321-359 & 361-399 Ibbotson Street
St Leonards

Roadside Vegetation Offset Calculations

Prepared for

Costa Property Nine Pty Ltd

Prepared by

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CONTENTS

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1 Introduction

1.1 Project Background

A residential sub-division is proposed for 321-359 and 361-399 Ibbotson Street St Leonards. This report was commissioned by Costa Property Nine Pty Ltd to undertake offset calculations for the native 'patch' vegetation that occurs on the adjacent Ibbotson Road roadside reserve. This vegetation is further assessed in a separate document (321-259 and 361-399 Ibbotson St St Leonards Vegetation Assessment by MTES, May 2014).

The State has recently gazetted new Native Vegetation Permitted Clearing Regulations 'the Regulations' (to replace the former Framework). The reforms 'introduce a risk based approach to assessing applications to remove native vegetation' (DEPI Website i).

Refer to Section 4 for further discussion.

1.2 Aims

The aims of the study are to -

- Undertake offset calculations for the native 'patch' vegetation that occurs on both sides of the adjacent Ibbotson Road roadside reserve.

1.3 Study Area

The study area is all of roadside reserve adjacent to the property at 321-359 and 361-399 Ibbotson Street (i.e. both the east and west verges), St Leonards, within the City of Greater Geelong. The size of the study area (area of 'patch' vegetation) is 0.206 ha.

The study area is within the Otway Plains bioregion (DNRE 2002), which is located within in the Corangamite Catchment Management Authority area.

The site is mostly disturbed, however the site carries some indigenous vegetation. The vegetation of the study area can be described as:

- Eight 'patches' of partially intact remnant indigenous vegetation and/or re-colonized indigenous vegetation (Drooping Sheoke and Wattle dominated vegetation).
- Exotic vegetation dominated by exotic species.

The 5 northern patches (Habitat Zone 1) are dominated by Drooping Sheoke (*Allocasuarina verticillata*), and are the most ecologically intact of the patches. The 3 southern patches (Habitat Zone 2) are dominated by Late Black Wattle (*Acacia mearnsii*), Golden Wattle (*Acacia pycnantha*) and Hedge Wattle (*Acacia paradoxa*) and are relatively degraded.

All patches have understoreys that are comprised of predominately exotic vegetation.

Refer to Figure 1 for the location of the study area and native vegetation.

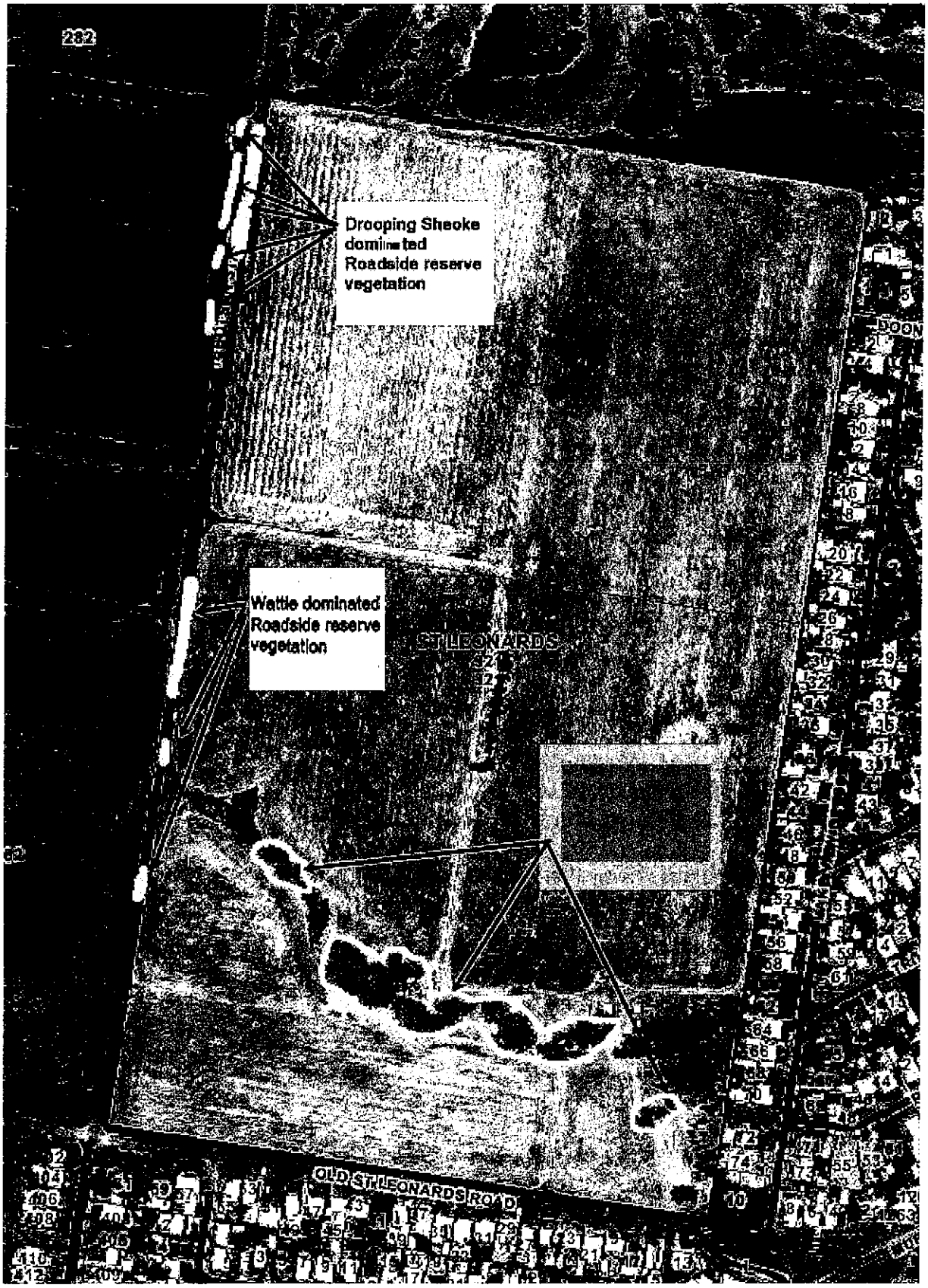


Figure 1. Study area, location and location of vegetation on Ibbotsons St roadside reserve.

2 *Methodology*

2.1 Taxonomy

Scientific names for plants follow the Census of Vascular Plants of Victoria 8th ed (Walsh & Stajsic 2007). Common names for plants follow the Flora of Victoria Volumes 2-4 (Walsh and Entwisle 1994-1999).

2.2 Literature and Database Review

Relevant literature and databases, including data within the Flora Information System (FIS) And Victorian Wildlife Atlas of the Department of Sustainability and Environment (DSE) and the Technical Support Maps for Local Government Authorities (DSE 2003), were reviewed. Impacts are calculated utilizing the DEPI Native Vegetation Management Information system (DEPI Website ii).

2.3 Field Survey

The study area was inspected on foot on the 4th of November 2014 by the report author. General observations were made on the vegetation and habitat quality of the study area. A list of all indigenous and dominant exotic vascular plant species was compiled. The location of all vegetation was mapped.

2.4 Limitations

The surveys were conducted in spring, a time of year suitable for the detection of most flora species. Due to the mostly degraded nature of the study area, the site inspection is considered to be adequate to assess the ecological values of the site. Consequently there are not considered to be any significant limitations to the study.

The survey includes only vascular flora. Non-vascular flora (mosses, lichens, fungi, etc) was not recorded. Fauna assessments were not undertaken.

2.5 Defining and Assessing Native Vegetation

Native vegetation in Victoria has been defined by DEPI as belonging to two categories. These are:

Remnant Patch
Remnant patches of remnant native vegetation are composed of indigenous plant species considered part of a clearly definable EVC. Such vegetation includes understorey species of greater than 25% total understorey cover (excluding bare ground), and/or indigenous canopy trees with at least 20% projected foliage canopy cover. Assessment of remnant patch vegetation utilized the Habitat Hectare method (*see below* 4.2).

