a probable elevated Likelihood of Failure.

***Figure 2**: Tree 1 with significant decay cavity, deadwood & structural fault at the stem union (left) & exposed deadwood & decay column extending up the eastern stem. The proposed access alignment will pass directly under/adjacent to this stem.*

3.1 Trees Subject to the Protection

3.1.1 **Tree 1** is a relevant species with a sufficiently large trunk diameter (DBH) to be ascribed a "Very High Conservation Value" as described in Kingborough Council Policy 6.10 "Biodiversity Offset Policy" (Section A1.5 in **Appendix 4)**. Accordingly this tree is also considered to have 'Moderate Priority Biodiversity Values" as set out in Table "E10.1- Priority Biodiversity Values" of The Scheme and should be retained and protected wherever practicable as prescribed in "E10.0 - Biodiversity Code" of The Scheme.

4.0 TREES AND DEVELOPMENT (AS4970- 2025)

4.1 Tree Protection Zones, Notional Root Zones & Structural Root Zones

4.1.1 *Australian Standard 4970 Protection of Trees on Development Sites (2025)* (AS-4970-2025) specifies the establishment of a **Tree Protection Zone** (TPZ) to protect a tree and its growing environment throughout the development process. The starting point to determining the TPZ is calculation of a tree's **Notional Root Zone** (NRZ). The NRZ is calculated as a radial measurement based on twelve (12) times the tree's diameter at standard height (DSH) (see figure 2 below). Once the NRZ is calculated the TPZ is then determined by consideration of relevant factors specific to each tree such as tree species, age, size, health & structural condition, site soil & topography, the location & distribution of roots, existing structures/obstacles affecting root growth within the NRZ & the amount of potential root loss from proposed NRZ encroachment. Various examples of amendment to the NRZ to establish the TPZ are shown in **Appendix 3.**

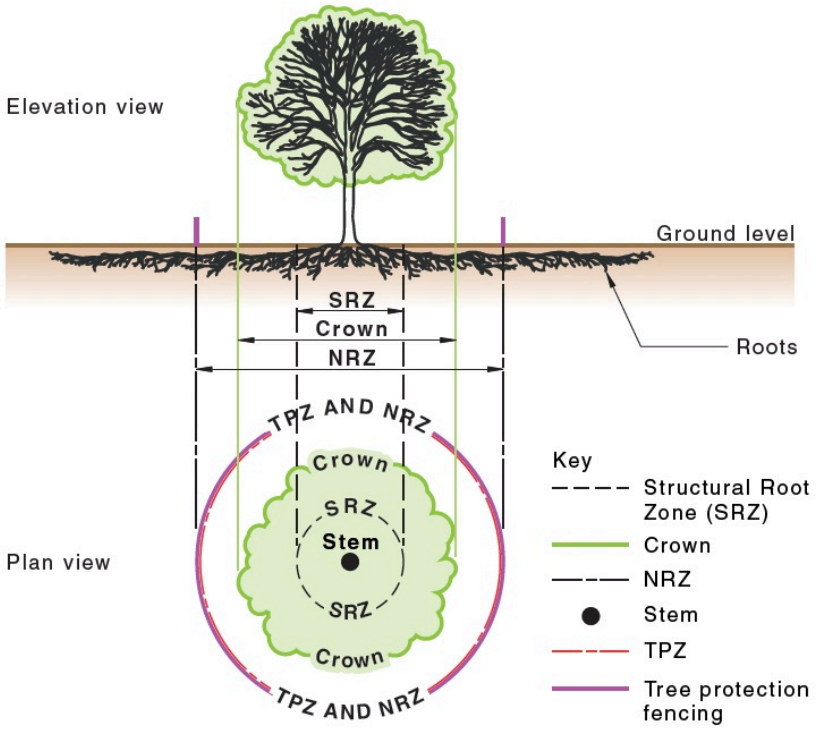


Figure 3*: Indicative Notional Root Zone, Structural Root Zone & Tree Protection Zone of a tree with no development within its NRZ (AS-4970-2025)*

4.1.2 The intention of the TPZ is to ensure protection of the root system and canopy from potential damage from construction works and ensure the long-term health and stability of each tree to be retained. Encroachments on the root zone often occur due to excavations, changes in ground levels, (either lowering or raising the grade), trenching or other forms of soil disturbance such as ripping, grading or inverting the soil profile. Such works can cause damage to or loss of part of the root system, leading to an adverse impact on the tree.

4.1.3 Ideally all works should be avoided within the TPZ. Where works within the TPZ are unavoidable, exploratory excavation and/or root mapping can be undertaken to provide information on the size and number of roots located along a specified line of excavation.

This information helps to identify the level of root damage that would result from an excavation and therefore the potential impact the works may have on the tree. Root sensitive design and construction techniques can then be specified based on the results of exploratory root trenching/mapping.

4.1.4 In addition to the TPZ, AS-4970-2025 provides calculations to determine a tree's **Structural Root Zone** (SRZ). The SRZ is described in AS-4970-2025 as *"the theoretical area around the base of a tree required for the tree's stability in the ground. This zone considers a tree's structural stability only, not the root zone required to maintain the trees vigour and long-term viability, which will usually be a much larger area".* Severance of structural roots (>25mm Ø) within the SRZ is not recommended as it may lead to the destabilisation and/or decline of the tree.

4.1.5 The NRZ & SRZ of the subject trees have been calculated in accordance with the AS-4970-2025 and are included in the Tree Assessment Schedule **(Appendix 2)**.

4.2 Encroachments on the Tree Protection Zone.

4.2.1 Where works within the TPZ are unavoidable, an encroachment not exceeding 10% of the TPZ area, and remaining outside the SRZ, can be acceptable. Greater TPZ encroachments may result in an adverse impact on the tree. Encroachments between 10% & 20% TPZ area but remaining outside the SRZ are classified as **Moderate**, while encroachments >20% NRZ area and/or within the SRZ are classified as **Major.** Where moderate or major encroachments are unavoidable, exploratory excavation using non-destructive methods may be required to evaluate the extent of the root system affected and determine whether or not the tree can remain viable. Various examples of minor & moderate TPZ encroachments are shown in **Appendix 3**.

4.2.3 Trees wholly within proposed construction footprints are generally recommended for removal. Similarly, trees with their SRZ and/or with greater than 25% of their TPZ impacted by construction are also generally recommended for removal unless they are subject to regulatory protection . ***However, different types of construction encroachments (e.g. fill, cut, services, pavement type, retaining walls) produce varying likely tree impacts and each situation must be assessed in its own context and with consideration of the possible application of alternative construction method.*** Existing constraints to root development also vary the TPZ. Compacted fill can be equally as damaging to tree longevity as root development is restricted within heavily compacted soils.

4.3 Acceptable Encroachments To The Canopy

4.3.1 The removal of a small portion of the crown (foliage and branches) is generally tolerable provided that the extent of pruning required is less than 10% of the total foliage volume of the tree and the removal of branches does not create large wounds or disfigure the natural form and habit of the tree. All pruning cuts must be undertaken in accordance with AS 4373-*Pruning of Amenity Trees*. This generally involves reduction of the affected branches back to the nearest branch collar at the junction with the parent branch, rather than at an intermediate point. The latter is referred to as "lopping" and is not an acceptable arboricultural practice. Generally speaking, the minimum pruning required as possible to accommodate any proposed works is desirable. Extensive pruning can result in a detrimental impact on tree health and may lead to exposure of remaining branches to wind forces that they were previously sheltered from, leading to a greater risk of branch failure.

