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IRONBARK

Environmental Arboriculture

Preliminary Tree Assessment & Native Vegetation Assessment

85 Harpers Lane
Kyneton, VIC 3444

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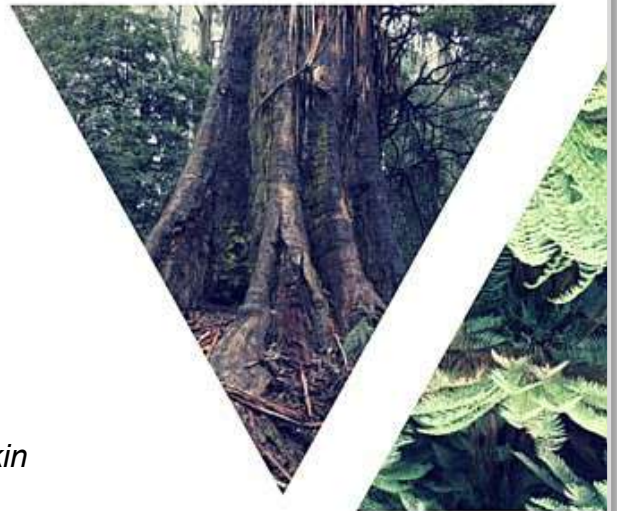
Commissioned by

Mandy Edwards - Millar Merrigan

25 May 2020

Revision A

Advertised



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Title	Action	Date	Staff
Preliminary Tree Assessment – 85 Harpers Lane – V1	Prepared	15/4/2020	JG
Preliminary Tree Assessment – 85 Harpers Lane – V2	Reviewed	16/4/2020	GH
Preliminary Tree Assessment – 85 Harpers Lane – FINAL	Checked	17/4/2020	IO
Preliminary Tree Assessment – 85 Harpers Lane – Revision A – V1	Prepared	25/5/2020	GH

- Tree #1 – 4 are old Manna Gums (*Eucalyptus viminalis*) with *high* retention values, these trees are proposed for retention in the design response.
- Site trees #5 – 7 Manna Gums have *medium* retention values and are less suitable for retention within a residential development. Tree #5 will be retained within a new reserve, whereas trees #6 and 7 are proposed for removal.
- Tree #8 is a third-party owned tree, automatically giving it a *high* retention value. There is a row of Cypresses and Eucalyptus at 35 – 51 Hill Drive, which has tree protection zones (TPZs) overlapping the subject site, these trees also have an assumed *high* retention value. The design has considered impacts on neighbouring trees and provided sufficient room for their protection.
- The site has been used as farmland with exotic grasses dominating the understorey; no patches of native vegetation are present. Trees #6 and 7 require a native vegetation offset because they are proposed for removal. Tree #2 will be within a lot of less than 0.4 ha and also requires offsetting as a consequential loss.

Introduction

Millar Merrigan has commissioned Ironbark Environmental Arboriculture (IEA) to provide a preliminary tree assessment for seven (7) trees at 85 Harpers Lane, Kyneton and potentially impacted neighbouring trees.

This report contains the following information:

- A *preliminary tree assessment* prepared with reference to AS 4970-2009 Protection of Trees on Development Sites, Clause 2.3.2.
- A Quantified Tree Risk Assessment (QTRA) and risk management recommendations for trees #1 – 7.
- A native vegetation assessment of trees and vascular plants on the subject site.

Planning Context

The subject site is within the Macedon Ranges Shire and is zoned as Low Density Residential Zone (LDRZ) and Farming Zone (FZ). The site is affected by Schedule 4 to the Environmental Significance Overlay (ESO4). The site is also subject to Clause 52.17 Native Vegetation as the overall property size is greater than 4,000m².

Existing Conditions

There is no existing dwelling located on the property and signs of the land being used for pasture and farming purposes. Seven (7) mature Manna Gums are present on the site, as well as smaller exotic trees. There are two (2) small dams on the land (Figure 1).

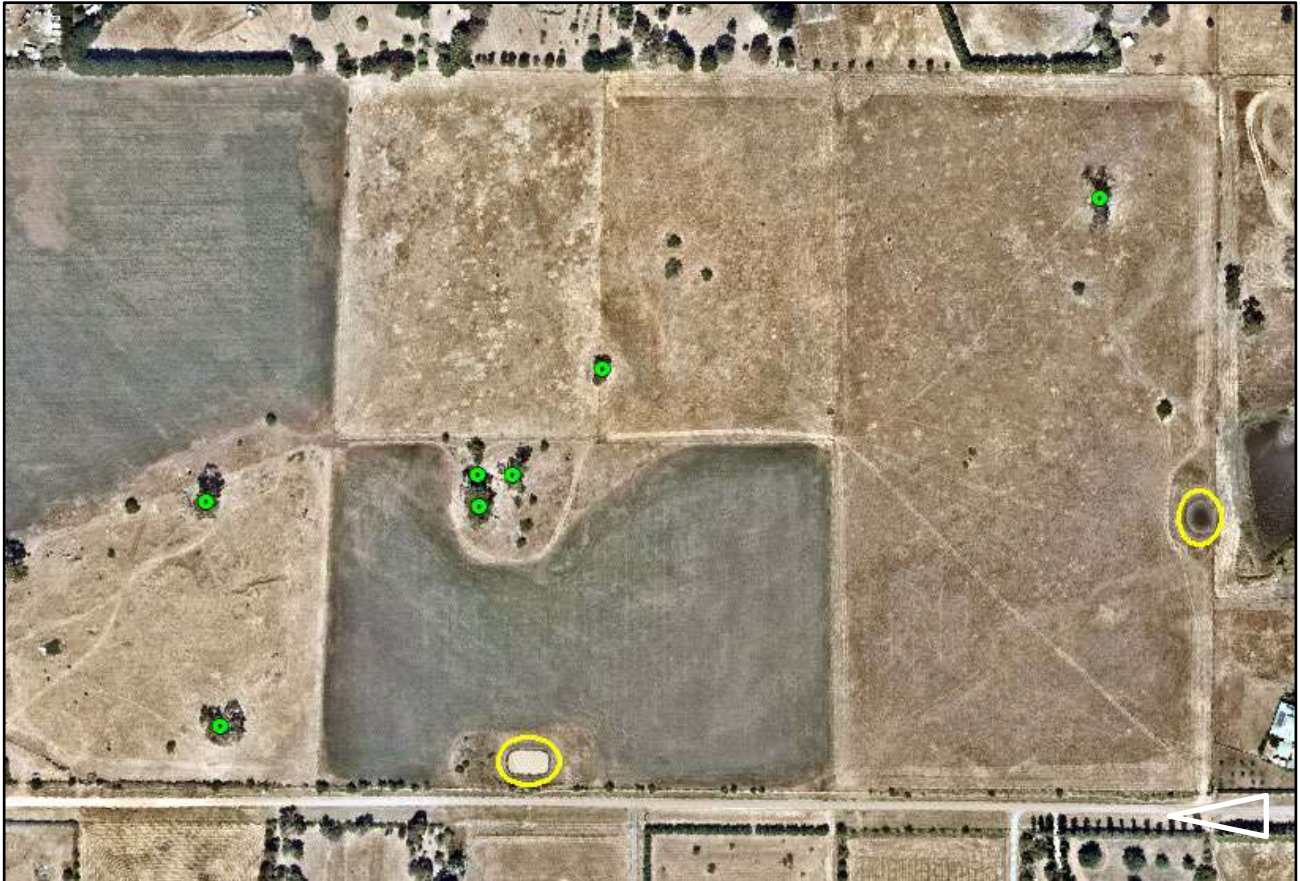


Figure 1: Site Context, showing the subject site, native trees (green markers) and dams (yellow). Adapted from Nearmap image dated 1/1/2020.

Methods

On the 27 March 2020, James Gibson of IEA assessed the subject trees. This report was prepared by James Gibson and Grant Harris. For site trees diameter at breast height (DBH) and diameter at the base (D) was measured with a tape. For neighbouring trees, DBH and D were visually estimated. Trees were located with reference to:

Feature and Level Plan – 85 Harpers Lane Kyneton 3444, Millar Merrigan, Drawing: 25247F1, Version 2, 28/2/2020.

Quadratic means were calculated for the DBH of multi-stem trees. Tree height and canopy spread were visually estimated and calibrated with a laser clinometer and/or

aerial imagery. Tree health and structure were assessed from the ground level. Tree assessment descriptors are provided in Appendix 2.

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Tree structure was assessed with reference to the following texts:

- Dunster, JA, Smiley, ET, Matheny, N & Lilly, S (2013) *Tree Risk Assessment Manual*, International Society of Arboriculture, Champaign, IL, USA.
- Lonsdale, D (1999) *Principles of Tree Hazard Assessment and Management*, The Stationery Office, London, UK.

Preliminary Tree Assessment

High Retention Value Trees

Trees #1 – 4 have a *high* retention value based on *high* visual amenity value, *fair – good* health and a useful life expectancy (ULE) of more than 10 years.

Medium Retention Value Trees

Trees #5 – 7 have a *medium* retention value based on *medium-high* amenity value, *poor – fair* health and *poor – fair* structure.

Low Retention Value Trees

Several small Hawthorn (*Crataegus monogyna*) are scattered throughout the subject site, these are an introduced weed species in Macedon Ranges Shire and provide *low* amenity value.

Neighbouring Trees

Tree #8 is a large, native tree with TPZ overlapping the subject site and has an assumed *high* retention value.