Scattered Trees
Scattered trees comprise mature indigenous canopy trees that occur outside a remnant patch.

Habitat Hectares
Habitat hectare is a site-based measure that combines extent and condition of native vegetation. The current condition of native vegetation is assessed against a benchmark for its Ecological Vegetation Class (EVC). EVCs are classifications of native vegetation types. The benchmark for an EVC describes the attributes of the vegetation type in its mature natural state, which reflects the pre-settlement circumstances. The condition score of native vegetation at a site can be determined through undertaking a habitat hectare assessment. The habitat hectares of native vegetation is calculated by multiplying the current condition of the vegetation (condition score) by the extent of native vegetation.

3 Results

3.1 Ecological Vegetation Classes (EVC)

EVCs are the primary level of classification of vegetation communities within Victoria. An EVC contains one or more plant (floristic) community, and represents a grouping of vegetation communities with broadly similar ecological attributes. Classification of EVCs in this report follows Oates and Taranto (2002).

The pre-1750 EVC mapping of the study area undertaken by DSE (DSE 2003) indicates that the study area and immediate surrounds were comprised of EVC 175 Grassy Woodland and EVC 55 Plains Grassy Woodland.

This report finds that parts of the study area are comprised of partially intact native vegetation that accords with EVC 175 Grassy Woodland.

The bioregional conservation status of EVC 175 Grassy Woodland is 'Endangered' (DSE 2004). Endangered is defined as an EVC where 'less than 10% of pre-european extent remains' (DNRE 2002).

Refer to Figure 2 for the distribution of year 2005 EVCs (DSE data).

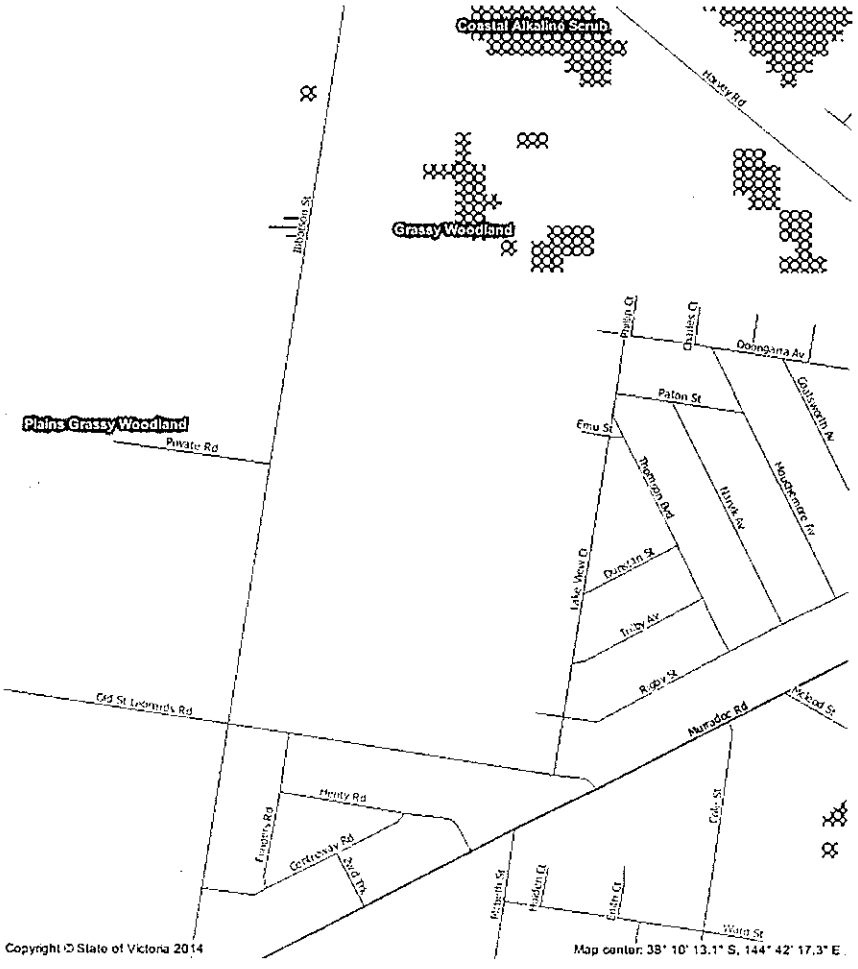


Figure 2. Distribution of year 2005 EVCs (DSE data).

3.2 Plant Species

A total of six indigenous vascular plant species were recorded for the study area. Refer to Table 1 for a list of all recorded indigenous vascular plant species, including conservation significance and location by habitat zone.

Refer to Table 2 for a list of dominant exotic vascular plant species.

Table 1 Indigenous Plant Species, Conservation Status and distribution by Habitat Zone

Botanical Name	Common Name	Status	HZ1	HZ2
Acacia mearnsii	Late Black Wattle	L		*
Acacia paradoxa	Hedge wattle	L		*
Acacia pycnantha	Golden Wattle	L	*	*
Allocasuarina verticillata	Drooping Sheoke	R	*	
Dianella brevicaulis	Coast Flax-lily	L	*	
Rhagodia candolleana	Seaberry Saltbush	L	*	*

Status: L – Local Conservation Significance
R – Regional Conservation Significance

Table 2 Exotic Plant Species

Botanical Name	Common Name
Asparagus asparagoides	Smilax
Cynodon dactylon	Couch-grass
Dactylis glomeratus	Cock's-foot
Ehrharta sp	Veldt-grass
Genista linefolia	Flax-leaf Broom
Pennisetum clandestinum	Kikuyu-grass
Sporobolus indicus	Rat's-tail Grass
Ulex europeus	Gorse

Refer to Plates 1-2 for photographs of the native vegetation.

3.3 Significant Species

No plant species of National or State conservation significance were recorded. A total of one Regionally Significant plant species, i.e. Drooping Sheoke, was recorded. The remaining 5 indigenous species are considered to be of Local conservation significance. Refer to Table 1 for a list of significant plant species.

3.4 Condition of the Vegetation

The current survey results show that areas of 'natural' native vegetation are present that are consistent in terms of vegetation quality and vegetation type. These areas of partially intact native vegetation are comprised of indigenous canopy trees with at least 20% projected foliage canopy cover, and are therefore assessed to be remnant 'patch' vegetation.

This vegetation is defined as follows:

Habitat Zone 1 - Partially intact Drooping Sheoke dominated vegetation – 5 sites.
Habitat Zone 2 - Partially intact Wattle dominated vegetation – 3 sites.

The remainder of the roadside reserve is comprised of exotic vegetation.

4 State

4.1 Native Vegetation Permitted Clearing Regulations

Under Particular Provision (Native Vegetation Clause 52.17) the State has recently gazetted new Native Vegetation Permitted Clearing Regulations 'the Regulations' (to replace the Native Vegetation Management Framework). The reforms 'introduce a risk based approach to assessing applications to remove native vegetation' (DEPI Website I *and* DSE Website ii).

DEPI have produced a range of biodiversity information tools to assess site significance and to assess the potential impacts of any permitted vegetation clearing. The biodiversity information tools are as follows:

- Native Vegetation Extent; the 'area of land covered by native vegetation'.
- Native Vegetation Site Condition; 'comprised of three components, species diversity, structure and function'.
- Native Vegetation Location Risk' 'location risk is calculated on the basis of a set of spatial models describing the importance of suitable habitat within the current extent of native vegetation for many rare or threatened species and native vegetation modeled condition data'.
- Strategic Biodiversity Score; a ' spatially explicit view of strategic biodiversity values', it 'identifies the value of a site relative to the value of all other Victorian locations'.