5.0 THE PROPOSED DEVELOPMENT

5.1 The Proposal

5.1.1 The components of the proposed development relevant to this report include:

- Construction of a new vehicle access through an established Right of way through the adjacent property of 3029a Channel Highway

5.2 Impact Assessment

5.2.1 The intention of this assessment is to evaluate the likely impact of the proposed works on the subject tree(s). A summary of the likely impact of the proposed works on the subject trees is shown in the Tree schedule **Appendix 2**. The following details have been considered as part of this assessment where relevant & available:

- Existing Relative Levels (R.L);
- Tree Protection Zone (TPZ);
- Structural Root Zone (SRZ);
- Footprint and envelope of the proposed works;
- Incursions to the TPZ & SRZ,
- Incursions to the tree canopy;
- Assessment of the likely impact of the works on existing tree(s).

5.2.1 Trees To Be Removed

5.2.1.1 No trees are required to be removed for the proposed works

5.2.2 Trees To Be Retained

MODERATE ENCROACHMENT

5.2.2.1 The access construction will result in a moderate encroachment (~16%) on the TPZ area of **tree 1.** In addition the proposed works will also result in encroachment on the SRZ of the tree. Although the proposed access alignment appears to have been subjected to previous informal surfacing this has become comprehensively degraded. Excavation & compaction associated with typical vehicle access works along the proposed alignment will likely sever/damage significant absorbing & structural roots resulting in an **unacceptable** adverse impact & potential instability of the tree. The adverse impact on the tree will likely be magnified due to its already diminished physiological capacity. Although the adverse impacts of such works within tree TPZs/SRZs can be generally be mitigated by employing non-destructive 'no-dig' construction methods I consider that in this instance the tree would still be adversely impacted by the resulting limitation of access to water and gaseous exchange, especially considering the existing, recently upgraded access within its southern TPZ/SRZ.In addition, construction of the new access along the proposed alignment within the failure impact zone of tree 1 will potentially increase its associated risk due to the existing elevated likelihood of stem & primary branch failure resulting from the noted significant structural faults.

5.2.2.2 ***Given the noted constraints to construction of the new access within the TPZ/SRZ of tree 1 consideration should be given to establishing a new right of way located completely outside its TPZ. This would enable conventional construction of the new access without adversely impacting the tree & potentially increasing its associated risk.*** A notional new right of way alignment is indicated in the Tree Protection Plan in Appendix 1.

5.2.2.3 If the new access is constructed along the proposed alignment the works should be conducted in accordance with **Item 6.6** of the **Tree Protection Specification (TPS)** in **Section 6**. **Specifically, the access should be constructed above the present surface grade employing non-destructive, non-compacting 'no dig' methodology within the TPZ/SRZ of tree 1.**

MINOR ENCROACHMENT

5.2.2.4 The access construction along the proposed alignment will result in a moderate encroachment (<10%) on the TPZ area of **trees 8 & 9.** This level of encroachment will be acceptable with negligible impact so long as the trees are protected in accordance with **item 6.3** of the **TPS** and the Tree Protection Plan**.**

5.3 Recommendations

5.3.1 **Retain all subject trees and protect them accordance with item 6.3 of the Tree Protection Specification(TPS) in Section 6 & the Tree Protection Plan in Appendix 1.**

5.3.2 **Establish a new right of way alignment that is completely outside the TPZ of tree 1.**

5.3.2 **If the new access is constructed along the proposed alignment construct it above the present surface grade within the TPZ/SRZ of tree 1employing non-destructive, non-compacting 'no dig' methodology in accordance with item 6.6 of the TPS.**

6.0 TREE PROTECTION SPECIFICATION

6.0.1 The tree protection measures set out in this specification are supplemented by detailed general explanations and descriptions outlined in the compilation of "*Site Guidance Notes"* produced by Barrell Tree Consultancy and located on their website at https://www.barrelltreecare.co.uk/resources/technical-guidance/. These Site Guidance Notes (SGN) address a range of tree protection and management issues that regularly arise in the construction phase of development. Although the content of the SGNs is generally applicable to tree protection on construction sites worldwide, it should be noted that they are British documents and some terminology and/or references may differ or not be relevant to local conventions, standards and/or legislation. Where relevant, hyperlinks to the relevant SGNs are provided at the end of particular sections.

6.1 Arboricultural Supervision

6.1.1 An Arborist (the Project Arborist) experienced in tree protection on construction sites *and* having gained a minimum arboricultural qualification of Australian Qualifications Framework (AQF) Certificate Level 5 (i.e diploma) should be engaged and the site specific requirements

for tree protection fencing, temporary TPZ access, and other specific tree protection measures confirmed through consultation between the Site Manager and the Project Arborist prior to the commencement of site establishment and construction work on the site. In addition the Project Arborist should oversee any excavation, machine trenching, compacted fill placement and other designated site specific activities within the TPZ of all retained trees.

6.2 Tree Removal

6.2.1 Trees approved for removal as part of the Development Consent Conditions shall be removed **prior to the establishment of the tree protection measures.** Tree removal shall not damage the trees to be retained. Stumps located within the TPZs of trees to be retained shall be grubbed-out where required using a mechanical stump grinder (or by hand where less than 150mm in diameter) without damage to the root system of other trees. Where trees to be removed are within the SRZ of any trees to be retained, consideration should be given to cutting the stump close to ground level and retaining the root crown intact. **Stumps within the Tree Protection Zone of other trees to be retained shall not be pulled out using excavation equipment or similar.**

6.2.2 Tree removal works shall be undertaken in accordance with the Safe Work Australia "Guide To Managing Risks of Tree Trimming and Removal Work" (2016).

6.3 Tree Protection

6.3.1 The TPZ is the area surrounding retained trees that must be protected from any disturbance by the construction activity. In practice, TPZ establishment can be done by any combination of fencing, trunk protection &/or ground protection to be finalised and agreed to by the Project Arborist. Whether the TPZ is protected by fencing or trunk/ground protection, all the protective measures should be installed before the start of any site works that could affect trees. ***No protective measures should be removed or temporarily dismantled without consulting the Project Arborist.*** Furthermore, the condition of all the protective measures should be regularly monitored to ensure they remain fit for purpose. The main means of preventing damage to trees and their root zones in the TPZ are fencing, barriers and ground protection. Where possible following activities should be avoided within specified Tree Protection Zones:-

- Excavations and trenching (with exception of approved works);
- Ripping or cultivation of soil;
- Mechanical removal of vegetation;
- Soil disturbance or movement of natural rock;
- Soil level changes including the placement of fill material
- Movement and storage of plant, equipment & vehicles;
- Erection of site sheds;
- Affixing of signage or hoardings to trees;
- Storage of building materials, waste and waste receptacles;
- Disposal of waste materials and chemicals including paint, solvents, cement slurry, fuel, oil and other toxic liquids;
- Other physical damage to the trunk or root system; and
- Any other activity likely to cause damage to the tree.