A row of Cypresses and Eucalyptus plantings at 35 – 51 Hill Drive also have an assumed *high* retention value.

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Tree Data

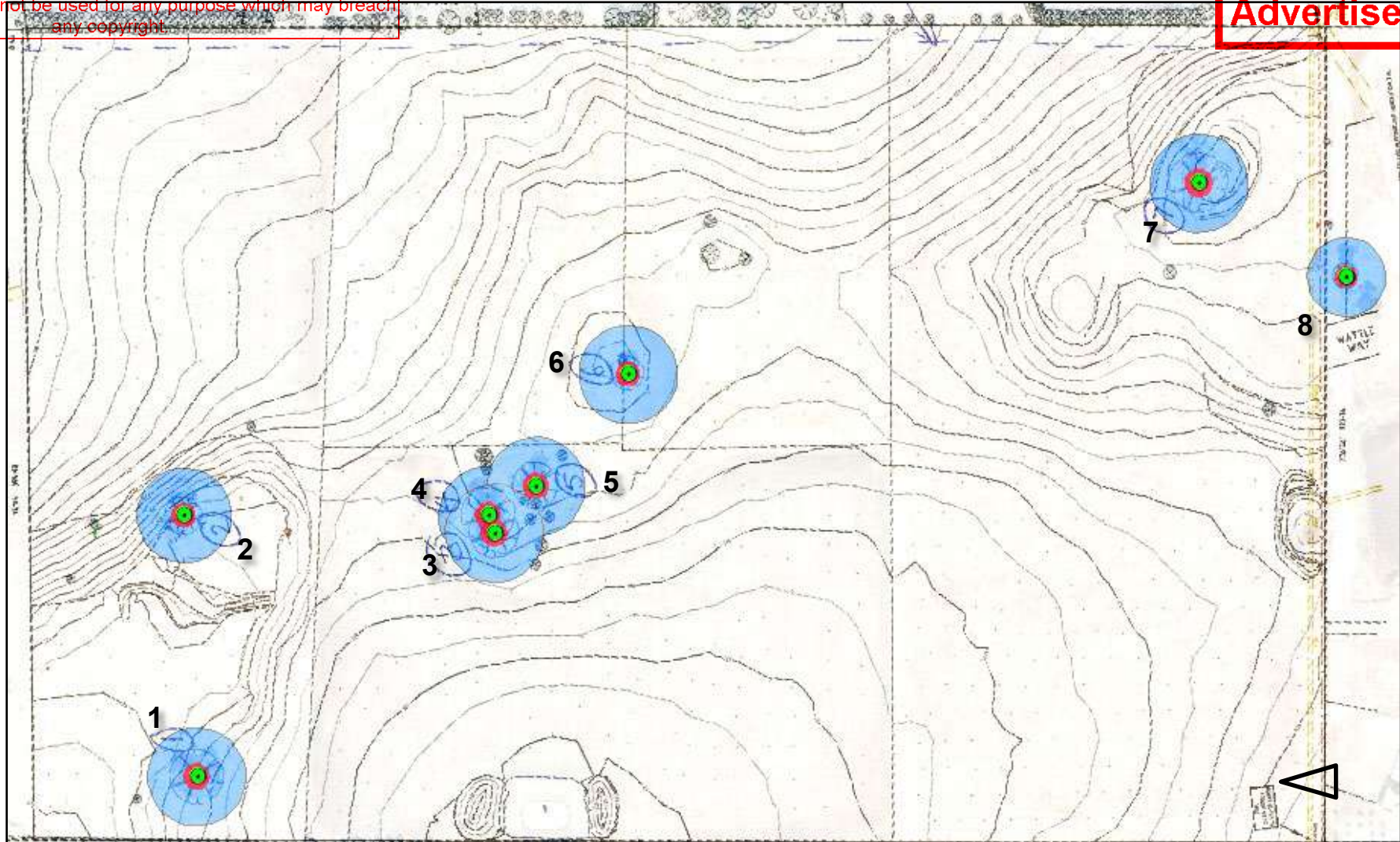
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Tree ID	Botanical Name	Common Name	Height (m)	Health	Structure	DBH (cm)	D (cm)	TPZ (m)	SRZ (m)	Visual Amenity value	Retention value	ULE (years)	QTRA Current Risk of Harm	QTRA Risk Region	Cir largest stem at 1.3 m (cm)
1	<i>Eucalyptus viminalis</i>	Manna Gum	15	Good	Fair	130	164	15	4.1	High	High	10+	1/50,000,000	Broadly Acceptable	408.4
2	<i>Eucalyptus viminalis</i>	Manna Gum	22	Fair	Fair	120	142	14.4	3.8	High	High	10+	1/4,000,000	Broadly Acceptable	377.0
3	<i>Eucalyptus viminalis</i>	Manna Gum	20	Fair	Fair	153	170	15	4.1	High	High	10+	1/10,000,000	Broadly Acceptable	480.6
4	<i>Eucalyptus viminalis</i>	Manna Gum	19	Fair	Poor	134	155	15	4	High	High	10+	1/5,000,000	Broadly Acceptable	420.9
5	<i>Eucalyptus viminalis</i>	Manna Gum	18	Fair	Poor	127	158	15	4	High	Medium	10+	1/10,000	Unacceptable	398.9
6	<i>Eucalyptus viminalis</i>	Manna Gum	11	Fair	Poor	126	139	15	3.8	Medium	Medium	3 - 10	1/500,000	Tolerable	396.0
7	<i>Eucalyptus viminalis</i>	Manna Gum	27	Poor	Poor	199	233	15	4.4	High	Medium	3 - 10	1/40,000	Tolerable	625.1
8	<i>Eucalyptus viminalis</i>	Manna Gum	16	Fair	Fair	100	115	12	3.5	High	High	10+	-	-	-

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Tree Map: Showing trees #1 – 8 (green icons), TPZs (blue circles) and SRZs (red circles). Tree numbers correspond with the Tree Data table. Adapted from *Feature and Level Plan – 85 Harpers Lane Kyneton 3444, Millar Merrigan, Drawing: 25247F1, Version 2, 28/2/2020* and Nearmap aerial imaged dated 1/1/2020.

Native Vegetation Assessment

Vegetation Mapping

The subject site is mapped almost entirely *cleared* (2005 extent) with one small patch of *Plains Grassy Woodland* (EVC 55) present adjacent to trees #3, 4 and 5. It is likely this patch has been mapped based on the tree canopies. *Plains Grassy Woodland* (EVC 55) has a bioregional conservation status of *endangered*.

Potentially Occurring Threatened Species

A desktop survey using the VBA (Victorian Biodiversity Atlas) search tool of a 2 km radius from the centre of the site revealed one (1) rare or threatened plant species having previously been recorded in the search area. These were:

- A single Broad-lip Diuris (*Diuris x Palachila*) sighting dated as 1770.

Vegetation Assessment

Methods

Between February and March 2020, James Gibson of IEA inspected vegetation and trees within the proposed walking trail area and immediate surrounds. The flora taxonomy (classification) used in this report follows the *Australian Plant Name Index* (Australian National Botanic Gardens 2007). Vegetation was assessed using a combination of targeted surveying and random meandering transects (Cropper 2003).

A meandering transect survey was undertaken throughout the subject site, outside of the study area. The purpose of this transect was to look for threatened plant species. Mapping was conducted using a Garmin GPS and with reference to aerial photography and the following documents:

- *Feature and Level Plan – 85 Harpers Lane Kyneton 3444*, Millar Merrigan, Drawing: 25247F1, Version 2, 28/2/2020.

Assessment Limitations

Vegetation surveys sample flora during a particular season. Plant species may not be detected during a survey if they are dormant at the time of assessment. Species identification is based upon the diagnostic features available at the time of assessment.

Results

- Manna Gum (*Eucalyptus viminalis*) was present as large, scattered trees throughout the site, with seven (7) specimens present. Most areas of the site were cleared of canopy trees with the land having been used for farming purposes.
- The groundcover and understorey layer was dominated by exotic pastoral grasses and herbs such as Spear Thistle (*Cirsium vulgare*), Cat's Ear (*Hypochaeris radicata*), Black Nightshade (*Solanum nigrum*), Mallow (*Malva* sp.), Clover (*Trifolium* sp.), Variegated Thistle (*Silybum marianum*), Prickly Sowthistle (*Sonchus asper*), Ribwort Plantain (*Plantago lanceolata*), Blackberry (*Rubus fruticosus*), Briar Rose (*Rosa rubiginosa*), Creeping Bent Grass (*Agrostis stolonifera*), Wild Oat (*Avena fatua*), Phalaris (*Phalaris aquatica*), Cocksfoot (*Dactylis glomerata*), Sweet Vernal Grass (*Anthoxanthum odoratum*), Yorkshire Fog (*Holcus lanatus*), Rye-grass (*Lolium* sp.), Dock (*Rumex* sp.), Gorse (*Ulex europaeus*), Hawthorn (*Crataegus monogyna*),
- Two (2) native understorey plants, Common Wheat Grass (*Elymus scaber*) and Willow-herb (*Epilobium billardierianum*) are present in the Southern end of the site. Both these species occurred with exotic herbs and grasses and did not comprise a *patch* of native vegetation.