Refer to Figure 3 for Native Vegetation Location Risk, including discussion of implications for the study area (DSE data).

Implications for the current proposal are discussed as follows.

This report finds that sections of the property are comprised of two habitat zones (in eight patches) of partially intact indigenous vegetation.

Offset calculations for the removal of that vegetation are presented in Appendix 1.

Figure 3. Distribution of vegetation according to 'Location Risk'. Blue equates to 'Location Risk A' (i.e. least risk). (DSE Website i).

4.1.1 Area of Remnant Patch Vegetation

The current survey results show that the area of indigenous vegetation (Habitat Zones 1 and 2) is less than 0.5 in size and is within 'Location A' (DSE Website i). It is assessed to constitute a 'low-risk pathway' vegetation clearing application (DEPI Website i).

The remainder of the study area is comprised of exotic vegetation that is assessed to be degraded.

Refer to Plates 1-2 for photographs of the native vegetation.

4.1.2 Trees

Under the Regulations, any scattered native canopy trees that are proposed to be removed are subject to protection/and or recruitment offsets, depending upon the characteristics of the site.

Scattered trees, that is, mature native canopy trees that exist outside of a patch, are also assessed under the Regulations. Within the Otway Plain bioregion, EVC 175 has *Eucalyptus* spp and *Allocasuarina* ssp as 'canopy trees'.

For practicality, a standard extent amount (i.e. 0.071 ha) has been developed for scattered trees, based on the habitat hectare assessment method.

No scattered trees are proposed to be cleared.

4.1.3 Implications

The current survey results show that the area of indigenous vegetation (Habitat Zones 1 and 2) is assessed to be a 'low risk pathway' vegetation clearance application.

Consequently, in keeping with the Regulations, a Biodiversity Assessment Report has been generated utilizing the Native Vegetation Information Management system on-line tool (DEPI Website ii). This report calculates the strategic biodiversity score of the vegetation and calculates offset requirements.

Refer to Appendix 1 for the Biodiversity Assessment Report.

Offset requirements for the removal of 0.206 ha of patch vegetation are for the generation of a general offset of 0.062 biodiversity equivalence units with a minimum strategic biodiversity score of 0.335, to be located within the Corangamite CMA region.

It is intended that offset be secured via a 3rd party arrangement or a credit register extract from the Native Vegetation Credit Register.

As the vegetation is located on Crown land which is managed by the responsible authority a referral to the DEPI will be required.

5 Conclusions

The study has a history of disturbance.

A total of six indigenous plant species were recorded for the study area.

The vegetation of the study area can be described as follows:

- Eight 'patches' of partially intact remnant indigenous vegetation and/or re-colonized indigenous vegetation (Drooping Sheoke and Wattle dominated vegetation).
- Exotic vegetation that is assessed to be degraded.

The Drooping Sheoke and Wattle dominated sections of the study area are comprised of partially intact native vegetation that accords with EVC 175 Grassy Woodland.
The bioregional conservation status of EVC 175 Grassy Woodland is 'Endangered'
The remainder of the study area is comprised of exotic vegetation

No plant species of National or State conservation significance were recorded. A total of one Regionally Significant plant species, i.e. Drooping Sheoke, was recorded. The remaining 5 indigenous species are considered to be of Local conservation significance.

The current survey results show that the area of indigenous vegetation that is assessed in this report (Habitat Zones 1 and 2) is assessed to be a 'low risk pathway' vegetation clearance application.

Consequently, in keeping with the Regulations, a Biodiversity Assessment Report has been generated utilizing the Native Vegetation Information Management system on-line tool. This report calculates the strategic biodiversity score of the vegetation and calculates offset requirements.

Offset requirements for the removal of 0.206 ha of patch vegetation are for the generation of a general offset of 0.062 biodiversity equivalence units with a minimum strategic biodiversity score of 0.335, to be located within the Corangamite CMA region.

It is intended that offset be secured via a 3rd party arrangement or a credit register extract from the Native Vegetation Credit Register.

As the vegetation is located on Crown land which is managed by the responsible authority a referral to the DEPI will be required.

There are not considered to be any significant limitations to this survey.

6 References

Conn, B J (1993). Natural regions and vegetation of Victoria. Pp. 79-158 In Foreman, D B and Walsh, G (eds.) 'Flora of Victoria Volume 1: Introduction.' Inkata Press, Melbourne.

Corangamite Catchment Management Authority (2005). 'Corangamite Native Vegetation Plan' CCMA, Colac, Victoria.

DEPI Website i.
http://www.depi.vic.gov.au/environment-and-wildlife/biodiversity/native-vegetation/native-vegetation-permitted-clearing-regulations

DEPI Website ii.
http://nvim.depi.vic.gov.au/

DEPI Website iii.
http://www.depi.vic.gov.au/__data/assets/pdf_file/0010/198964/Meeting-the-moderate-and-high-risk-based-pathway-application-requirements.pdf

DSE Website i.
http://mapshare2.dse.vic.gov.au/MapShare2EXT/imf.jsp?site=bim

Walsh, N G & Stajsic, V. (2007). ' A Census of the Vascular Plants of Victoria- Eighth Edition' Royal Botanic Gardens, Melbourne.

Walsh, N G & Entwisle, T (1994-1999). 'Flora of Victoria Vol 2-4' Inkata Press, Melbourne.

Appendix 1 Biodiversity Assessment Report

Biodiversity assessment report

Biodiversity information for applications for permits to remove native vegetation under clause 52.16 or 52.17 of the Victoria Planning Provisions

Date of issue: 07 November 2014

Time of issue: 15:06:25

Property address	IBBOTSON STREET ST LEONARDS 3223
	321-399 IBBOTSON STREET ST LEONARDS 3223
	321-359 IBBOTSON STREET ST LEONARDS 3223
	Address unknown
	322-380 IBBOTSON STREET ST LEONARDS 3223

Summary of marked native vegetation

Risk-based pathway	**Low**
Total extent	0.206 ha
Remnant patches	
1	0.062 ha
2	0.042 ha
3	0.008 ha
4	0.004 ha
5	0.010 ha
6	0.052 ha
7	0.014 ha
8	0.014 ha
Location risk	A

See Appendix 1 for risk-based pathway details

Biodiversity assessment report

Offset requirements

If a permit is granted to remove the marked native vegetation, a requirement to obtain a native vegetation offset will be included in the permit conditions. The offset must meet the following requirements:

Offset type	General offset
Offset amount (general biodiversity equivalence units)	0.062
Offset attributes	
Vicinity	Corangamite Catchment Management Authority (CMA)
Minimum strategic biodiversity score	0.335
Strategic biodiversity score of marked native vegetation	0.419

See Appendix 2 for offset requirements details

Next steps

This proposal to remove native vegetation must meet the application requirements of the low risk-based pathway and it will be assessed in the low risk-based pathway.

If you wish to remove the marked native vegetation you are required to apply for a permit from your local council.

The Biodiversity assessment report should be submitted with your application for a permit to remove native vegetation you plan to remove, lop or destroy.