6.3.2 **Tree Protection Fencing**: Protective fencing shall be installed at the locations shown on the Tree Protection Plan in **Appendix 1** by a **pink line**. Where Tree Protection Zones merge a single fence encompassing the area is deemed to be adequate. The actual form of the fencing can vary, provided it is fit for purpose in that it *effectively physically restricts access and damaging activities within the TPZ/SRZ that it encloses for the duration of the proposed works* and it is approved by the Project Arborist. **In the context of the proposed works it is appropriate to construct the fencing from medium duty (160 gsm minimum) barrier mesh attached to star pickets (droppers) at 5m minimum spacing**. In order to maintain tension 2mm fencing wire should be run through the top of the barrier mesh & droppers (see figure 4 below).

Figure 4*- Tree Protection Fencing constructed with barrier mesh.*

6.3.3 **Tree Signage**: Appropriate signage shall be installed on the fencing to prevent unauthorised movement & or storage of plant and equipment or entry to the TPZ/SRZ (see figure 4 below). A sample Tree Protection Zone sign is attached to the back of this document.

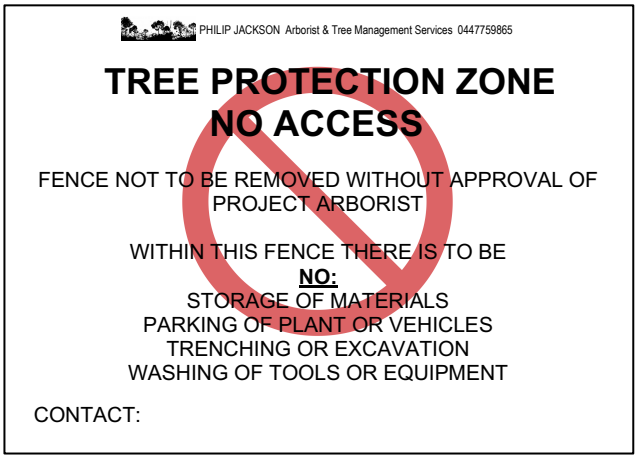


Figure 4*- Appropriate Tree Protection Zone Signage*

6.3.4 **Trunk Protection:** Where provision of tree protection fencing is in impractical due to its proximity to the proposed construction footprint, trunk protection shall be erected around nominated trees to avoid accidental damage, as indicated by a **pink circle** on the Tree Protection Plan (**Appendix 1**). The trunk protection shall consist of a layer of carpet underfelt (or similar) wrapped around the trunk, followed by 1.8 metre lengths of softwood timbers (90 x 45mm in section) aligned vertically and spaced evenly around the trunk at 150mm centres (i.e. with a 50mm gap) and secured together with 2mm galvanised wire or galvanised hoop strap as shown in Figure 5 below. Recycled timber (such as demolition waste) may be suitable for this purpose, subject to the approval of the Project Arborist. The timbers shall be wrapped around the trunk (over the carpet underfelt), but not fixed to the tree to avoid mechanical injury or damage to the trunk. Trunk protection should be installed prior to any site works and maintained in good condition for the duration of the construction period. Carpet underfelt (alone) is sufficient for trees with a trunk diameter of less than 200mm. Trunk protection should be installed prior to any site works and maintained in good condition for the duration of the construction period.

***Figure 5**- Example of tree trunk protection*

6.3.5 **Ground Protection:** If temporary access for machinery is required within the TPZ ground protection measures will be required (see figure 6 below). The purpose of ground protection is to prevent root damage and soil compaction within the TPZ. A range of methods can be used, including retaining existing hard surfacing or structures that already protect the soil, installing new materials, or a combination of both. Commonly employed methods include a permeable membrane such as geotextile fabric beneath a 100mm layer of hardwood mulch or crushed rock below rumble boards. **Whatever the choice of method, the end result must be that the underlying soil (rooting environment) remains undisturbed and retains the capacity to support existing and new roots.**

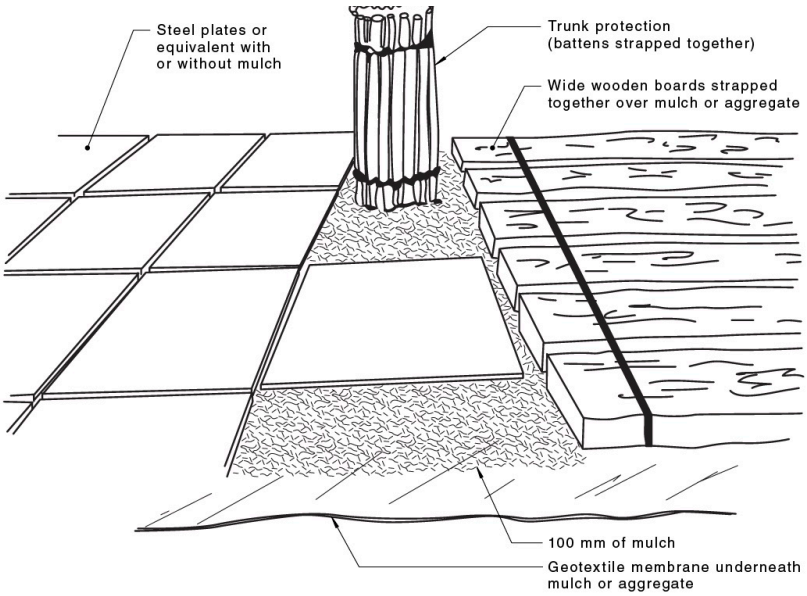


Figure 6*- Example of tree ground protection*

6.3.3 More detailed illustrative guidance on ground protection in TPZs can be accessed via the following hyperlink:

https://www.barrelltreecare.co.uk/resources/technical-guidance/sgn03?stage=Stage

6.3.6 **Tree damage:** In the event of a protected tree becoming damaged for any reason during the works period the Project Arborist shall be required to inspect and provide advice on any remedial action to minimise any adverse impact. Such remedial action shall be implemented as soon as practicable and certified by the arborist.

6.4 Working Within Tree Protection Zones

6.4.0 In some cases works within the TPZ may be authorized. **These works shall be supervised by, or at a minimum notified to, the Project Arborist**. When undertaking works within the TPZ, care should be taken to avoid damage to the tree's root system, trunks and lower branches.

6.4.1 General Excavation & Dealing With Roots

6.4.1.1 **Prior to any mechanical excavations for building/wall or post footings or foundations, batter cuts or pavement sub-grade** within the Tree Protection Zone of all trees nominated for retention, exploratory excavation using non-destructive techniques shall be undertaken at the proposed footing site or along the perimeter of the structure or pavement within the TPZ. Non-destructive excavation techniques may include the use of hand-held implements, air pressure (using an Air-spade® device) or water pressure. For walls or slabs the exploratory excavation shall be undertaken along the perimeter of the foundation or pavement (within the TPZ) to the depth of the foundation or to a maximum of 800mm from surface levels, to locate and expose any woody roots prior to any mechanical excavation. All care shall be undertaken to preserve woody roots intact and undamaged during exploratory excavation.

6.4.1.2 Any located roots less than 40mm in diameter can be cleanly severed with clean sharp pruning implements 10–20cm behind the final face of the excavation. The root zone in the

vicinity of the excavation shall be kept moist following excavation for the duration of construction to minimise stress on the tree. ***Where large woody roots (greater than 40mm diameter) are encountered during excavations, further advice from the Project Arborist shall be sought prior to severance.***

6.4.1.3 Where necessary, (to avoid severing large amounts of woody and or fibrous roots) consideration should be given to the installation of an elevated structure (e.g. pier and beam footing, suspended slab or floor supported on piers, cantilevered slab, up-turned edge beam etc) in preference to structures requiring a deep edge beam or continuous perimeter strip footing. The beam section of any pier and beam footing should be placed ***above*** grade to avoid excavation within the SRZ. Pier footings intersecting large woody roots should be slightly offset where necessary to avoid root severance.