Life Form	Stratum	Scientific Name	Common Name	Origin
Tree	Canopy	<i>Eucalyptus viminalis</i>	Manna Gum	Indigenous
Tree	Understorey	<i>Crataegus monogyna</i>	Hawthorn	Exotic
Shrub	Understorey	<i>Ulex europaeus</i>	Gorse	Exotic
Shrub	Understorey	<i>Rosa rubiginosa</i>	Briar Rose	Exotic
Shrub	Understorey	<i>Rubus fruticosus</i>	Blackberry	Exotic
Herb	Groundcover	<i>Rumex</i> sp.	Dock	Exotic
Herb	Groundcover	<i>Cirsium vulgare</i>	Spear Thistle	Exotic
Herb	Groundcover	<i>Solanum nigrum</i>	Black Nightshade	Exotic
Herb	Groundcover	<i>Malva</i> sp.	Mallow	Exotic
Herb	Groundcover	<i>Plantago lanceolata</i>	Ribwort Plantain	Exotic
Herb	Groundcover	<i>Hypochaeris radicata</i>	Cat's Ear	Exotic
Herb	Groundcover	<i>Trifolium</i> sp.	Clover	Exotic

Life Form	Stratum	Scientific Name	Common Name	Origin
Herb	Groundcover	<i>Silybum marianum</i>	Variegated Thistle	Exotic
Herb	Groundcover	<i>Sonchus asper</i>	Prickly Sowthistle	Exotic
Herb	Groundcover	<i>Taraxacum sp.</i>	Dandelion	Exotic
Herb	Groundcover	<i>Epilobium billardierianum</i>	Willowherb	Indigenous
Graminoid	Groundcover	<i>Avena fatua</i>	Wild Oat	Exotic
Graminoid	Groundcover	<i>Phalaris aquatica</i>	Phalaris	Exotic
Graminoid	Groundcover	<i>Anthoxanthum odoratum</i>	Sweet Vernal Grass	Exotic
Graminoid	Groundcover	<i>Agrostis stolonifera</i>	Creeping Bentgrass	Exotic
Graminoid	Groundcover	<i>Dactylis glomerata</i>	Cocksfoot	Exotic
Graminoid	Groundcover	<i>Holcus lanatus</i>	Yorkshire Fog	Exotic
Graminoid	Groundcover	<i>Lolium sp.</i>	Rye Grass	Exotic
Graminoid	Groundcover	<i>Elymus scaber</i>	Common Wheat Grass	Indigenous

Quantified Tree Risk Assessment

Quantified Tree Risk Assessment (QTRA) is a tree risk assessment method which determines the *risk of harm* a tree poses to a *target*, such as people, vehicles or property.

Targets are rated based on the frequency of use by vehicles and/or pedestrians and for property the monetary value. The target rating is combined with an assessment of the *size of part* most likely to fail and the *probability of failure* of that part.

Target range 3 for pedestrians has been used, as this most closely represents the expected frequency of use in a residential garden setting.

Tree #1 Manna Gum (*Eucalyptus viminalis*)

Tree #1 has partially failed at the rootplate and lost a large stem at approximately 8 m above ground level; since these events, it has adapted and formed a new canopy.

The part considered most likely to fail is a branch with two sections of deadwood on the underside. The probability of failure for this branch is in the *broadly acceptable* risk region.

Target Range	Size	Probability of Failure	Risk of Harm	Risk Region
3	3	5	1/50,000,000	Broadly Acceptable

Removal of major deadwood (≥ 40 mm diameter) and reduction pruning would allow this tree to be retained at an acceptable level of risk, within a residential garden bed setting.



Tree #1, showing the former leading stem failed on the ground and the reformed canopy.



Showing the part considered most likely to fail, a branch with deadwood and incipient decay (arrows).

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Tree #2 Manna Gum (*Eucalyptus viminalis*)

The underdevelopment of buttress roots on the back (compressive) side of the trunk lean may be indicative of a previous wound to the lower trunk. There is no evidence of hollowing or decay at this point.

The part considered most likely to fail is the trunk, close to ground level. The probability of failure for this branch is in the *broadly acceptable* risk region.

Target Range	Size	Probability of Failure	Risk of Harm	Risk Region
3	1	5	1/4,000,000	Broadly Acceptable

Tree #2 can be retained at an acceptable level of risk, within a residential garden bed setting.



Tree #2, showing a slight trunk lean which has self-corrected. Lack of root buttressing or taper on the compressive side of trunk loading.



Showing a concave area on the compression side of the trunk between two root buttresses, possibly an indicator of old wounding.

Tree #3 Manna Gum (*Eucalyptus viminalis*)

The peripheral canopy is dying back which is indicative of water-stress and often associated with older trees, where it is termed 'retrenchment'.

The part most likely to fail is a large branch with a hollow in its base and signs of decay.

Target Range	Size	Probability of Failure	Risk of Harm	Risk Region
3	2	5	1/10,000,000	Broadly Acceptable

Removal of major deadwood (≥ 40 mm diameter) and reduction pruning would allow this tree to be retained at an acceptable level of risk, within a residential garden bed setting.



Tree #3, showing the declining/retrenching canopy.



Showing the part considered most likely to fail, an area of hollowing and decay at the base of a large branch (arrow).

Tree #4 Manna Gum (*Eucalyptus viminalis*)

Tree #4 has a partially 'retrenched' canopy with the presence of large deadwood.

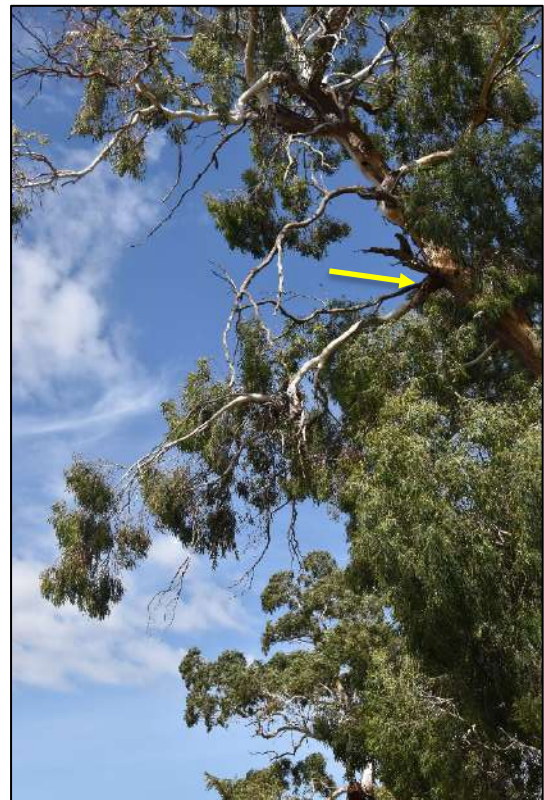
The part considered most likely to fail is a regrowth (epicormic) stem with signs of possible decay at the attachment point.

Target Range	Size	Probability of Failure	Risk of Harm	Risk Region
3	3	4	1/5,000,000	Broadly Acceptable

Removal of major deadwood (≥ 40 mm diameter) and reduction pruning would allow this tree to be retained at an acceptable level of risk, within a residential garden bed setting.



Tree #4, a partially retrenched, senescent tree. Some deadwood and declining canopy visible.



An epicormic stem with signs of incipient decay at the attachment.

Tree #5 Manna Gum (*Eucalyptus viminalis*)

Tree #5 has an asymmetrical canopy as a result of a previous trunk failure and is holding large sections of deadwood. The canopy is comprised of large regrowth (epicormic) stems that have grown after the trunk failure; at the point of attachment to the trunk, there is extensive decay.

The part considered most likely to fail is a large regrowth (epicormic stem) with signs of decay at the attachment point.

Target Range	Size	Probability of Failure	Risk of Harm	Risk Region
3	2	2	1/10,000	Unacceptable (when imposed on others)

Tree #5 is not a good candidate for retention within a residential garden bed setting. The defects in the tree's structure cannot be rectified with pruning.

If tree #5 is retained an exclusion area of ~10 m radius from the trunk is recommended. This exclusion area would be comprised of dense vegetation plantings, which prevent easy access by pedestrians.

Restricting pedestrian access would reduce the QTRA target range from 3 to 5, and subsequently, the risk would be reduced to *tolerable* (1/1,000,000).

Given the proximity and overlap of TPZs for trees #3, 4 and 5, they are well located for placement of a garden bed/exclusion area around the group.

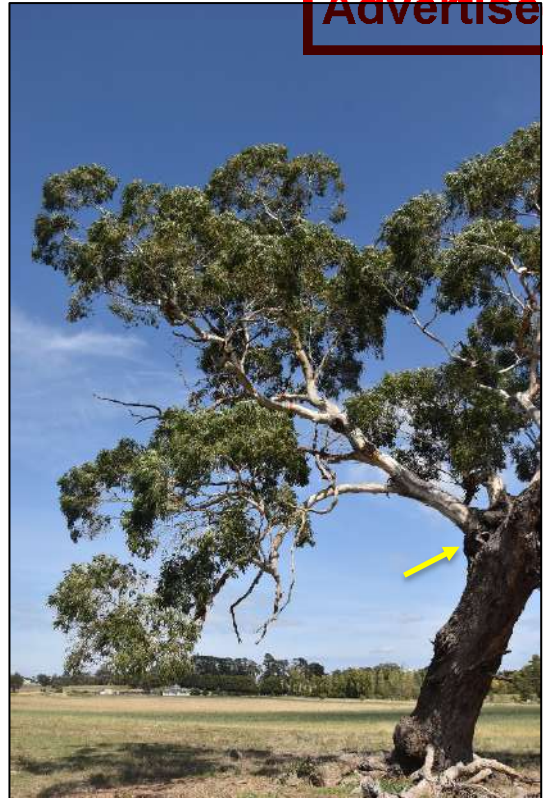
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Tree #5 has an asymmetrical canopy and is formed of mainly epicormic stems.