The Biodiversity assessment report provides the following information that is required to be provided with your application for a permit to remove native vegetation:

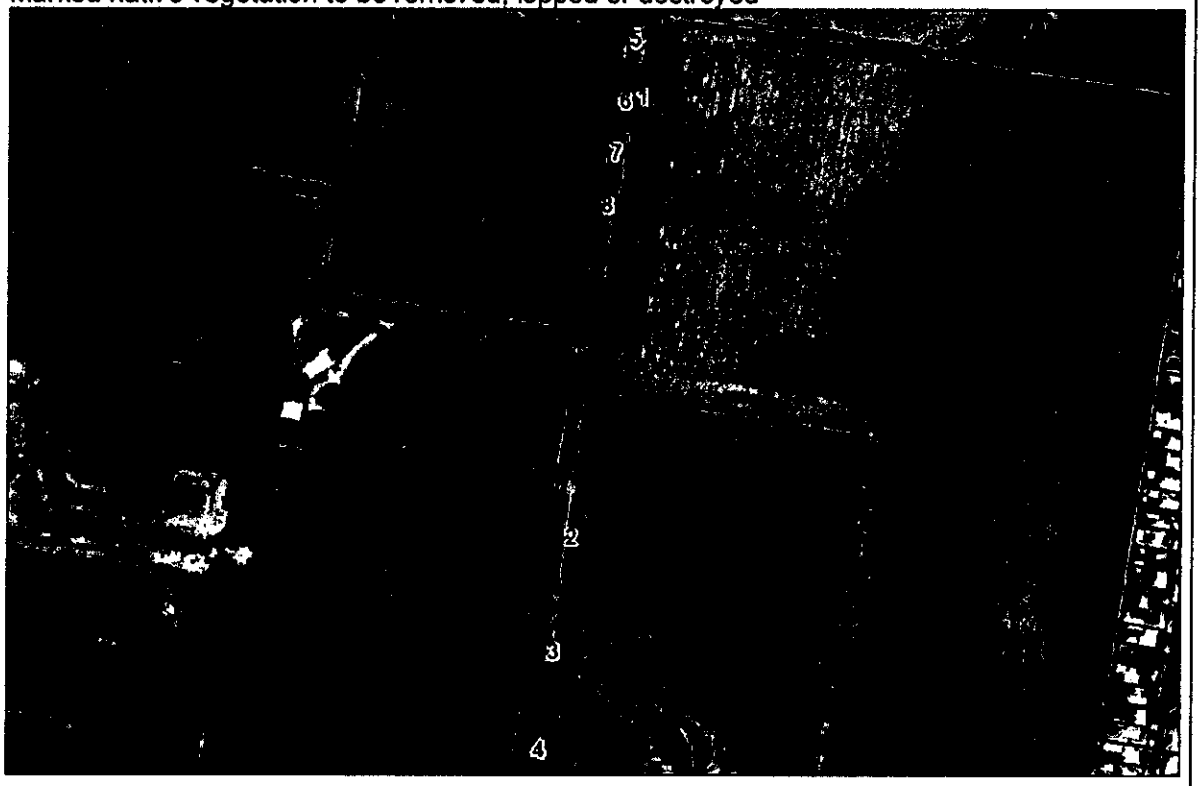
- The location of the site where native vegetation is to be removed.
- The area of the patch of native vegetation and/or the number of any scattered trees to be removed.
- Maps or plans containing information set out in the *Permitted clearing of native vegetation - Biodiversity assessment guidelines.*
- The risk-based pathway of the application for a permit to remove native vegetation.
- The strategic biodiversity score of the native vegetation to be removed.
- The offset requirements should a permit be granted to remove native vegetation.

If you have undertaken any permitted clearing on your property within the last five years contact DEPI to confirm offset requirements.

Additional information is required when submitting an application for a permit to remove native vegetation. Refer to the *Permitted clearing of native vegetation - Biodiversity assessment guidelines* for a full list of application requirements.

Maps of marked native vegetation

Marked native vegetation to be removed, lopped or destroyed



Biodiversity assessment report

Property view of marked native vegetation

See Appendix 3 for biodiversity information maps

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

For more information contact the DEPI Customer Service Centre 136 186

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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 the Victoria Planning Provisions 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 the Victoria Planning Provisions.

www.depi.vic.gov.au

Department of Environment and Primary Industries
State Government Victoria

Appendix 1 - Risk-based pathway details

Risk-based pathway	Low
Total extent	0.206 ha
Remnant patches	
1	0.062 ha
2	0.042 ha
3	0.008 ha
4	0.004 ha
5	0.010 ha
6	0.052 ha
7	0.014 ha
8	0.014 ha
Location risk	A

Why is the risk-based pathway low?

The following table explains how the risk-based pathway is determined:

Extent	Location A	Location B	
< 0.5 hectares	Low	Low	High
≥ 0.5 hectares and < 1 hectares	Low	Moderate	High
≥ 1 hectares	Moderate	High	High

The marked native vegetation is located entirely within Location A and has a total extent of less than 0.5 hectares.

At this location, native vegetation removal of this size is not expected to have a significant impact on the habitat of any rare or threatened species. As a result, an application for the removal of this native vegetation must meet the requirements of, and will be assessed in, the low risk-based pathway.

For further information on location risk please see *Native vegetation location risk map factsheet.* For information on the determination of the risk-based pathway see *Permitted clearing of native vegetation – Biodiversity assessment guidelines.*

Have you received a planning permit to remove native vegetation in the last five years?

If you have undertaken any permitted clearing on your property within the last five years, the extent of this past clearing must be included in the total extent of your current permit application. The risk-based pathway for your application requirements and assessment pathway is determined using the combined extent of permitted clearing within the last five years and proposed clearing.

If the risk-based pathway determined from this combined extent is low, contact DEPI to confirm offset requirements.

Biodiversity assessment report

Appendix 2 - Offset requirements details

If a permit is granted to remove the marked native vegetation the permit condition will include the requirement to obtain a native vegetation offset. This offset must meet the following requirements:

Offset type	General offset
Offset amount (general biodiversity equivalence units)	0.062
Offset attributes	
Vicinity	Corangamite Catchment Management Authority (CMA)
Minimum strategic biodiversity score	0.335
Strategic biodiversity score of marked native vegetation	0.419

Native vegetation to be removed		
Total extent (hectares) for calculating habitat hectares	0.206	This is the total area of the marked native vegetation in hectares. The total extent of native vegetation is an input to calculating the habitat hectares of a site and in calculating the general biodiversity equivalence score. Where the marked native vegetation includes scattered trees, each tree is converted to hectares using a standard area calculation of 0.071 hectares per tree.
Condition score*	0.480	This is the weighted average condition score of the marked native vegetation. This condition score has been calculated using the *Native vegetation condition map*. The condition score of native vegetation is a site-based measure of how close the native vegetation is to its mature natural state, as represented by a benchmark reflecting pre-settlement circumstances. The *Native vegetation condition map* is a modelled layer based on survey data combined with a benchmark model and a range of other environmental data.
Habitat hectares	0.099	Habitat hectares is a site-based measure that combines extent and condition of native vegetation. The habitat hectares of native vegetation is equal to the current condition of the vegetation (condition score) multiplied by the extent of native vegetation. Habitat hectares = total extent x condition
Strategic biodiversity score	0.419	This is the weighted average strategic biodiversity score of the marked native vegetation. This strategic biodiversity score has been calculated using the *Strategic biodiversity map*. The strategic biodiversity score of native vegetation is a measure of the native vegetation's importance for Victoria's biodiversity, relative to other locations across the landscape. The *Strategic biodiversity map* is a modelled layer that prioritises locations on the basis of rarity and level of depletion of the types of vegetation, species habitats, and condition and connectivity of native vegetation.