6.4.1.4 More detailed illustrative guidance on excavating and installing structures in TPZs can be accessed via the following hyperlinks codes:

https://www.barrelltreecare.co.uk/resources/technical-guidance/sgn07?stage=Stage

https://www.barrelltreecare.co.uk/resources/technical-guidance/sgn10?stage=Stage

6.4.2 Fill Material

6.4.2.1 Placement of fill material within the Tree Protection Zone of trees to be retained should be avoided wherever possible. Where placement of fill is unavoidable, the material should be a well-drained friable material, equivalent in texture to the existing site topsoil material (heavy clay or shale sub- soil material is unacceptable). The fill should be free from rocks, vegetation and other extraneous material complying with AS 4419:2003 (*Soils for Landscaping and Garden Use*). The fill may be consolidated but should not be compacted to engineering standards. No fill material should be placed in direct contact with the trunk. Plant and equipment used to place and spread fill material should be stationed outside the TPZ where possible. Where not possible, suitable ground protection should be installed in accordance to avoid compaction of the underlying soil.

6.5 Canopy And Root Pruning

6.5.1 All pruning work required shall be carried out in accordance with Australian Standard 4373- – *Pruning of Amenity Trees*. The arborist undertaking the pruning works shall possess a minimum arboricultural qualification of Australian Qualifications Framework (AQF) Level 3 or its recognised equivalent. The arborist should have a minimum of 3 years' experience in practical Arboriculture. Pruning work should be undertaken in accordance with *Australian Standard 4373: Pruning of Amenity Trees (2007), Workcover Code of Practice for the Amenity Tree Industry* (1998) and other applicable legislation and codes.

6.5.2 Care shall be taken when operating cranes, excavators, drilling rigs and similar equipment near trees to avoid damage to tree canopies (foliage and branches). ***Under no circumstances shall branches be torn-off by construction equipment. Where there is potential conflict between tree canopy and construction activities, the advice of the Project Arborist must be sought.***

6.5.3 Where root pruning is required, roots shall be severed with clean, sharp pruning implements and retained in a moist condition during the construction phase using Hessian material or mulch where practical.

6.6 Construction of Surfacing & Vehicular Access Within TPZs

6.6.1 ***Basic principles:*** New vehicle accesses & surfacing are potentially damaging to trees because it may require changes to existing ground levels, result in localised soil structure degradation and/or disrupt the efficient exchange of water and gases in and out of the soil. Mature and over-mature trees are much more prone to suffer because of these changes than young and maturing trees. Adverse impact on trees can be reduced by minimising the extent of these changes in TPZs. Generally, the most suitable surfacing will be relatively permeable to allow water and gas movement, load spreading to avoid localised compaction and require little or no excavation to limit direct damage. ***The actual specification of the access material is an engineering issue that needs to be considered in the context of the bearing capacity of the soil, the intended loading and the frequency of loading. The detail of product and specification are beyond the scope of this guidance and must be provided separately by the appropriate specialist. Notwithstanding, the following general principals apply when considering protection of tree root zones.***

6.6.2 **Establishing the depth of excavation and surfacing gradient:** The precise location and depth of roots within the soil is unpredictable and will only be known when careful digging starts on site. Ideally, all new surfacing in TPZs should be no-dig, i.e. requiring no excavation whatsoever, but this is rarely possible on undulating surfaces. New surfacing normally requires an evenly (gap) graded sub-base layer, which can be made up to any high points with granular, permeable fills such as crushed stone or sharp sand. This sub-base must not be compacted as would happen in conventional surface installation. Some limited excavation is usually necessary to achieve this and need not be damaging to trees if carried out carefully and large roots are not cut. On undulating surfaces, finished gradients/levels must be planned with sufficient flexibility to allow on-site adjustment if excavation of any high points reveals large unexpected roots near the surface.

6.6.3 If the roots exposed are less than 50mm in diameter, it would normally be acceptable to cut them and the gradient formed with the preferred minimal excavation of up to 50mm. However, if roots over 50mm in diameter are exposed, cutting them may be too damaging and further excavation may not be possible. If that is the case, the surrounding levels must be adjusted to take account of these high points by filling with suitable granular, permeable fills such as crushed stone or sharp sand. In order to maintain water infiltration & gaseous exchange this fill should not be compacted as would happen in conventional surface installation.. If this is not practical and large roots have to be cut, the situation should be discussed with the Project Arborist before a final decision is made.

6.6.4 **Base and finishing layers (Fill Material):** Sub-base should be formed from coarse, gap-graded material such as 20–50mm crushed basalt (Blue Metal) or equivalent to provide some aeration to the root zone. Note that road-base or crushed sandstone or other material containing a high percentage of fines is unacceptable for this purpose. The fill material should be consolidated with a non-vibrating roller to minimise compaction of the underlying soil. A permeable geotextile may be used beneath the sub-base to prevent migration of the stone into the sub-grade. Suitable surface finishes usually include washed gravel, permeable tarmac such as asphalt or permeable block paving set on a sand base. In certain

circumstances the load spreading sub-base will be cellular and filled with suitable materials, however this application may need specialist engineering input to assess its suitability. ***(See below for illustrative guidance for installing cellular confinement surfacing within TPZs).***

6.6.5 **Edge retention:** Conventional kerb edge retention set in concrete filled excavated trenches is likely to result in damage to roots and should be avoided. Effective edge retention in TPZs must be custom designed to avoid any significant excavation into existing soil levels. For most surfaces, the use of pre-formed edging secured by metal pins or wooden pegs is normally an effective way of minimising any adverse impact on trees from the retention structure. Railway sleepers pinned in place or wooden boards offer alternative options, depending on the expected loading of the surfacing. If the edge retention needs to be battered down to lower surrounding ground levels, a permeable soil fill will be used, as agreed with the Project Arborist.

6.6.6 **New Surfacing Near Trunks:** All new surfacing should be set back from trunks and buttress roots by at least 50cm to allow space for future growth and minimise the risk of distortion.

6.6.7 More detailed illustrative guidance on installing/upgrading surfacing in TPZs can be accessed via the following hyperlink :

https://www.barrelltreecare.co.uk/resources/technical-guidance/sgn09?stage=Stage

6.7 Installing Services Within TPZs

6.7.1 All proposed stormwater lines and other underground services should be located outside TPZs of trees proposed to be retained wherever possible or installed by alternative measures. Alternative measures include suspending pipelines beneath the floor of a building or structure (to avoid excavation with the TPZ), non-destructive excavation methods or Horizontal Directional Drilling (HDD). Where the installation of service lines within TPZs is unavoidable, the pipelines or conduits should be installed as follows:

6.7.2 Where the extent of the incursion to the root zone is less than 10% of the TPZ including any excavations for benching and shoring the trench, the pipeline or conduit may be installed by open trenching using standard construction methods (excavator or trenching machine).