The part considered most likely to fail is a lateral branch with decay at the trunk union.



Tree #5, a second stem equally likely to fail and of similar size at a point of very poor attachment



Showing the attachment of the second branch with extensive decay throughout the previously failed trunk.

Tree #6 Manna Gum (*Eucalyptus viminalis*)

The tree is comprised of regrowth (epicormic) stems that have grown after the trunk failed. The attachment point the stems has decay on the underside and considered the part most likely to fail.

Target Range	Size	Probability of Failure	Risk of Harm	Risk Region
3	3	3	1/500,000	Tolerable

If this tree was retained, reduction and restoration pruning would be required every two (2) years. Due to its height and largely reduced canopy, it has a *medium* visual amenity value and is a poor candidate for retention within a residential garden bed setting.



Tree #6, a tree with a previously failed trunk like tree #5. The new canopy is entirely epicormic stems



Showing the epicormic canopy origin point, with decay present on the underside of the point of attachment (arrow).

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Tree #7 Manna Gum (*Eucalyptus viminalis*)

Tree #7 is showing signs of acute water-stress and is holding large deadwood in the canopy. Signs of decay were visible in the trunk; however, the extent of decay could not be accurately determined from ground level.

At the base of the tree, there is soil erosion, with exposed dead structural roots. Some roots have decayed back to the trunk. There is also a cavity at the base of the tree.

A QTRA assessment is given for the failure of the trunk at ground level.

Target Range	Size	Probability of Failure	Risk of Harm	Risk Region
3	1	3	1/40,000	Tolerable

Tree #7 could be retained as a largely reduced habitat tree by removing deadwood and reduction pruning; however, it would have a significantly reduced visual amenity value.

Tree #7 is not a suitable candidate for retention within a residential garden bed setting.



Tree #7 a mature tree beginning to retrench its canopy with extensive deadwood and dieback at the tallest points of the canopy



Showing one of many structural roots dead and decayed from cattle compaction and changed soil grade.

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Decayed structural root and basal decay.



Showing another exposed and decayed structural root on heavily compacted soil.



Showing the approximate location of canopy the reduction that would be required to retain tree #7 in the long-term (yellow lines)

- Trees #1 – 4 are in the *broadly acceptable* risk region and are suitable for retention within a residential garden bed setting.
- Tree #5 is an *unacceptable* risk when imposed to others but could be retained with some reduction pruning and exclusion planting underneath the canopy.
- Tree #6 is in the *tolerable* risk region but only provides a *moderate* level of visual amenity and has the lowest retention value. This tree is proposed for removal.
- In its current condition tree #7 is in the *tolerable* risk region but is likely to decline further in health and structural integrity. This tree is unsuited to retention in a residential garden bed setting. This tree is proposed for removal.

Arboricultural Impact Assessment

An arboricultural impact assessment for trees #1 – 5, 8 and the row of neighbouring trees to the East was undertaken based on the following documents:

- *Proposed Subdivision Plan*, Version 1, Sheet 1 of 1, Millar Merrigan, 15/5/2020.

Impacts have been assessed for the subdivision proposal but not the development of individual lots.

Neighbouring Trees

Neighbouring tree #8 Manna Gum is with the roadside reserve and is sufficiently set back from the proposed crossover that it will not be adversely impacted.

The row of neighbouring trees to the East on properties from Hill Drive are largely mature Cypress and semi-mature Eucalypts. If the built form is setback ~4.5 m from the fenceline *major* (>10%) TPZ encroachments will be avoided. A setback of ~4.5 m will be achievable within Lots 19 – 30 and 52 – 55.

Tree #1 Manna Gum

Tree #1 is within Lot 3, which is 4,001 m² in area; tree #1 will continue to be protected under Clause 52.17 Native Vegetation after subdivision. There is sufficient space on Lot 3 for construction of a dwelling which does not require encroachment into this trees TPZ. This tree can successfully be retained within the proposed subdivision design.

Tree #2 Manna Gum

Tree #2 is within Lot 12, which is 2,788 m² and pursuant to Clause 52.17 Native Vegetation is considered as a consequential loss. There is sufficient room on Lot 12 to construct a dwelling without adversely impacting tree #2.

Trees #3, 4 and 5 Manna Gums

Trees #3, 4 and 5 are proposed for retention within a reserve of 1,7250 m² and will continue to be protected under Clause 52.17 Native Vegetation. The proposed new internal/access road is outside the TPZs of trees #3 and 4 and requires a minor encroachment into the TPZ of tree #5. These trees will remain viable if isolated from machinery with tree protection fencing during the construction of internal/access roads.

Recommendations

- Tree protection fencing is installed to isolated trees #3, 4 and 5 from transit of machinery during the construction of the new internal/access roads.
- Before removal, trees #6 and 7 are inspected by a zoologist to determine if native fauna is present. Fauna must be translocated from trees #6 and 7 to nearby suitable habitat before tree removal.

Appendix 1: Photographs



Gorse (*Ulex europaeus*)



Rye Grass (*Lolium sp.*)



Blackberry (*Rubus fruticosus*)



Willow-herb (*Epilobium billardierianum*)

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Briar Rose (*Rosa rubiginosa*)



Phalaris (*Phalaris aquatica*)



Wild Oat (*Avena fatua*)



Spear Thistle (*Cirsium vulgare*)

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Yorkshire Fog (*Holcus lanatus*)



Clover (*Trifolium sp.*)



Black Nightshade (*Solanum nigrum*)



Hawthorn (*Crataegus monogyna*)

Origin

Indigenous – species is characteristic of pre-1750 vegetation community of the local area.

Native – species is Native to the State of Victoria and has been naturally occurring since the recording of flora commenced.

Australian – species is Native to Australia and has been naturally occurring since the recording of flora commenced.

Exotic – species is not endemic to any part of Australia.

Health

Good

- Tree displays 71-100% live canopy mass
- Foliage exhibits near optimal foliage characteristics in size, colour and density
- Tree may have low levels of tip dieback
- Tree may exhibit low levels of pest/ pathogen infestation that is not expected to have a significant impact on the long-term health of the tree

Fair

- Tree displays 51-70% live canopy mass
- Foliage may be stunted or discoloured
- Tree exhibits less than optimal extension growth
- Tree has Medium pest/pathogen infestation which may be retarding growth and impacting on health levels, it is expected that the tree can recover with or without intervention

Poor

- Tree displays < 50% live canopy mass
- Tree exhibits low levels of extension growth
- Tree has extensive pest/pathogen infestation and is not expected to recover from such infestation even with intervention

Dead

- Tree has no live vascular tissue

Structure

Good

- Tree has Good branch attachment and well-formed unions
- Tree has Good trunk and scaffold branch taper
- Tree may have Poor tertiary branch taper
- Tree may exhibit structural defects on tertiary branches and attachments
- Complete tree failure or major structural failure under normal environmental conditions is unlikely
- Remedial pruning works may improve the structural rating of the tree

Fair

- Tree may have Poor scaffold branch / stem taper
- Tree may have Poor tertiary branch taper
- Tree may have minor structural root damage/ severance
- Tree may exhibit structural defects to the trunk or scaffold branches
- The majority of structural defects may be managed through current recognised arboricultural practices

Poor

- Tree may exhibit major structural defects to trunk and / or scaffold branch attachments and/or roots

Visual Amenity Value

Low

- Tree has Poor health *or*
- Tree provides little visual contribution to the neighbourhood character

Medium

- Tree has Fair / Good health *and*
- Tree is easily viewed from the street

High

- Tree has Fair / Good health *and*
- Tree is highly visible from the street and from other streets in the area

Retention Value

High

The tree is generally in Good health and structure, provides high levels of amenity and is likely to do so for more than 10 years. Tree may have historic or cultural significance.

Trees in third-party ownership have an assumed *high* retention value regardless of their condition of health, structure and/or visual amenity value.

Medium

The tree is generally in Fair to Good health and structure, provides medium levels of amenity and is likely to do so for up to 10 years.

Low

The tree is generally in Fair health and structure, provides low levels of amenity and may do so for up to 10 years. The tree may be juvenile or otherwise small and easily replaced by advanced plantings or plantings that will provide similar amenity value in a reasonable timeframe.

Diameter at Breast Height (DBH)

Trunk diameter measured at 1.4 m above ground level. Where there is more than one trunk the quadratic mean value is used.