Biodiversity assessment report

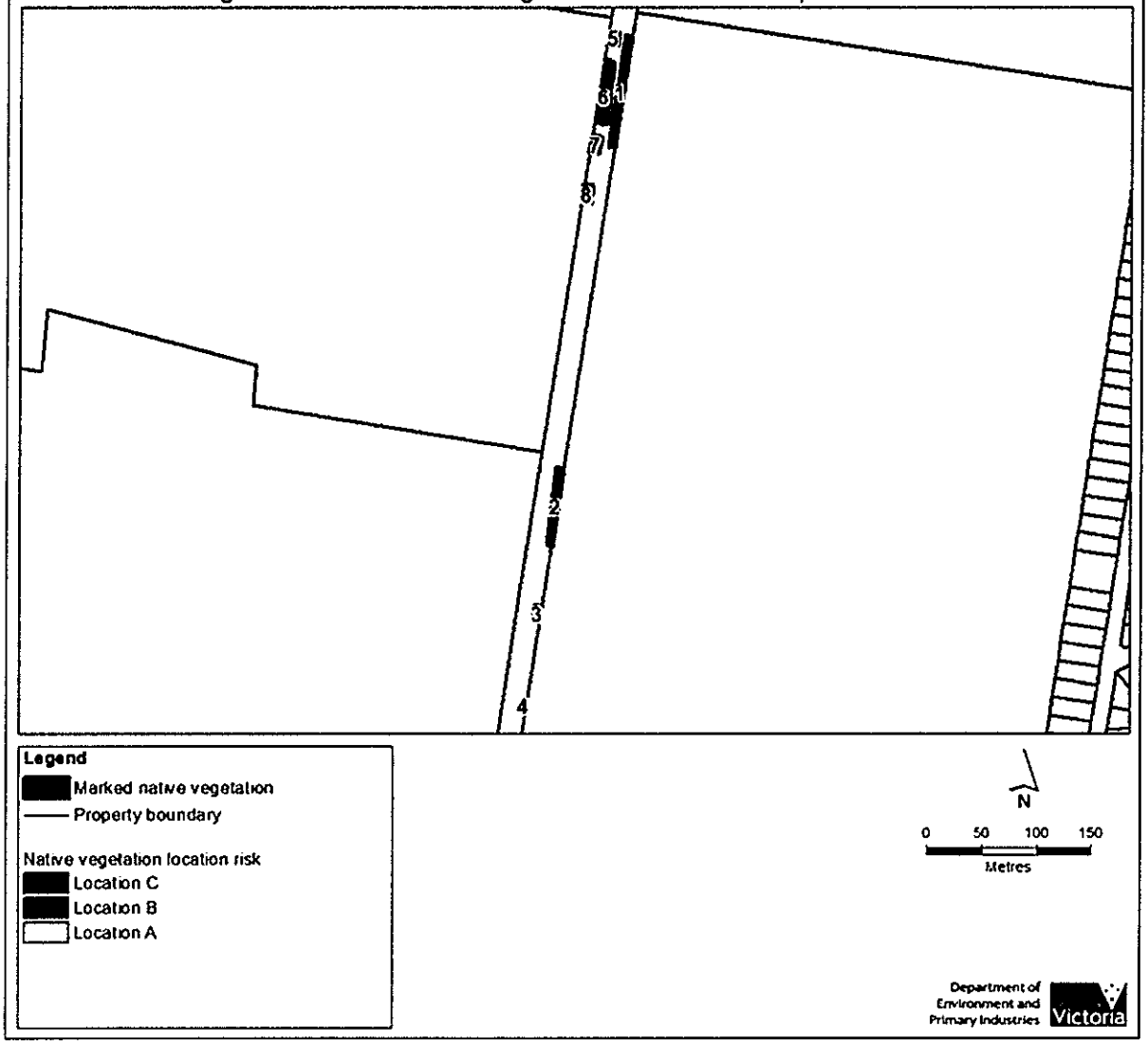
General biodiversity equivalence score	0.041	The general biodiversity equivalence score quantifies the relative overall contribution that the native vegetation to be removed (the marked native vegetation) makes to Victoria's biodiversity. It is calculated as follows: General biodiversity equivalence score = habitat hectares × strategic biodiversity score

* Offset requirements for partial clearing: If your proposal is to remove parts of the native vegetation in a remnant 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 following calculations that the biodiversity assessment tool has provided: *habitat hectares*, *general biodiversity equivalence score* and *offset amount*.

Offset requirements		
Offset type	General offset	A general offset is required when a proposal to remove native vegetation is not deemed, by application of the specific-general offset test, to have a significant impact on habitat for any rare or threatened species. All proposals in the low risk-based pathway will require a general offset.
Risk factor for general offsets	1.5	There is a risk that the gain from undertaking the offset will not adequately compensate for the loss from the removal of native vegetation. If this were to occur, despite obtaining an offset, the overall impact from removing native vegetation would result in a loss in the contribution that native vegetation makes to Victoria's biodiversity. To address the risk of offsets failing, an offset risk factor is applied to the calculated loss to biodiversity value from removing native vegetation.
Offset amount (general biodiversity equivalence units)	0.062	This is calculated by multiplying the general biodiversity equivalence score of the native vegetation to be removed by the risk factor for general offsets. This number is expressed in general biodiversity equivalence units and is the amount of offset that is required to be provided should the application be approved. This offset requirement will be a condition to the permit for the removal of native vegetation. Risk adjusted general biodiversity equivalence score = general biodiversity equivalence score $_{clearing}$ × 1.5
Minimum strategic biodiversity score	0.335	The strategic biodiversity score of the offset site must be at least 80 per cent of the strategic biodiversity score of the native vegetation to be removed. This is to ensure offsets are located in areas with a strategic value that is comparable to, or better than, the native vegetation to be removed.
Vicinity	Corangamite CMA	The offset site must be located within the same Catchment Management Authority boundary as the native vegetation to be removed.

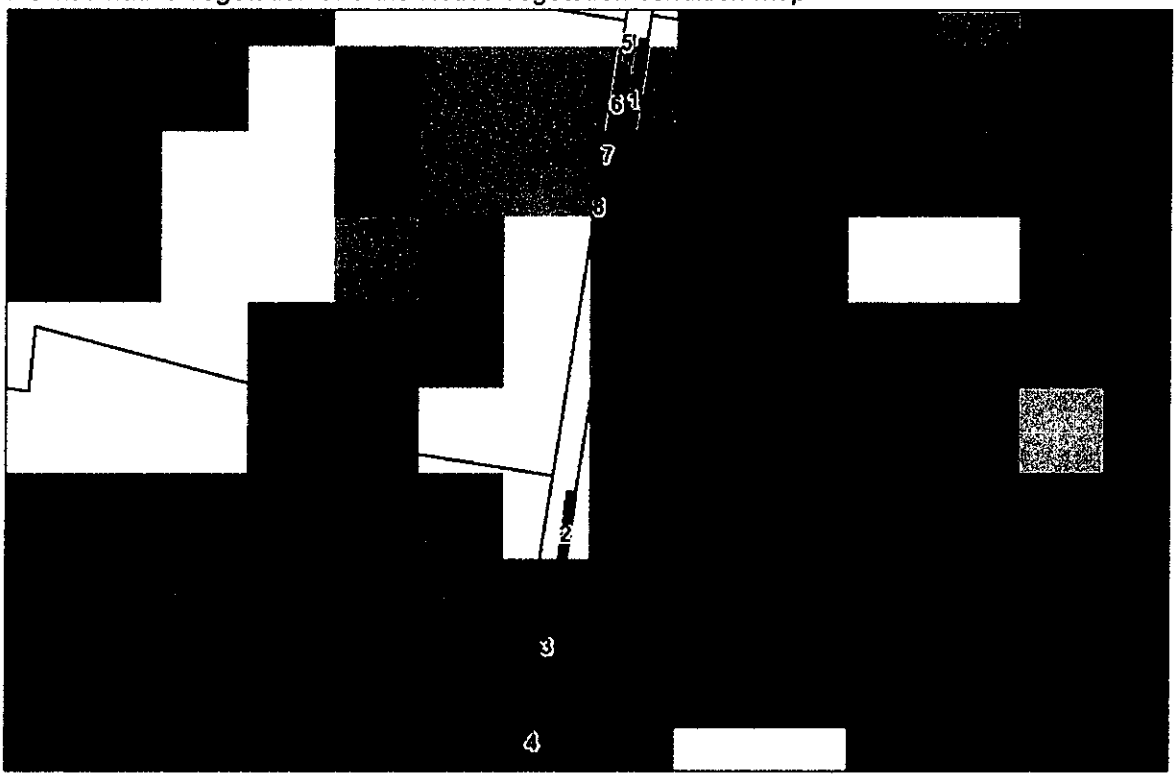
Appendix 3 - Biodiversity information maps

Marked native vegetation and the *Native vegetation location risk map*



Biodiversity assessment report

Marked native vegetation and the *Native vegetation condition map*



Legend

Marked 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

N

0 50 100 150

Metres

Department of Environment and Primary Industries

Victoria

Biodiversity assessment report

Marked native vegetation and the *Strategic biodiversity map*

Plates 1-2 Patch vegetation

Plate 1. Habitat Zone 1. Drooping Sheoke dominated vegetation. Typical conditions.