6.7.3 Where the extent of the incursion to the root zone exceeds 10% of the TPZ, but is outside the SRZ, non-destructive excavation methods must be adopted in accordance with **sub-item 6.4.1.** Where large woody roots are encountered during excavation or trenching (root diameter greater than 50mm), these shall be retained intact wherever possible (e.g. by tunnelling beneath roots and inserting the pipeline or conduit beneath or re-routing the service etc). Where this is not practical and root pruning is the only alternative, proposed root pruning should be assessed by a qualified arborist [AQF 5] to evaluate the potential impact on the health and stability of the subject tree.

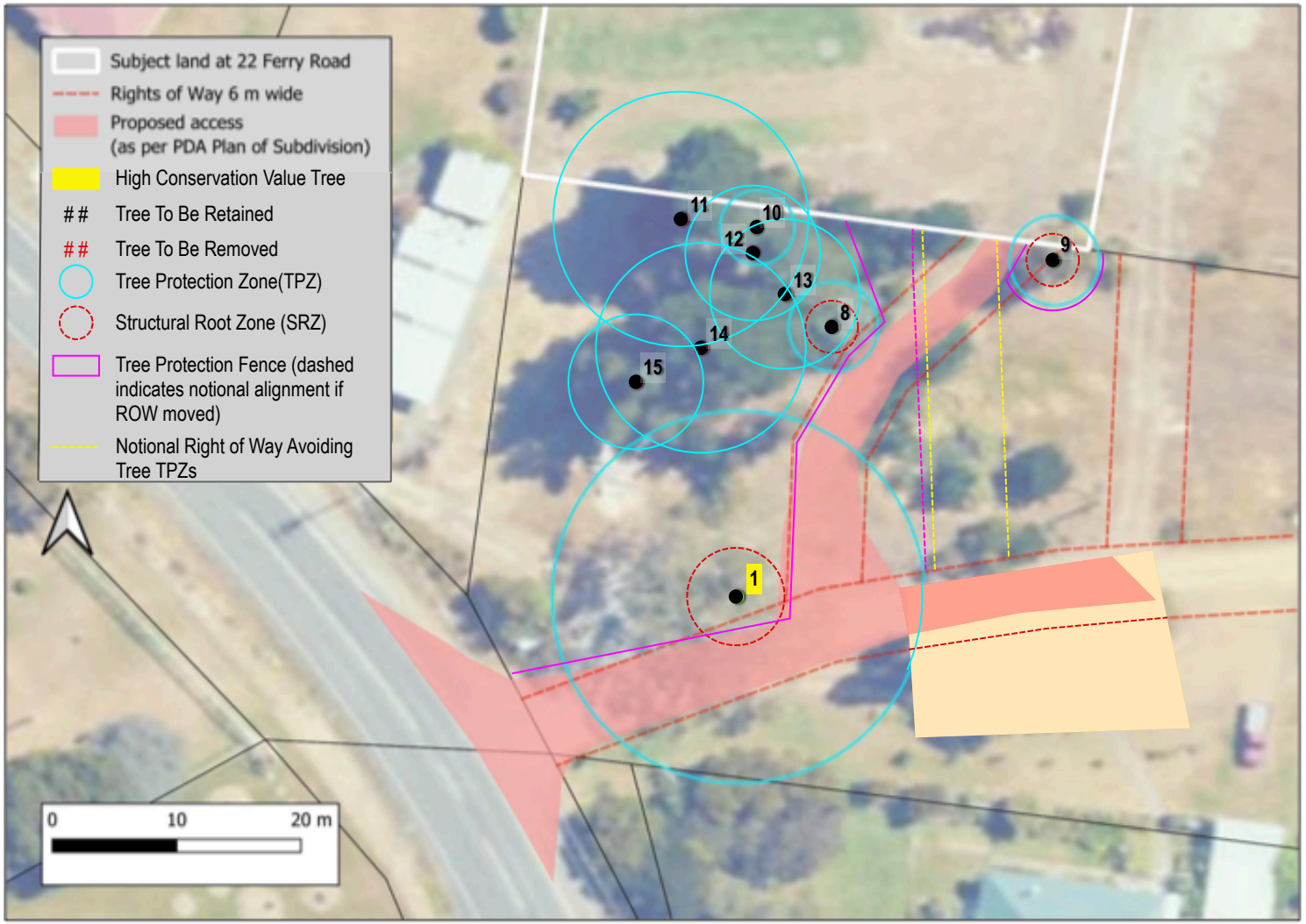
6.7.4 More detailed illustrative guidance on installing services in TPZs can be accessed via the following hyperlink:
https://www.barrelltreecare.co.uk/resources/technical-guidance/sgn11?stage=Stage

6.8 Pollution Control Within TPZs

6.8.1 Detailed illustrative guidance on pollution control in TPZs can be accessed via the following hyperlink:

https://www.barrelltreecare.co.uk/resources/technical-guidance/sgn4-v3/

APPENDIX 1: TREE PROTECTION PLAN



TREE PROTECTION PLAN: 22 FERRY ROAD KETTERING	PHILIP JACKSON *Arborist & Tree Management Services* 0447759865 tastreereports@gmail.com	Drawing based on: *"Figure 3. Mature trees (DBH of 250mm or more) within 15m of existing and proposed access works"* in **Planning Report v2: 22 Ferry Rd, Kettering, 1 Lot Subdivision** Prepared by: PDA Dated: October 2025	DWG No: FER22-2511-01 DATE: 28/11/25 Not to scale

APPENDIX 2 – TREE SCHEDULE

NOTES:

Age Class: Y = young, SM = semi-mature, EM = early-mature, M = mature, PM = post-mature (senescent)

Height: **Class**: 0-5m; 6-10m; 11-15m; 16-20m; 21-25m; >25m

DSH: Diameter at Standard Height

DAB: Diameter of base measure at point above basal flare

NRZ = Notional Root Zone

SRZ = Structural Root Zone

Overall Vitality: G= Good; M=Moderate; P=Poor; Mo= Moribund; D= Dead

Overall Structure: G = Good; F = Fair; P = Poor; D= Dead.

Remaining Life Expectancy L =Long (>40 years); M=Medium (15-40 years); S=Short (5-15 years) ; T=Transient (< 5 years)

Conservation Value VH= Very High; H= High (see Section A1.5 in Appendix 4);