Tree Protection Zone (TPZ)

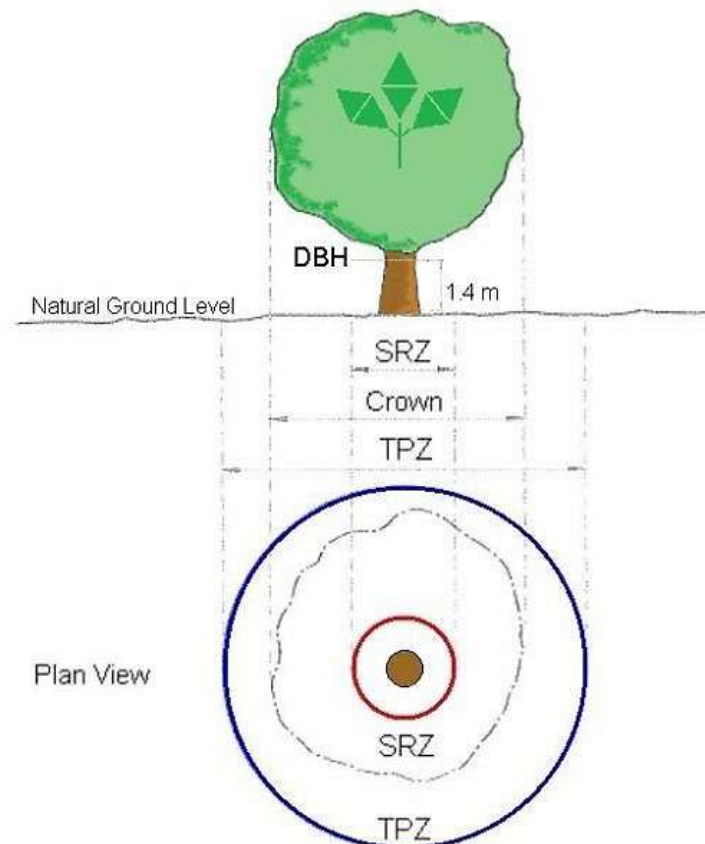
An area above and below ground set aside for the protection of tree roots and canopy. The TPZ is a circle calculated from the Diameter at Breast Height (DBH) and a radial measurement in metres is given. To protect tree roots it is common for the natural ground level within the TPZ to be maintained.

Structural Root Zone (SRZ)

The area around the base of a tree required to maintain stability. The SRZ is nominally circular with the trunk at its centre and is expressed by its radius in metres.

Major TPZ Encroachment

When encroachment into the TPZ of a tree is greater than 10% of the TPZ area and/or inside the SRZ.



Target Rating

Quantified Tree Risk Assessment (QTRA) is a tree risk assessment method which determines the *risk of harm* a tree poses to a *target*, such as people, vehicles or property.

Targets are rated based on the frequency of use by vehicles and/or pedestrians and for property the monetary value.

The target rating is combined with an assessment of the *size of part* most likely to fail and the *probability of failure* of that part.

Size of Part

Parts of the tree include the whole tree (failure of root-plate or trunk), large branches or small branches. Orders of branches (1st, 2nd and 3rd) are used with reference to Draper and Richards (2009).

Probability of Failure

Probability of failure is determined by the structural condition of the part under assessment and the likelihood it will fail under normal weather conditions, within one (1) year of the assessment.

Risk of Harm

The combination of target rating, size of part and probability of failure is used to calculate a *risk of harm*. Risk of harm scores are placed into risk regions, which include *unacceptable*, *tolerable* and *broadly acceptable*.

Risk Regions

Thresholds	Description	Action
1/1 000	Unacceptable Risks will not ordinarily be tolerated	<ul style="list-style-type: none"> Control the risk
	Unacceptable (where imposed on others) Risks will not ordinarily be tolerated	<ul style="list-style-type: none"> Control the risk Review the risk
1/10 000	Tolerable (by agreement) Risks may be tolerated if those exposed to the risk accept it, or the tree has exceptional value	<ul style="list-style-type: none"> Control the risk unless there is broad stakeholder agreement to tolerate it, or the tree has exceptional value Review the risk
	Tolerable (where imposed on others) Risks are tolerable if ALARP	<ul style="list-style-type: none"> Assess costs and benefits of risk control Control the risk only where a significant benefit might be achieved at reasonable cost Review the risk
1/1 000 000	Broadly Acceptable Risk is already ALARP	<ul style="list-style-type: none"> No action currently required Review the risk

Adapted from Ellison, M (2014) QTRA Practice Note, Version 5, 1.2 (AUS) 01-2014, Table 4. (ALARP: As low as reasonably practicable)

I have over fifteen (15) years of experience in arboricultural and ecological industries, including over eleven (11) years of consultancy.

I have training and experience in the collection of biological samples and data for scientific research. I have co-authored papers published in peer-reviewed scientific journals.

My qualifications, experience and expertise are in the fields of arboriculture, botany, planning and wildlife biology, which ensures that I am qualified to make informed independent assessments of issues pertaining to the management of vegetation and associated fauna.

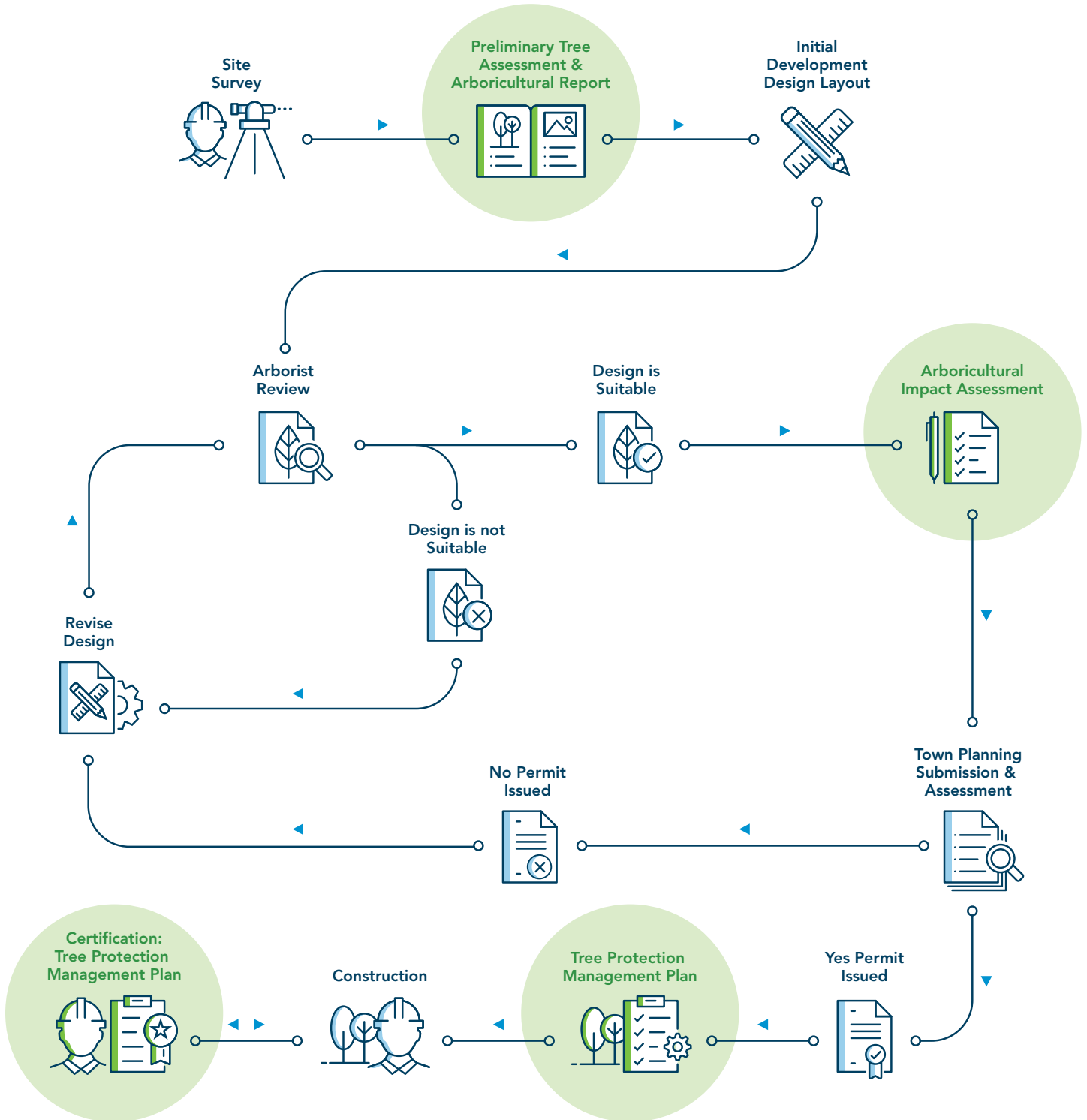
Yours Sincerely



Grant Harris – Director Ironbark Environmental Arboriculture Pty Ltd

Flow Chart

Arboricultural Assessment and Reporting for Development Projects.



A report to support an application to remove, destroy or lop native vegetation in the Intermediate Assessment Pathway using the modelled condition score

This report provides information to support an application to remove native vegetation in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation*. The report is not an assessment by DELWP or local council of the proposed native vegetation removal. Biodiversity information and offset requirements have been calculated using modelled condition scores contained in the *Native vegetation condition map*.

Date and time: 25 May 2020 12:46 PM

Lat./Long.: -37.2610974257069,144.444751840794

Native vegetation report ID:

Address: 7 HARPERS LANE KYNETON 3444

339-20200525-006

Assessment pathway

The assessment pathway and reason for the assessment pathway

Assessment pathway	Intermediate Assessment Pathway
Extent of past plus proposed native vegetation removal	0.211 hectares
No. large trees	3 large tree(s)
Location category	Location 2 The native vegetation is in an area mapped as an Endangered Ecological Vegetation Class. Removal of less than 0.5 hectares of native vegetation will not have a significant impact on any habitat for a rare or threatened species.

Offset requirement

The offset requirement that will apply if the native vegetation is approved to be removed

Offset type	General offset
Offset amount	0.077 general habitat units
Offset attributes	
Vicinity	North Central Catchment Management Authority (CMA) or Macedon Ranges Shire Council
Minimum strategic biodiversity value score	0.326
Large trees	3 large tree(s)

Biodiversity information about the native vegetation

Description of any past native vegetation removal

Any native vegetation that was approved to be removed, or was removed without the required approvals, on the same property or on contiguous land in the same ownership, in the five year period before the application to remove native vegetation is lodged is detailed below.