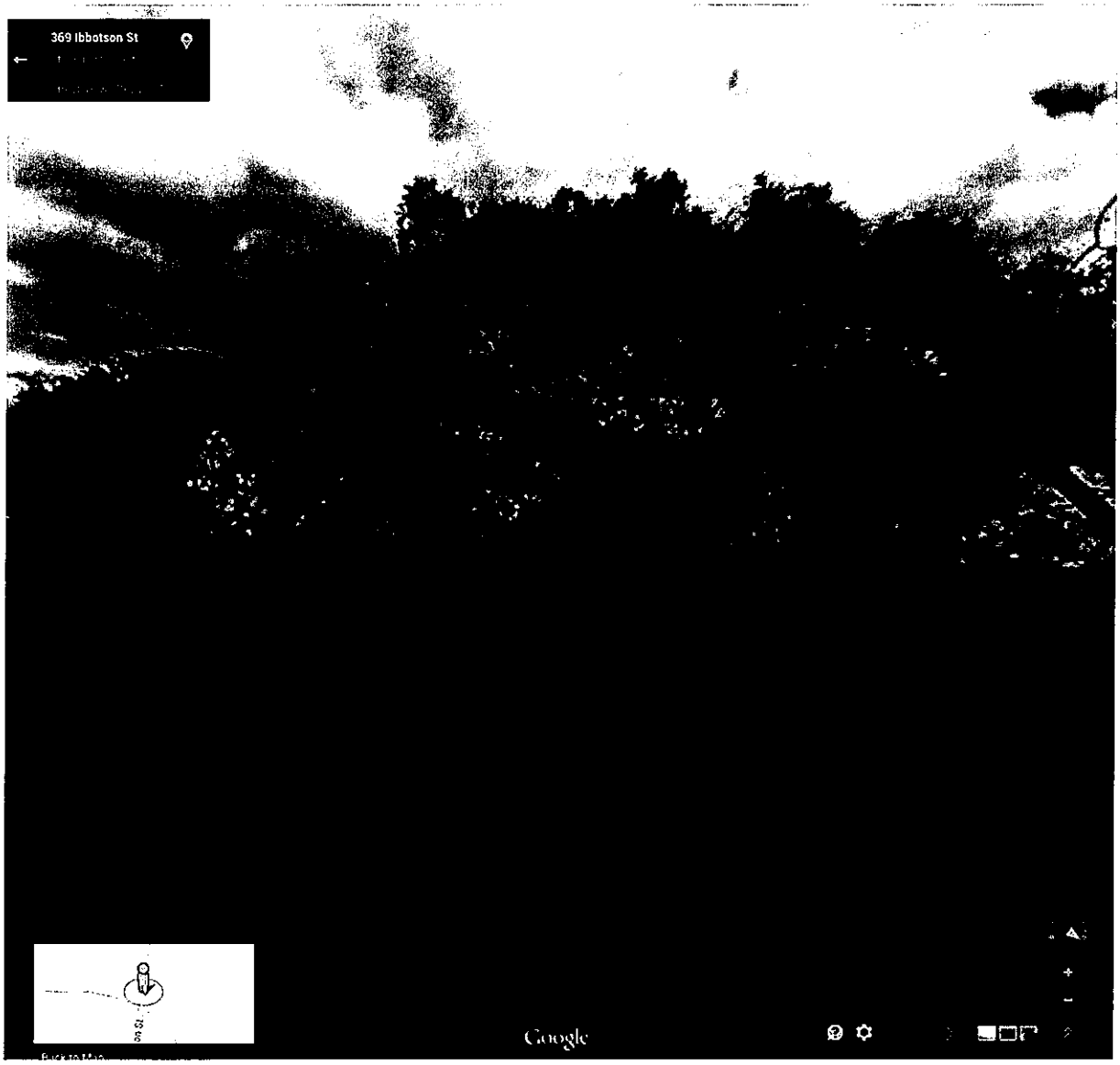


Plate 2. Habitat Zone 2. Wattle dominated vegetation. Typical conditions.

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1 Introduction

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Refer to Section 4 for further discussion.

1.2 Aims

The aims of the study are to -

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1.3 Study Area

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The study area is within the Otway Plains bioregion (DNRE 2002), which is located within in the Corangamite Catchment Management Authority area.

The site is mostly disturbed, however the site carries some indigenous vegetation. The vegetation of the study area can be described as:

- Eight 'patches' of partially intact remnant indigenous vegetation and/or re-colonized indigenous vegetation (Drooping Sheoke and Wattle dominated vegetation).
- Exotic vegetation dominated by exotic species.

The 5 northern patches (Habitat Zone 1) are dominated by Drooping Sheoke (*Allocasuarina verticillata*), and are the most ecologically intact of the patches. The 3 southern patches (Habitat Zone 2) are dominated by Late Black Wattle (*Acacia mearnsii*), Golden Wattle (*Acacia pycnantha*) and Hedge Wattle (*Acacia paradoxa*) and are relatively degraded.

All patches have understoreys that are comprised of predominately exotic vegetation.

Refer to Figure 1 for the location of the study area and native vegetation.

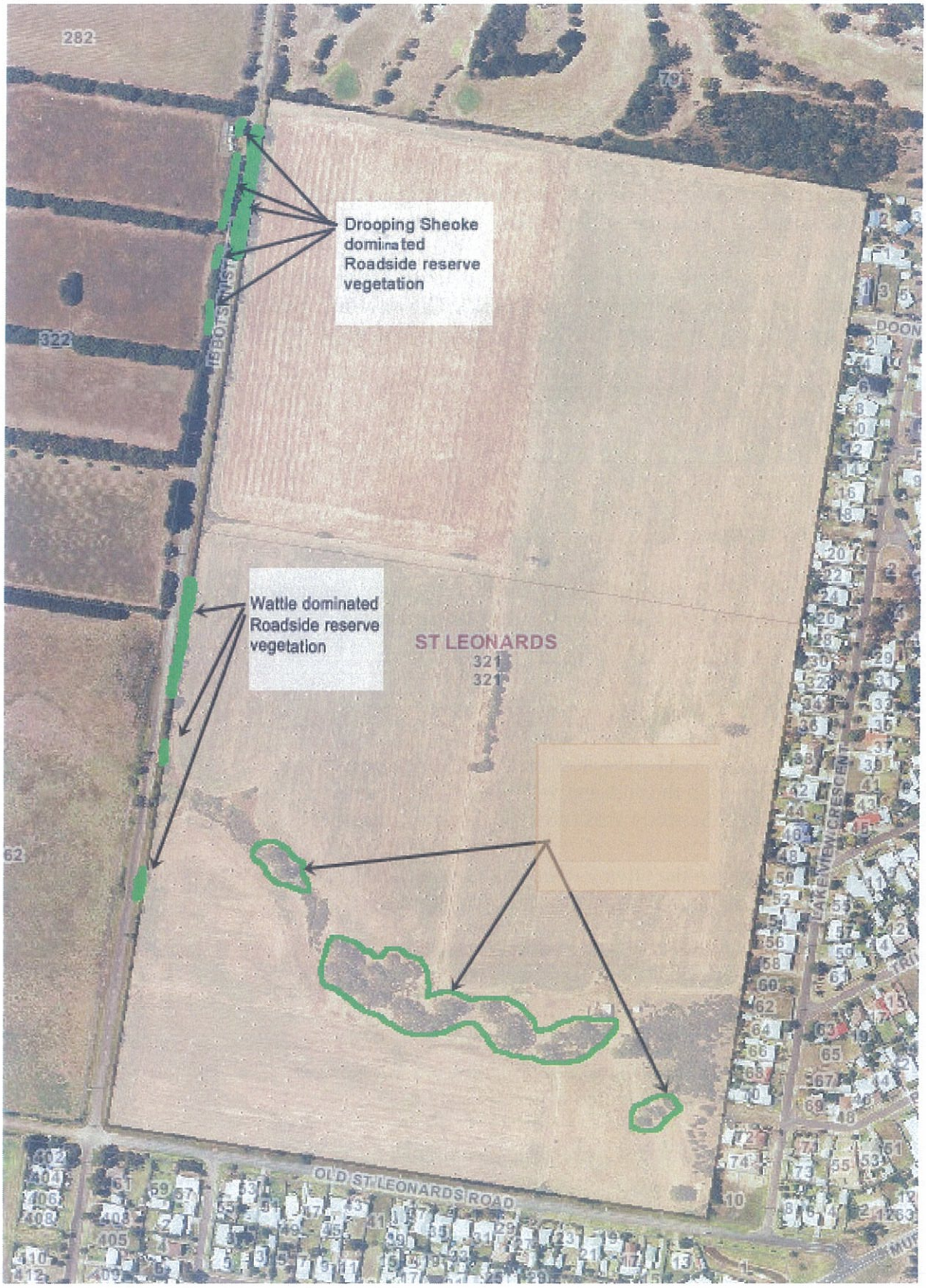

Figure 1. Study area, location and location of vegetation on Ibbotsons St roadside reserve.

2 Methodology

2.1 Taxonomy

Scientific names for plants follow the Census of Vascular Plants of Victoria 8th ed (Walsh & Stajsic 2007). Common names for plants follow the Flora of Victoria Volumes 2-4 (Walsh and Entwisle 1994-1999).

2.2 Literature and Database Review

Relevant literature and databases, including data within the Flora Information System (FIS) And Victorian Wildlife Atlas of the Department of Sustainability and Environment (DSE) and the Technical Support Maps for Local Government Authorities (DSE 2003), were reviewed. Impacts are calculated utilizing the DEPI Native Vegetation Management Information system (DEPI Website ii).

2.3 Field Survey

The study area was inspected on foot on the 4th of November 2014 by the report author. General observations were made on the vegetation and habitat quality of the study area. A list of all indigenous and dominant exotic vascular plant species was compiled. The location of all vegetation was mapped.

2.4 Limitations

The surveys were conducted in spring, a time of year suitable for the detection of most flora species. Due to the mostly degraded nature of the study area, the site inspection is considered to be adequate to assess the ecological values of the site. Consequently there are not considered to be any significant limitations to the study.

The survey includes only vascular flora. Non-vascular flora (mosses, lichens, fungi, etc) was not recorded. Fauna assessments were not undertaken.

2.5 Defining and Assessing Native Vegetation

Native vegetation in Victoria has been defined by DEPI as belonging to two categories. These are:

Remnant Patch
Remnant patches of remnant native vegetation are composed of indigenous plant species considered part of a clearly definable EVC. Such vegetation includes understorey species of greater than 25% total understorey cover (excluding bare ground), and/or indigenous canopy trees with at least 20% projected foliage canopy cover. Assessment of remnant patch vegetation utilized the Habitat Hectare method (*see below* 4.2).

Scattered Trees
Scattered trees comprise mature indigenous canopy trees that occur outside a remnant patch.

Habitat Hectares
Habitat hectare is a site-based measure that combines extent and condition of native vegetation. The current condition of native vegetation is assessed against a benchmark for its Ecological Vegetation Class (EVC). EVCs are classifications of native vegetation types. The benchmark for an EVC describes the attributes of the vegetation type in its mature natural state, which reflects the pre-settlement circumstances. The condition score of native vegetation at a site can be determined through undertaking a habitat hectare assessment. The habitat hectares of native vegetation is calculated by multiplying the current condition of the vegetation (condition score) by the extent of native vegetation.

3 Results

3.1 Ecological Vegetation Classes (EVC)

EVCs are the primary level of classification of vegetation communities within Victoria. An EVC contains one or more plant (floristic) community, and represents a grouping of vegetation communities with broadly similar ecological attributes. Classification of EVCs in this report follows Oates and Taranto (2002).

The pre-1750 EVC mapping of the study area undertaken by DSE (DSE 2003) indicates that the study area and immediate surrounds were comprised of EVC 175 Grassy Woodland and EVC 55 Plains Grassy Woodland.

This report finds that parts of the study area are comprised of partially intact native vegetation that accords with EVC 175 Grassy Woodland.

The bioregional conservation status of EVC 175 Grassy Woodland is 'Endangered' (DSE 2004). Endangered is defined as an EVC where 'less than 10% of pre-european extent remains' (DNRE 2002).

Refer to Figure 2 for the distribution of year 2005 EVCs (DSE data).

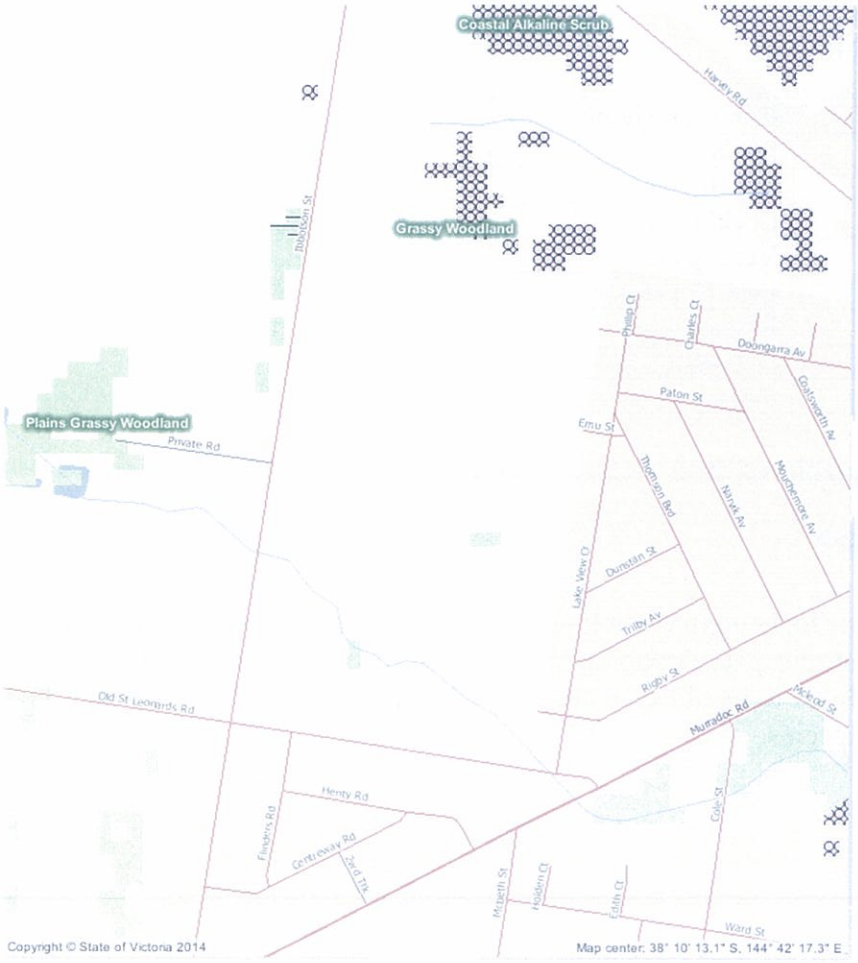

Figure 2. Distribution of year 2005 EVCs (DSE data).

3.2 Plant Species

A total of six indigenous vascular plant species were recorded for the study area. Refer to Table 1 for a list of all recorded indigenous vascular plant species, including conservation significance and location by habitat zone.

Refer to Table 2 for a list of dominant exotic vascular plant species.

Table 1 Indigenous Plant Species, Conservation Status and distribution by Habitat Zone

Botanical Name	Common Name	Status	HZ1	HZ2
Acacia mearnsii	Late Black Wattle	L		*
Acacia paradoxa	Hedge wattle	L		*
Acacia pycnantha	Golden Wattle	L	*	*
Allocasuarina verticillata	Drooping Sheoke	R	*	
Dianella brevicaulis	Coast Flax-lily	L	*	
Rhagodia candolleana	Seaberry Saltbush	L	*	*

Status: L – Local Conservation Significance
R – Regional Conservation Significance

Table 2 Exotic Plant Species

Botanical Name	Common Name
Asparagus asparagoides	Smilax
Cynodon dactylon	Couch-grass
Dactylis glomeratus	Cock's-foot
Ehrharta sp	Veldt-grass
Genista linefolia	Flax-leaf Broom
Pennisetum clandestinum	Kikuyu-grass
Sporobolus indicus	Rat's-tail Grass
Ulex europeus	Gorse

Refer to Plates 1-2 for photographs of the native vegetation.

3.3 Significant Species

No plant species of National or State conservation significance were recorded. A total of one Regionally Significant plant species, i.e. Drooping Sheoke, was recorded. The remaining 5 indigenous species are considered to be of Local conservation significance. Refer to Table 1 for a list of significant plant species.

3.4 Condition of the Vegetation

The current survey results show that areas of 'natural' native vegetation are present that are consistent in terms of vegetation quality and vegetation type. These areas of partially intact native vegetation are comprised of indigenous canopy trees with at least 20% projected foliage canopy cover, and are therefore assessed to be remnant 'patch' vegetation.

This vegetation is defined as follows:

Habitat Zone 1 - Partially intact Drooping Sheoke dominated vegetation – 5 sites.
Habitat Zone 2 - Partially intact Wattle dominated vegetation – 3 sites.

The remainder of the roadside reserve is comprised of exotic vegetation.

4 State

4.1 Native Vegetation Permitted Clearing Regulations

Under Particular Provision (Native Vegetation Clause 52.17) the State has recently gazetted new Native Vegetation Permitted Clearing Regulations 'the Regulations' (to replace the Native Vegetation Management Framework). The reforms 'introduce a risk based approach to assessing applications to remove native vegetation' (DEPI Website I *and* DSE Website ii).

DEPI have produced a range of biodiversity information tools to assess site significance and to assess the potential impacts of any permitted vegetation clearing. The biodiversity information tools are as follows:

- Native Vegetation Extent; the 'area of land covered by native vegetation'.
- Native Vegetation Site Condition; 'comprised of three components, species diversity, structure and function'.
- Native Vegetation Location Risk' 'location risk is calculated on the basis of a set of spatial models describing the importance of suitable habitat within the current extent of native vegetation for many rare or threatened species and native vegetation modeled condition data'.
- Strategic Biodiversity Score; a ' spatially explicit view of strategic biodiversity values', it 'identifies the value of a site relative to the value of all other Victorian locations'.

Refer to Figure 3 for Native Vegetation Location Risk, including discussion of implications for the study area (DSE data).

Implications for the current proposal are discussed as follows.

This report finds that sections of the property are comprised of two habitat zones (in eight patches) of partially intact indigenous vegetation.

Offset calculations for the removal of that vegetation are presented in Appendix 1.

Figure 3. Distribution of vegetation according to 'Location Risk'. Blue equates to 'Location Risk A' (i.e. least risk). (DSE Website i).

4.1.1 Area of Remnant Patch Vegetation

The current survey results show that the area of indigenous vegetation (Habitat Zones 1 and 2) is less than 0.5 in size and is within 'Location A' (DSE Website i). It is assessed to constitute a 'low-risk pathway' vegetation clearing application (DEPI Website i).

The remainder of the study area is comprised of exotic vegetation that is assessed to be degraded.

Refer to Plates 1-2 for photographs of the native vegetation.

4.1.2 Trees

Under the Regulations, any scattered native canopy trees that are proposed to be removed are subject to protection/and or recruitment offsets, depending upon the characteristics of the site.

Scattered trees, that is, mature native canopy trees that exist outside of a patch, are also assessed under the Regulations. Within the Otway Plain bioregion, EVC 175 has *Eucalyptus* spp and *Allocasuarina* ssp as 'canopy trees'.

For practicality, a standard extent amount (i.e. 0.071 ha) has been developed for scattered trees, based on the habitat hectare assessment method.

No scattered trees are proposed to be cleared.

4.1.3 Implications

The current survey results show that the area of indigenous vegetation (Habitat Zones 1 and 2) is assessed to be a 'low risk pathway' vegetation clearance application.

Consequently, in keeping with the Regulations, a Biodiversity Assessment Report has been generated utilizing the Native Vegetation Information Management system on-line tool (DEPI Website ii). This report calculates the strategic biodiversity score of the vegetation and calculates offset requirements.

Refer to Appendix 1 for the Biodiversity Assessment Report.

Offset requirements for the removal of 0.206 ha of patch vegetation are for the generation of a general offset of 0.062 biodiversity equivalence units with a minimum strategic biodiversity score of 0.335, to be located within the Corangamite CMA region.

It is intended that offset be secured via a 3rd party arrangement or a credit register extract from the Native Vegetation Credit Register.

As the vegetation is located on Crown land which is managed by the responsible authority a referral to the DEPI will be required.

5 Conclusions

The study has a history of disturbance.

A total of six indigenous plant species were recorded for the study area.

The vegetation of the study area can be described as follows:

- Eight 'patches' of partially intact remnant indigenous vegetation and/or re-colonized indigenous vegetation (Drooping Sheoke and Wattle dominated vegetation).
- Exotic vegetation that is assessed to be degraded.

The Drooping Sheoke and Wattle dominated sections of the study area are comprised of partially intact native vegetation that accords with EVC 175 Grassy Woodland.
The bioregional conservation status of EVC 175 Grassy Woodland is 'Endangered'
The remainder of the study area is comprised of exotic vegetation

No plant species of National or State conservation significance were recorded. A total of one Regionally Significant plant species, i.e. Drooping Sheoke, was recorded. The remaining 5 indigenous species are considered to be of Local conservation significance.

The current survey results show that the area of indigenous vegetation that is assessed in this report (Habitat Zones 1 and 2) is assessed to be a 'low risk pathway' vegetation clearance application.

Consequently, in keeping with the Regulations, a Biodiversity Assessment Report has been generated utilizing the Native Vegetation Information Management system on-line tool. This report calculates the strategic biodiversity score of the vegetation and calculates offset requirements.

Offset requirements for the removal of 0.206 ha of patch vegetation are for the generation of a general offset of 0.062 biodiversity equivalence units with a minimum strategic biodiversity score of 0.335, to be located within the Corangamite CMA region.

It is intended that offset be secured via a 3rd party arrangement or a credit register extract from the Native Vegetation Credit Register.

As the vegetation is located on Crown land which is managed by the responsible authority a referral to the DEPI will be required.

There are not considered to be any significant limitations to this survey.

6 References

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Corangamite Catchment Management Authority (2005). 'Corangamite Native Vegetation Plan' CCMA, Colac, Victoria.

DEPI Website i.
http://www.depi.vic.gov.au/environment-and-wildlife/biodiversity/native-vegetation/native-vegetation-permitted-clearing-regulations

DEPI Website ii.
http://nvim.depi.vic.gov.au/

DEPI Website iii.
http://www.depi.vic.gov.au/__data/assets/pdf_file/0010/198964/Meeting-the-moderate-and-high-risk-based-pathway-application-requirements.pdf

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