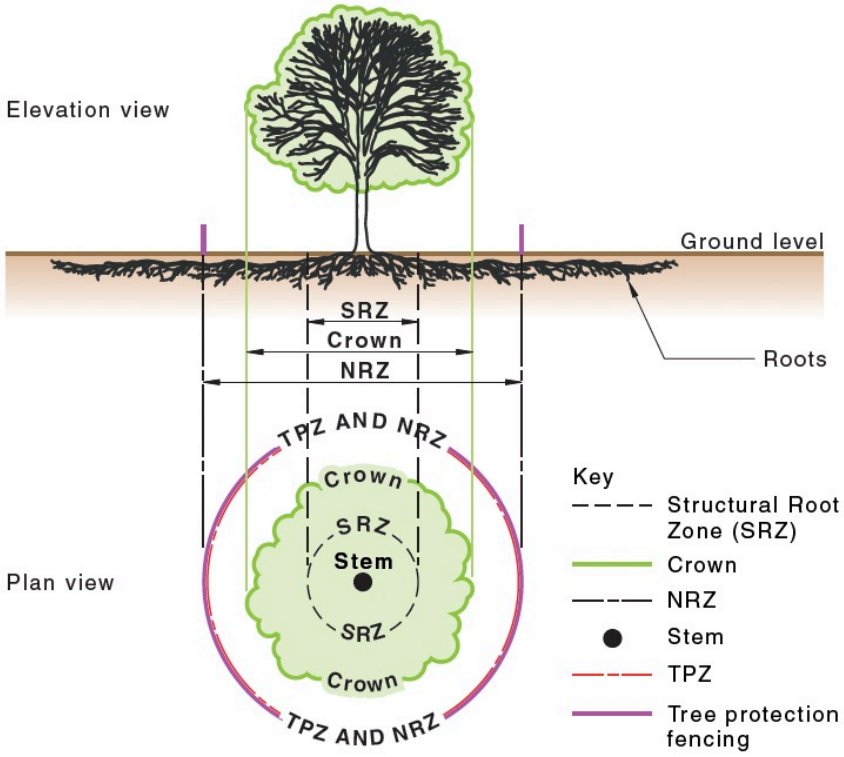
Recommendations: **Rm**= Remove, **Rt**= Retain, **Rt+ =** Retain by re-designing and/or employing alternative non-destructive construction methods

Tree	Species	Age Class	Height Class (m)	Spread (m)	DSH (m)	DAB(m)	Overall Vitality	Overall Structure	Life (RLE)	Conservation Value	NRZ(m)	SRZ(m)	TPZ/SRZ Encroachment	Likely Impact	Recommendation	Comments
1	***White Peppermint*** *(Eucalyptus pulchella)*	M	16-20m	15	1.30	1.43	P-M	P	S	VH	15.0	3.9	~16% + SRZ	Moderate level of encroachment with significant root loss. **Adverse impact exacerbating existing physiological decline**	**Rt+**	Tree stressed & in early decline with canopy dieback throughout & large amount of stress response growth along primary & secondary branches. Large basal cavity & significant stem decay. Crack in deadwood up western stem to primary branch union. Elevated likelihood of western primary branch failure. Structural testing Recommended. **Consider creating new ROW alignment outside of TPZ. If not construct access above present surface using "no dig" methods including no excavation or compaction in TPZ.**
8	**Silver Wattle** *(Acacia dealbata)*	EM	11-15m	5	0.30	0.33	G	G	M	n/a	3.6	2.1	<10%	Minor **acceptable** encroachment. Negligible impact	**Rt**	**Ensure access alignment placed outside SRZ.**
9	**Black Gum** *(Eucalyptus ovata)*	EM	11-15m	5	0.30	0.33	G	G	M	n/a	3.6	2.1	<10%	Minor **acceptable** encroachment. Negligible impact	**Rt**	**Ensure access alignment placed outside SRZ.**
10	**Black Gum** *(Eucalyptus ovata)*	EM	6-10m	5	0.25	0.28	G	F	M	n/a	3.0	1.9	0%	works outside TPZ	**Rt**	Tree suppressed by neighbouring trees

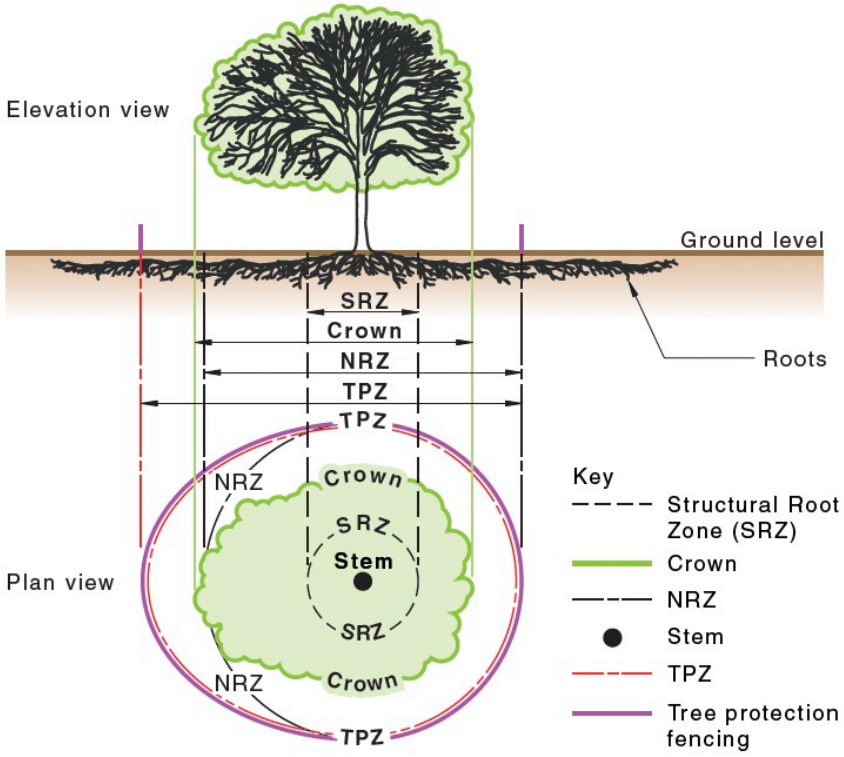
Tree	Species	Age Class	Height Class (m)	Spread (m)	DSH (m)	DAB(m)	Overall Vitality	Overall Structure	Life (RLE)	Conservation Value	NRZ(m)	SRZ(m)	TPZ/SRZ Encroachment	Likely Impact	Recommendation	Comments
11	**Radiata Pine** *(Pinus radiata)*	M	16-20m	8	0.85	0.94	G	G	M	n/a	10.2	3.2	0%	works outside TPZ	**Rt**	
12	**Radiata Pine** *(Pinus radiata)*	M	11-15m	4	0.45	0.50	M	F	S	n/a	5.4	2.5	0%	works outside TPZ	**Rt**	Tree stressed
13	**Radiata Pine** *(Pinus radiata)*	M	11-15m	4	0.50	0.55	G	G	M	n/a	6.0	2.6	0%	works outside TPZ	**Rt**	
14	**Radiata Pine** *(Pinus radiata)*	M	16-20m	7	0.70	0.77	G	G	M	n/a	8.4	3.0	0%	works outside TPZ	**Rt**	
15	**Radiata Pine** *(Pinus radiata)*	M	11-15m	6	0.45	0.50	G	G	M	n/a	5.4	2.5	0%	works outside TPZ	**Rt**	