Permit/PIN number	Extent of native vegetation (hectares)
None entered	0 hectares

Description of the native vegetation proposed to be removed

Extent of all mapped native vegetation	0.211 hectares
Condition score of all mapped native vegetation	0.346
Strategic biodiversity value score of all mapped native vegetation	0.407
Extent of patches native vegetation	0.000 hectares
Extent of scattered trees	0.211 hectares
No. large trees within patches	0 large tree(s)
No. large scattered trees	3 large tree(s)
No. small scattered trees	0 small tree(s)

Additional information about trees to be removed, shown in Figure 1

Tree ID	Tree circumference (cm)	Benchmark circumference (cm)	Scattered / Patch	Tree size
A	377	251	Scattered	Large
B	396	251	Scattered	Large
C	625.1	251	Scattered	Large

Other information

Applications to remove, destroy or lop native vegetation must include all the below information. If an appropriate response has not been provided the application is not complete.

Photographs of the native vegetation to be removed

Recent, dated photographs of the native vegetation to be removed must be provided with the application. All photographs must be clear, show whether the vegetation is a patch of native vegetation or scattered trees, and identify any large trees. If the area of native vegetation to be removed is large, provide photos that are indicative of the native vegetation.

Ensure photographs are attached to the application. If appropriate photographs have not been provided the application is not complete.

Topographical and land information

Description of the topographic and land information relating to the native vegetation to be removed, including any ridges, crests and hilltops, wetlands and waterways, slopes of more than 20 percent, drainage lines, low lying areas, saline discharge areas, and areas of existing erosion, as appropriate. This may be represented in a map or plan. **This is an application requirement and your application will be incomplete without it.**

There is no existing dwelling or farm building on the land, which has been used for pasture and farming purposes. There are two (2) small dams on the land and the site is relatively flat. Upper Coliban Reservoir is approximately 1.5 km to the South-west.

Avoid and minimise statement

This statement describes what has been done to avoid the removal of, and minimise impacts on the biodiversity and other values of native vegetation. **This is an application requirement and your application will be incomplete without it.**

Before the design of the subdivision, tree health, structure and arboricultural risk assessment was undertaken to determine which trees had high retention values. All high retention value trees are proposed for retention. The layout of internal/access roads has been modified to minimise impacts on retained trees. A reserve has been included in the subdivision to allow tree retention.

Defendable space statement

Where the removal of native vegetation is to create defendable space, a written statement explaining why the removal of native vegetation is necessary. This statement must have regard to other available bushfire risk mitigation measures. This statement is not required if your application also includes an application under the Bushfire Management Overlay.

Not applicable.

Offset statement

An offset statement that demonstrates that an offset is available and describes how the required offset will be secured. **This is an application requirement and your application will be incomplete without it.**

An offset will be purchased.

Next steps

Applications to remove, destroy or lop native vegetation must address all the application requirements specified in *Guidelines for the removal, destruction or lopping of native vegetation*. If you wish to remove the mapped native vegetation you are required to apply for a permit from your local council. This *Native vegetation removal report* must be submitted with your application and meets most of the application requirements. The following needs to be added as applicable.

Property Vegetation Plan

Landowners can manage native vegetation on their property in the longer term by developing a Property Vegetation Plan (PVP) and entering into an agreement with DELWP.

If an approved PVP applies to the land, ensure the PVP is attached to the application.

Applications under Clause 52.16

An application to remove, destroy or lop native vegetation is under Clause 52.16 if a Native Vegetation Precinct Plan (NVPP) applies to the land, and the proposed native vegetation removal is not in accordance with the relevant NVPP. If this is the case, a statement that explains how the proposal responds to the NVPP considerations must be provided.

If the application is under Clause 52.16, ensure a statement that explains how the proposal responds to the NVPP considerations is attached to the application.

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Authorised by the Victorian Government, 8 Nicholson Street, East Melbourne.

For more information contact the DELWP Customer Service Centre 136 186

www.delwp.vic.gov.au

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This publication may be of assistance to you but the State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.

Obtaining this publication does not guarantee that an application will meet the requirements of Clauses 52.16 or 52.17 of planning schemes in Victoria or that a permit to remove native vegetation will be granted.

Notwithstanding anything else contained in this publication, you must ensure that you comply with all relevant laws, legislation, awards or orders and that you obtain and comply with all permits, approvals and the like that affect, are applicable or are necessary to undertake any action to remove, lop or destroy or otherwise deal with any native vegetation or that apply to matters within the scope of Clauses 52.16 or 52.17 of planning schemes in Victoria.

Figure 1 – Map of native vegetation to be removed, destroyed or lopped

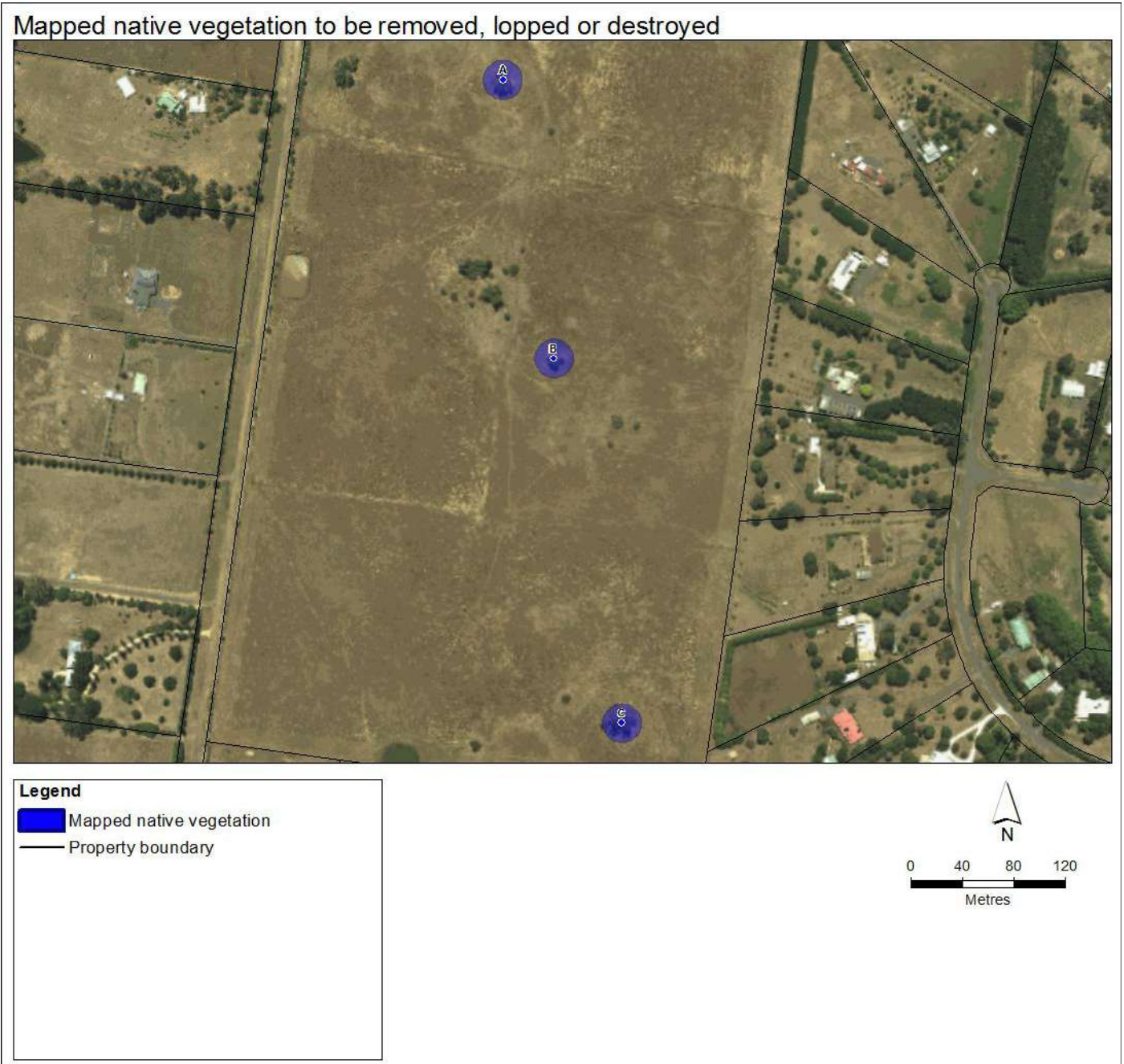


Figure 2 – Map of property in context

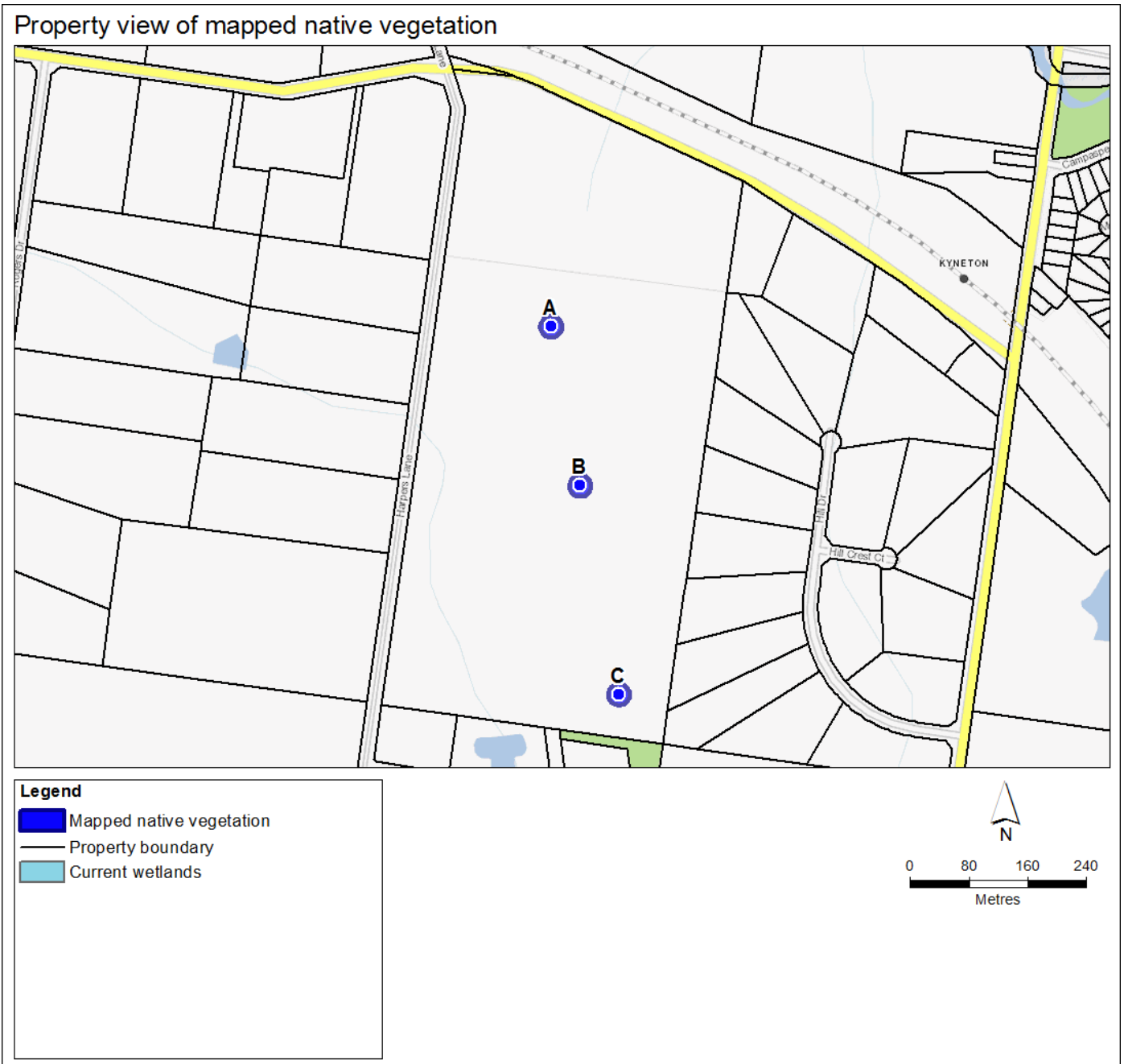
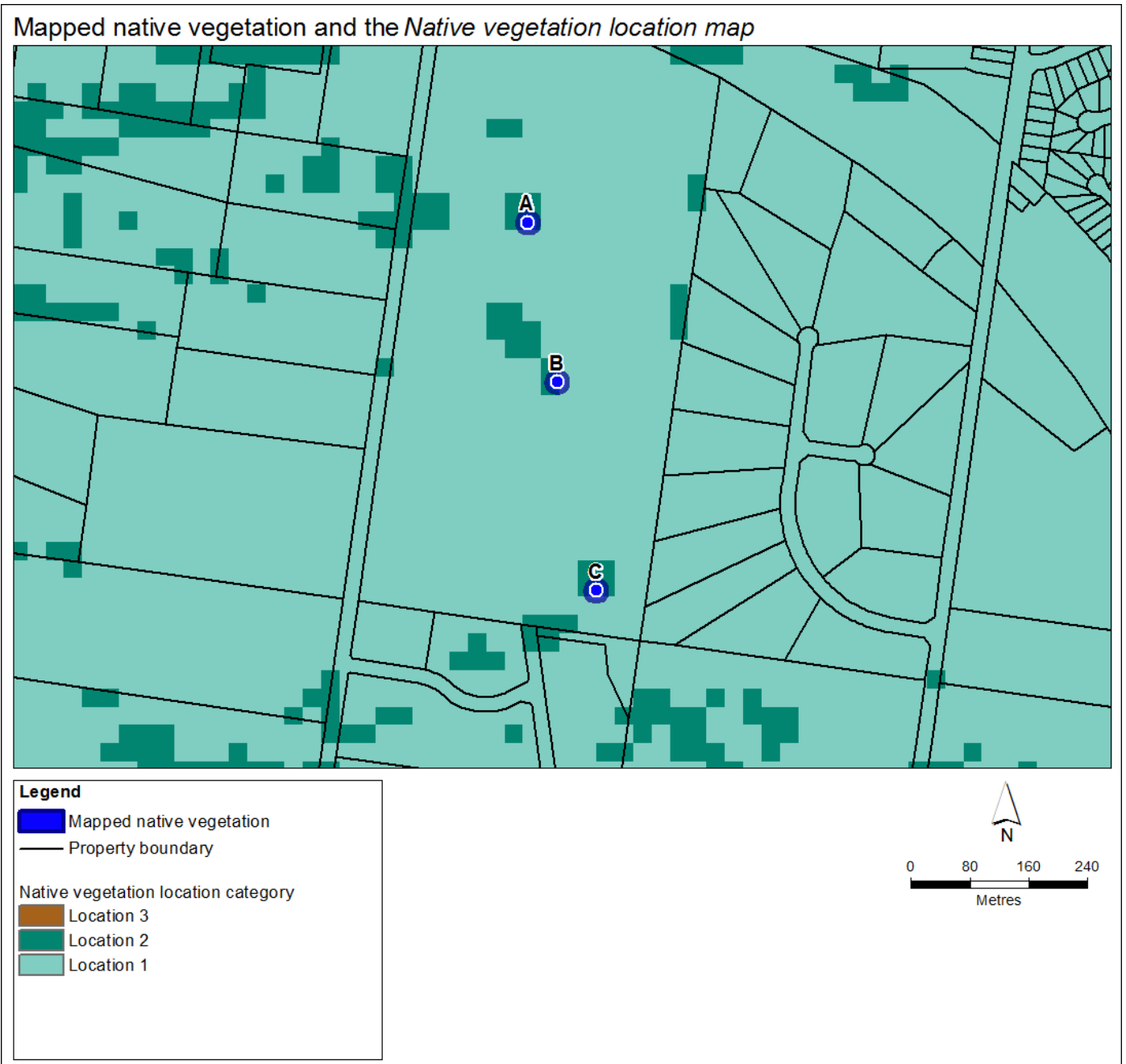
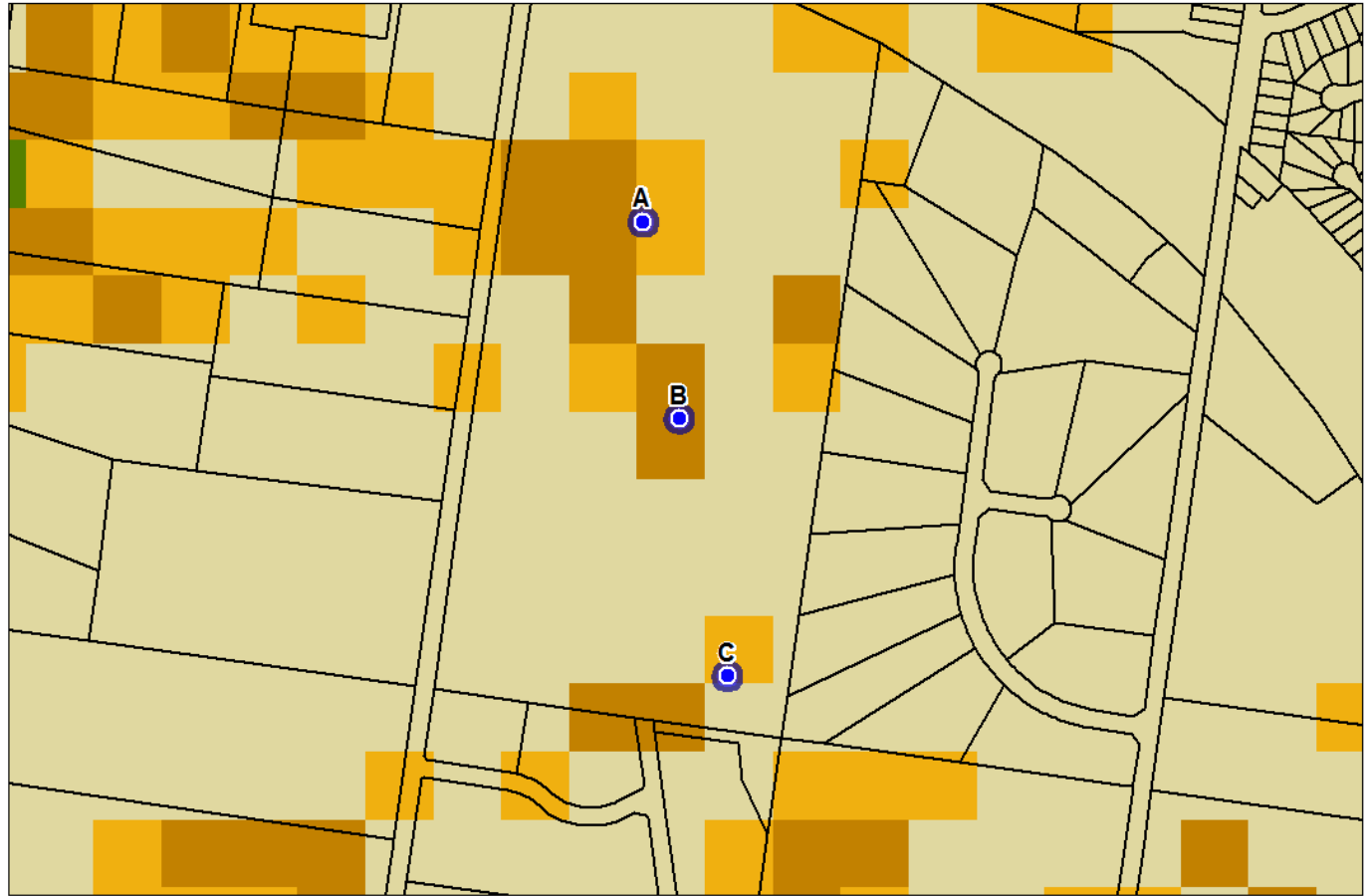


Figure 3 – Biodiversity information maps



Mapped native vegetation and the *Native vegetation condition map*



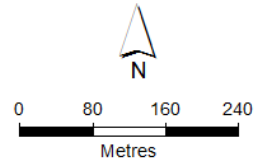
Legend

- Mapped native vegetation
- Property boundary

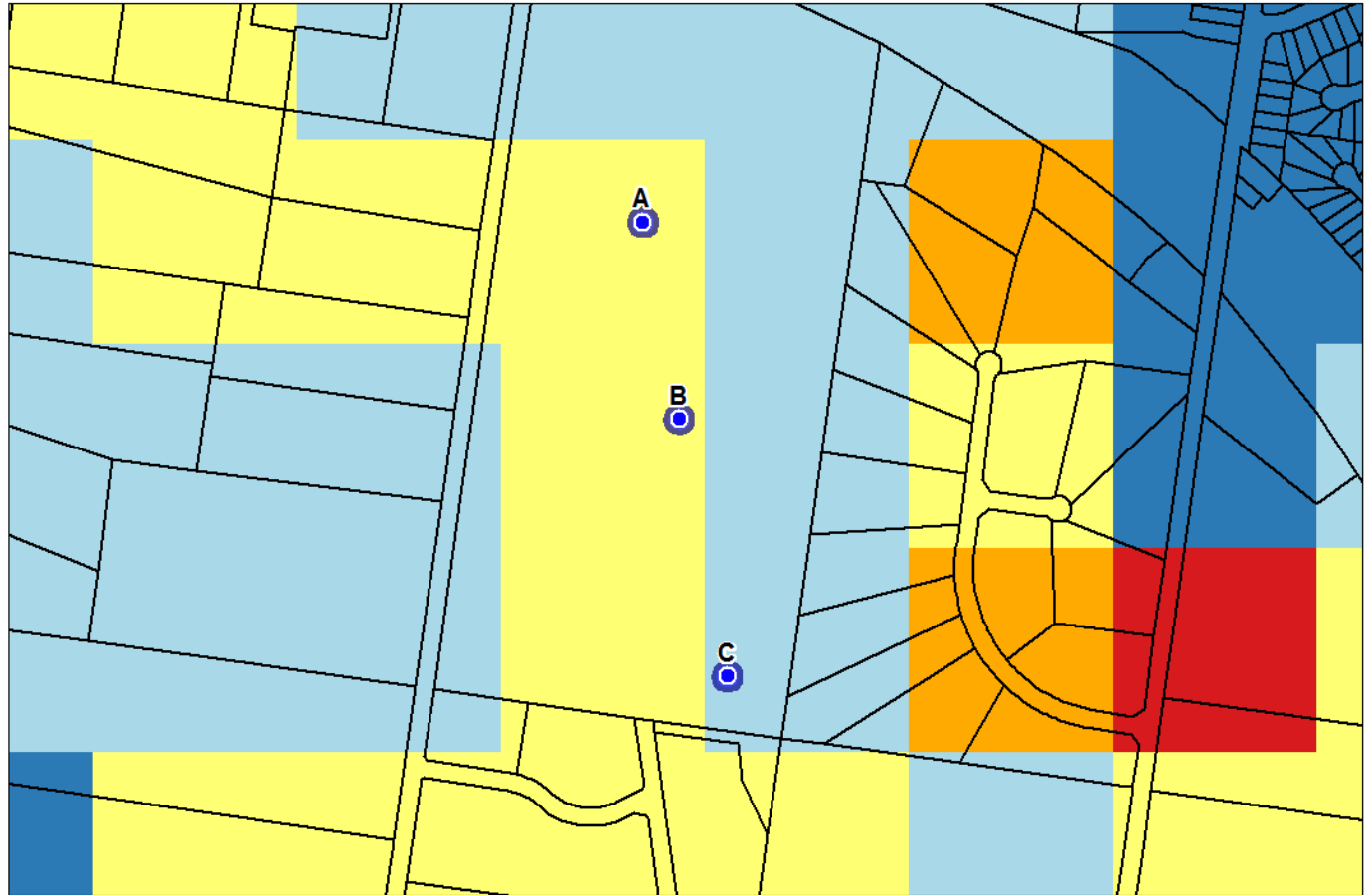
Native vegetation condition*

- 0.81 - 1.00
- 0.61 - 0.80
- 0.41 - 0.60
- 0.21 - 0.40
- 0.00 - 0.20

* These classes are for display purposes only



Mapped native vegetation and the Strategic biodiversity value map



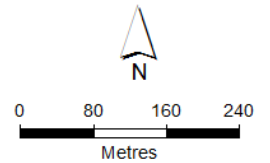
Legend

- Mapped native vegetation
- Property boundary

Strategic biodiversity value*

- 0.81 - 1.00
- 0.61 - 0.80
- 0.41 - 0.60
- 0.21 - 0.40
- 0.00 - 0.20

* These classes are for display purposes only



Appendix 1 - Details of offset requirements

Native vegetation to be removed

Extent of all mapped native vegetation (for calculating habitat hectares)	0.211	The area of land covered by a patch of native vegetation and/or a scattered tree, measured in hectares. Where the mapped native vegetation includes scattered trees, each tree is assigned a standard extent and converted to hectares. A small scattered tree is assigned a standard extent defined by a circle with a 10 metre radius and a large scattered tree a circle with a 15 metre radius. The extent of all mapped native vegetation is an input to calculating the habitat hectares.
Condition score*	0.346	The condition score of native vegetation is a site-based measure that describes how close native vegetation is to its mature natural state. The condition score is the weighted average condition score of the mapped native vegetation calculated using the <i>Native vegetation condition map</i> .
Habitat hectares	0.073	Habitat hectares is a site-based measure that combines extent and condition of native vegetation. It is calculated by multiplying the extent of native vegetation by the condition score: Habitat hectares = extent x condition score
Strategic biodiversity value score	0.407	The strategic biodiversity value score represents the complementary contribution to Victoria's biodiversity of a location, relative to other locations across the state. This score is the weighted average strategic biodiversity value score of the mapped native vegetation calculated using the <i>Strategic biodiversity value map</i> .
General landscape factor	0.704	The general landscape factor is an adjusted strategic biodiversity value score. It has been adjusted to reduce the influence of landscape scale information on the general habitat score.
General habitat score	0.051	The general habitat score combines site-based and landscape scale information to obtain an overall measure of the biodiversity value of the native vegetation. The general habitat score is calculated as follows: General habitat score = habitat hectares x general landscape factor

* **Offset requirements for partial removal:** If your proposal is to remove parts of the native vegetation in a patch (for example only understorey plants) the condition score must be adjusted. This will require manual editing of the condition score and an update to the calculations that the native vegetation removal tool has provided: habitat hectares, general habitat score and offset amount.

Offset requirements

Offset type	General offset	A general offset is required when the removal of native vegetation does not have a significant impact on any habitat for rare or threatened species. All proposals in the Basic and Intermediate assessment pathways will only require a general offset.
Offset multiplier	1.5	This multiplier is used to address the risk that the predicted outcomes for gain will not be achieved, and therefore will not adequately compensate the biodiversity loss from the removal of native vegetation.
Offset amount (general habitat units)	0.077	The general habitat units are the amount of offset that must be secured if the application is approved. This offset requirement will be a condition to any permit or approval for the removal of native vegetation. General habitat units required = general habitat score x 1.5
Minimum strategic biodiversity value score	0.326	The offset site must have a strategic biodiversity value score of at least 80 per cent of the strategic biodiversity value score of the native vegetation to be removed. This is to ensure offsets are located in areas with a strategic biodiversity value that is comparable to the native vegetation to be removed.
Vicinity	North Central CMA or Macedon Ranges Shire Council	The offset site must be located within the same Catchment Management Authority boundary or municipal district as the native vegetation to be removed.
Large trees	3 large tree (s)	The offset site must protect at least one large tree for every large tree removed. A large tree is a native canopy tree with a Diameter at Breast Height greater than or equal to the large tree benchmark for the local Ecological Vegetation Class. A large tree can be either a large scattered tree or a large patch tree.

Dunster, JA, Smiley, ET, Matheny, N & Lilly, S (2013) *Tree Risk Assessment Manual*, International Society of Arboriculture, Champaign, IL, USA.

Lonsdale, D (1999) *Principles of Tree Hazard Assessment and Management*, The Stationery Office, London, UK.

Standards Australia, AS 4970-2009 *Protection of Trees on Development Sites*, SAI Global.