APPENDIX 3 –

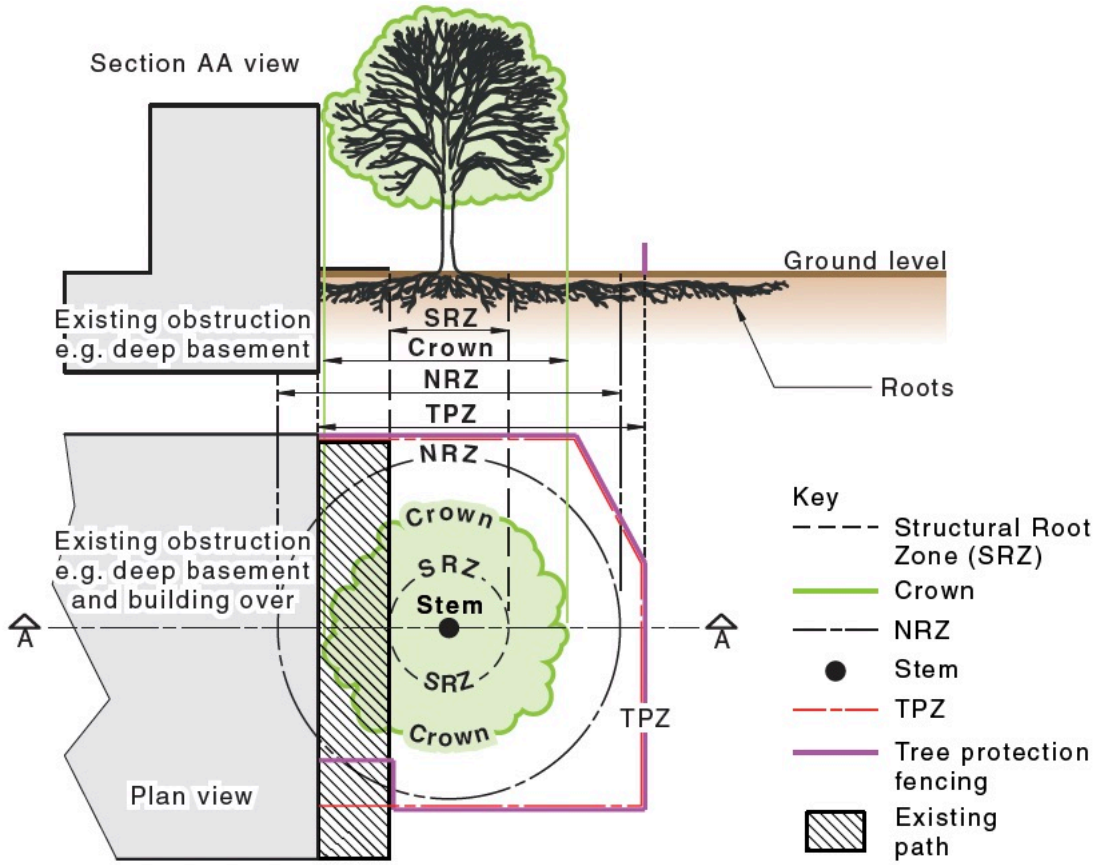
ESTABLISHMENT OF THE TREE PROTECTION ZONE (TPZ) & MINOR/MODERATE ENCROACHMENT EXAMPLES



(a) No development within NRZ

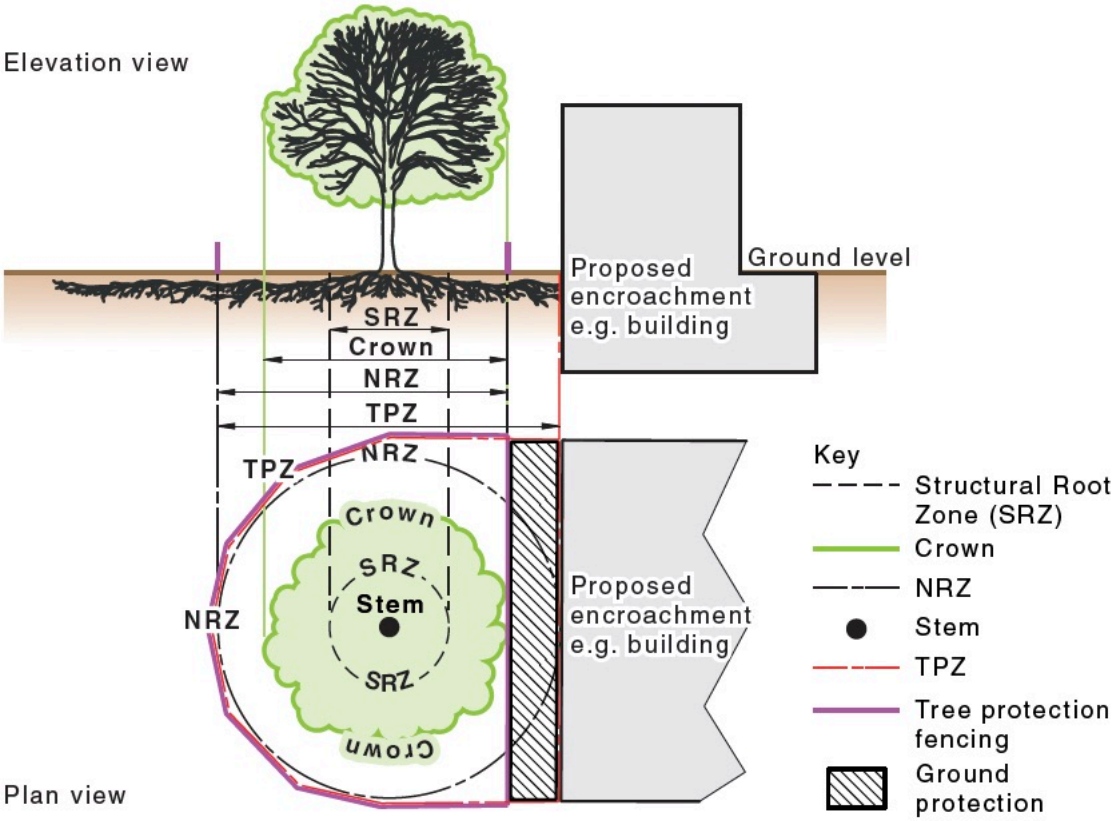


(b) No development within NRZ but with crown protection required

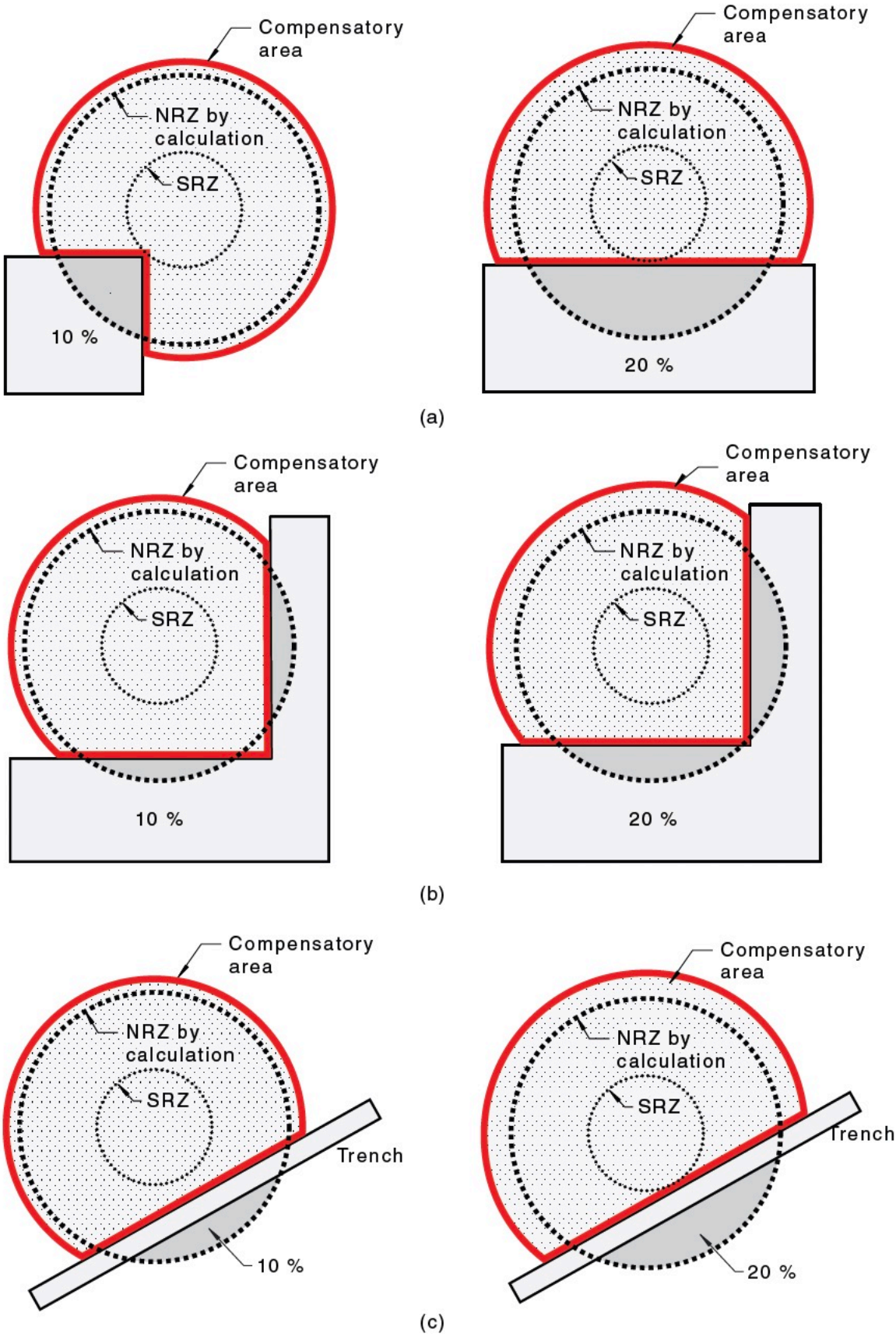


NOTE The project arborist has determined a suitable location for the tree protection fence. They have included a portion of the path as ground protection.

(c) TPZ compensatory area shown for existing structures



(d) TPZ compensatory area shown for proposed development



Source:-**AS 4970 – 2025 – Protection of Trees on Development Sites** (Standards Australia, Sydney.)

APPENDIX 4 – METHODOLOGY

A1.0 Qualifications

1.0.1 I have based this report on my site observations and the information provided to me. I have over fifteen years' experience in the field of tree management and arboricultural practice. A summary of my relevant qualifications includes:

- Bachelor of Science (Hons) – Plant Ecology - University of NSW
- Bachelor of Science – Botany/Environmental. Studies - Tasmania University
- Diploma of Horticulture - Aboriculture - Ryde TAFE
- VALID Tree Risk-Benefit Assessment certified validator
- Quantified Tree Risk Assessment certified advanced practitioner - Lic. No. 4148

A1.1 General

1.1.1 I conducted a survey and basic inspection of the subject trees from the ground. No aerial or climbing inspections, core testing, drilling or ultrasound diagnosis were undertaken. No excavations to determine the location and/or condition of roots were conducted. No plant samples were analysed for formal identification of any pests or disease.

1.1.2 The biological and mechanical features of the trees were assessed for health & vitality, structural condition and defects.

1.1.3 Tree trunk diameter at standard height (DSH) was measured or estimated at 1.4 metres above ground level and rounded to the nearest 0.10 metres. Tree Basal diameter was estimated to be 0.1x greater than the DBH. Tree height was estimated. All distances were taken from the centre of the trunk unless otherwise indicated.

A1.2 Tree Health Assessment

1.2.1 The overall health of the trees was rated as follows:

	Description
Good	**Good** health and vitality - exhibiting minor pest/disease, good extension growth, minor abnormalities in foliage size, colour or density.
Moderate	**Moderate** health and vitality - containing defects and/or damage that may be able to be remediated to provide an acceptable level of risk.
Poor	**Poor** health and vitality - exhibiting extensive or untreatable pest/disease, poor extension growth, significant deadwood and dieback, evidence of rapid decline, sparse foliage cover, abnormal foliage colour or size.
Moribund	Tree is in terminal decline, Lacking vitality or vigour
Dead	Tree is dead

A1.3 Tree Structure Assessment

1.3.1 The overall structure of the tree was rated as follows:

	Description
Good	Good structure - may contain minor defects and/or damage that can be successfully remediated or do not require treatment with an acceptable level of risk.
Fair	Fair structure - containing defects and/or damage that may be able to be remediated to provide an acceptable level of risk.
Poor	Poor structure - Evidence of instability or contains defects and/or damage which render the tree potentially hazardous/ prone to failure or cannot be successfully remediated.
Dead	Tree is dead

A1.4 Remaining Life Expectancy

1.4.1 The remaining life expectancy (RLE) is an estimate of the sustainable longevity of the subject tree(s) in its growing environment. The RLE is modified where necessary to take in consideration tree(s) health, structural condition and site suitability. The tree(s) has been allocated one of the following RLE categories (Modified from Barrell, 2001):

I. Long (>40 years)
II. Medium (15-40 years)
III. Short (5-15 years)
IV. Transient (< 5 years)

The estimated RLE of the subject tree is shown in the Tree Schedule in **Appendix 2**.

A1.5 Conservation Value Assessment

Table 1: *Kingborough Council working definition of native tree conservation value set out in Kingborough Council Policy 6.10 "Biodiversity Offset Policy" (version 2.1, November 2023)*

Description	**Characteristics**	**Rationale**	**Biodiversity Value**
Eucalyptus globulus or *E. ovata*	DBH >70cm	Swift parrot foraging habitat	Very high
E. viminalis	DBH >25cm and within or directly adjacent to significant forty-spotted pardalote habitat	Forty-spotted pardalote habitat	Very high
Native trees with known or potential nesting hollows	Hollows present; and/or, DBH > 70cm in dry forests or cleared settings; or, DBH >100cm in wet forests	Habitat for hollow dependent species	Very high
Eucalyptus globulus or *E. ovata*	DBH >40cm and <70cm	Swift parrot foraging habitat	High
E. viminalis	DBH >25cm and: • on Bruny Island; or • within 5,000m of significant forty-spotted pardalote habitat or within potential forty-spotted pardalote habitat	Forty-spotted pardalote habitat	High
A species that is listed in the *Threatened Species Protection Act 1995* or the *Environment Protection and Biodiversity Conservation Act 1999 (C'th)*	N/A	Listed threatened species	High
Priority species (including *Eucalyptus rubida)*	DBH >25cm	Meets IUCN criteria for endangered within Kingborough	High

REFERENCES

Barrell, J 2001, *"* SULE: Its use and status into the new millennium" in *Management of mature trees.* Proceedings of the 4th NAAA Tree Management Seminar, NAAA, Sydney.

Barrell Tree Consultancy (2020) *"Manual For Managing Trees on Development Sites" (2020) https://www.barrelltreecare.co.uk/resources/technical-guidance*

Council of Standards Australia (2025) **AS 4970–2025 Protection of Trees on Development Sites** Standards Australia, Sydney.

Council of Standards Australia (2007) **AS 4373 – Pruning of Amenity Trees** Standards Australia, Sydney.

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PARKING OF PLANT OR VEHICLES
TRENCHING OR EXCAVATION
WASHING OF TOOLS OR EQUIPMENT

CONTACT: