

**10 KLAUER STREET, SEAFORD:  
HABITAT HECTARE ASSESSMENT AND  
NET GAIN ANALYSIS**

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## 1. EXECUTIVE SUMMARY

Norwood Hall Pty Ltd, on behalf of Harvey Norman Pty Ltd, engaged Brett Lane and Associates Pty Ltd to conduct a habitat hectare assessment and net gain analysis for a 0.8 hectare parcel of land at 10 Klauer Street, Seaford – a property proposed for warehouse development.

The study area has previously been used as a golf driving range. Observed vegetation consisted of introduced lawn species (such as Kikuyu) and common garden weeds (such as Ribwort) across the vast majority of the most of the study area. Around the north and eastern perimeter of the study area the vegetation consisted primarily of planted native trees (such as Blackwood and Spotted Gum) and colonising native shrubs (such as Coast Tea-tree and Coast Wattle). However, there was a light scattering of remnant indigenous trees (such as Coast Manna-gum and Coast Banksia) (see Figure 1).

The field assessment recorded 22 species of plants, 4 (18%) of which were indigenous and 12 (82%) of which were introduced (including non-indigenous native) in origin. These are listed in Appendix 1. No rare or threatened flora species and no remnant patches of native vegetation were detected during the current field survey.

A total of three scattered trees occurred within the study area (Figure 1), of which one was very large, one was large, and one was small compared to the benchmark large tree diameter at breast height (DBH) for Heathy Woodland (EVC 48) of 50 centimetres for Coast Manna-gum and 40 centimetres for Coast Banksia (Appendix 3). These trees will be removed by the approved development and will need to be offset.

In addition, three scattered trees on the adjacent property to the east have their root zones within the study area. These trees are therefore likely to be impacted by development within the study area and will also need to be offset. Two of these trees were Large and one was Medium in size compared to the benchmark.

Under Clause 52.17, a planning permit would be required to remove six scattered indigenous trees and the scattered native plants within the study area. The current development proposal would not trigger a referral to DSE.

The offset target for the removal of the six trees involves the permanent protection of two Very large trees, three Large trees and one Medium tree and the recruitment of 50 indigenous plants (with 15% to be canopy species) or the recruitment of 209 indigenous plants (with 15% to be canopy species).

The most appropriate offset strategy would involve providing a financial contribution to the responsible authority for their use in delivering an offset elsewhere. This arrangement would need to be negotiated with the responsible authority.

The provisions of the EPBC Act, FFG Act and EE Act do not currently apply to the study area. Therefore no referrals or licences are required under these pieces of legislation.

## 2. INTRODUCTION

Norwood Hall Pty Ltd, on behalf of Harvey Norman Pty Ltd, engaged Brett Lane and Associates Pty Ltd to conduct a habitat hectare assessment and net gain analysis for a 0.8 hectare parcel of land at 10 Klauer Street, Seaford – a property proposed for warehouse development.

This investigation was commissioned to provide information on the extent and condition of native vegetation in the study area and outline any implications under various national, state and local legislation and policy. Of particular focus is any implications of the proposal under Victoria's Native Vegetation Management Framework (DNRE 2002), referred to herein as the 'Framework'.

Specifically, the scope of the investigation included:

- A review of existing information on the site's flora will be reviewed (e.g. DSE's Flora Information System and EPBC Act Protected Matters Search Tool);
- A site survey involving:
  - Identification of the extent, type and condition of any remnant vegetation;
  - Mapping of habitat zones and habitat scoring to ascertain vegetation condition in each habitat zone, consistent with the methodology required for net gain analysis under the state vegetation planning provisions; and
  - Searches for rare and threatened flora species within areas of remnant native vegetation that may be affected by the proposed redevelopment;
- Preparation of a map of the site, showing the results of the assessment.
- Preparation of this report that includes:
  - A statement of the methods used and sources of information for the investigation, including any limitations, where applicable;
  - The results of the survey and review of existing information, documenting the flora and native vegetation of the site;
  - Discussion of the implications of the findings, specifically addressing relevant legislative and policy requirements; and
  - Quantification of the extent and habitat score of vegetation to be removed by one development layout.
  - A net gain analysis to identify offset obligations arising from the vegetation removal associated with this layout.
  - Recommendations for mitigation and management strategies, as well as any further investigation, if required.
- The report will be finalised to a form suitable to accompany a planning permit application taking into account comments and feedback.

This report is divided into the following sections:

**Section 3** describes the sources of information, including the methods used for the field survey.

**Section 4** provides an overview of the characteristics of the study area.

**Section 5** presents the investigation results, describing the flora of the study area.

**Section 6** discusses the implications of the findings under relevant Commonwealth, State and local legislation and policies.

**Section 7** provides recommendations to inform the design process and assist the development of a minimum impact proposal.

This investigation was undertaken by a team from Brett Lane & Associates Pty Ltd, comprising Alan Brennan (Senior Ecologist) and Francisco D'Elia (GIS Analyst).

### 3. SOURCES OF INFORMATION

This section identifies the sources of information and methodologies used to assess flora in this assessment. Only vascular plants were considered during this assessment.

#### 3.1. Existing information

Existing information regarding flora utilised as part of this investigation is described below. Note that 'study area' refers to the 10 Klauer Street, Seaford. Existing information has been obtained from a wider area, termed the 'search region' defined for this assessment as an area with radius 10 kilometres from the approximate centre point of the study area of coordinates: latitude 38° 07' 04" S and longitude 145° 08' 38" E.

##### 3.1.1. Flora

Flora records from the Viridans Flora Information System (FIS), a database administered by the Department of Sustainability and Environment were obtained. This database search listed all plant species, including rare and threatened plants found in the search region.

The likelihood of suitable habitat in the study area for nationally threatened flora species was ascertained through a search of the online *Environment Protection and Biodiversity Conservation Act 1999* Protected Matters Search Tool (DEWHA 2009) using the same search region.

Plant taxonomy used throughout this report follows the FIS standards.

##### 3.1.2. Ecological Vegetation Classes

Pre-1750 (pre-European settlement) vegetation mapping was reviewed to determine the type of native vegetation likely to occur in the study area. Information on Ecological Vegetation Classes was obtained from published EVC benchmarks. These sources included:

- Relevant EVC benchmarks for the Gippsland Plain bioregion<sup>1</sup> (DSE 2009a); and
- Biodiversity Interactive Maps (DSE 2009b).

#### 3.2. Field methodology

The field assessment was conducted in mid-April 2009. During the field assessment, the study area was inspected on foot.

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<sup>1</sup> A bioregion is defined as "a geographic region that captures the patterns of ecological characteristics in the landscape, providing a natural framework for recognising and responding to biodiversity values". In general bioregions reflect underlying environmental features of the landscape (DNRE 1997).

### 3.2.1. Flora species

Incidental records of flora species were made based on intuitive sampling methods within all vegetation types and landforms. Specimens requiring identification using laboratory techniques were collected.

### 3.2.2. Defining and assessing native vegetation

Native vegetation in Victoria has been defined by the DSE as belonging to three categories. These are:

- Remnant patch;
- Scattered trees; and
- Degraded treeless vegetation.

These categories are described in detail below, together with the method DSE prescribes for their assessment.

#### Remnant Patch

Remnant patches of remnant native vegetation are composed of indigenous plant species considered part of a clearly definable Ecological Vegetation Class (EVC). Such vegetation includes remnant vegetation with the following attributes:

- Proportion of indigenous understorey species being greater than 25% total understorey cover (excluding bare ground); and/or
- Indigenous canopy trees with at least 20% projected foliage canopy cover (DSE 2007a).

Assessment of remnant patch vegetation involves the habitat scoring or habitat hectare method (Parkes *et al.* 2003; DSE 2004). This entails assessing the components of native vegetation (e.g. tree canopy, understorey and ground cover) against a DSE-issued EVC benchmark (see appendices) that described the notional pre-European condition of that EVC. The score effectively measures the percentage resemblance of the vegetation to its original condition.

The habitat hectare score assists in defining the value of remnant native vegetation for assessing its conservation significance and for calculating offsets if removal of native vegetation is approved.

#### Scattered trees

Scattered trees comprise indigenous trees with projected foliage canopy cover less than 20% and total cover of indigenous species (excluding bare ground) is less than 25% (DSE 2007a).

Scattered trees are counted and their diameter recorded at 1.3 metres above ground level (diameter at breast height or DBH). The size class of scattered trees (based on DBH) is determined based on the large tree DBH in the relevant benchmark for the EVC to which it once belonged.

#### Degraded treeless vegetation

Degraded treeless vegetation comprises all other vegetation (DSE 2007a). This category includes the following:



- Treeless vegetation with less than 25% total cover of indigenous species (excluding bare ground); or
- Treeless vegetation that has greater than 25% total cover of indigenous species (excluding bare ground) but is dominated by a small number of opportunistic native species which were unlikely to have been dominant prior to a disturbance event (e.g. cropping).

### **3.3. Limitations of field assessment**

Flora field surveys usually fail to record all species present for various reasons, including the seasonal absence of some species and short survey duration. Rare or cryptic species are often missed in short surveys.

Detailed flora surveying was carried out in autumn, when many annual and spring-emergent plant species may have been absent or in the senescent stage of their life cycle and lacking essential identification characteristics. The timing of the survey and condition of vegetation was otherwise considered suitable to ascertain the extent and quality of native vegetation.

Wherever appropriate, a precautionary approach has been adopted in the discussion of implications. That is, where insufficient evidence is available on the occurrence or likelihood of occurrence of a species, it is assumed that it could be in an area of habitat, if suitable, and the implications under legislation and policy are considered accordingly.

#### 4. SITE DESCRIPTION

The study area for this investigation is approximately 0.8 hectares of freehold land located at Seaford, approximately 36 km south-east of Melbourne. It is bordered by Klauer Street and a bitumen carpark to the south, vacant land to the west (that was previously a golf driving range) and existing urban development on all other sides.

The study area has previously been used as part of a golf driving range. Surrounding land predominantly supports warehousing and residential uses. The study area was composed of sandy soils on a flat landscape.

Observed vegetation consisted of introduced lawn species (such as Kikuyu) and common garden weeds (such as Ribwort) across the vast majority of the most of the study area. Around the perimeter of the study area the vegetation consisted primarily of planted native trees (such as Blackwood and Spotted Gum) and colonising native shrubs (such as Coast Tea-tree and Coast Wattle). However, there was a light scattering of remnant indigenous trees (such as Coast Manna-gum and Coast Banksia) (see Figure 1).

Other than a small patch of native vegetation on the property to the immediate east, the study area is isolated from other habitat in the region by urban development. The next nearest habitat is 1 km to the south at the Long Island Country Club and 2 km to the south-east at The Pines Flora and Fauna Reserve.

The study area lies within the Gippsland Plain bioregion and falls within the Port Phillip and Westernport catchment. It is currently zoned Industrial 1 Zone (INZ1) in the Frankston planning scheme. No overlays relevant to this investigation cover the study area.

## 5. FLORA OF THE STUDY AREA

This section describes the flora of the study area based on the review of existing information and the field investigations.

### 5.1. Vegetation assessment

#### 5.1.1. Flora species

The field assessment recorded 22 species of plants, 4 (18%) of which were indigenous and 18 (82%) of which were introduced (including non-indigenous native) in origin. These are listed in Appendix 1.

Flora Information System records and the EPBC Protected Matters Search Tool indicate that within the search region there are records of, or there occurs potential habitat for, 22 rare or threatened flora species. No rare or threatened flora species were detected during the current field survey.

The likelihood of occurrence in the study area of threatened species listed under the state *Flora and Fauna Guarantee Act 1988* or the federal *Environment Protection and Biodiversity Conservation Act 1999* is addressed in Table 1. These species are either known to occur in the broader search region or suitable habitat has been identified in the broader search region in the Protected Matters Search Tool (DEWHA 2009).

This analysis of the likelihood of occurrence of flora species listed under the FFG Act and EPBC Act indicates that suitable habitat does not occur on site for any threatened species. It is therefore considered that no flora species listed under the EPBC Act and/or FFG Act have the potential to occur in the study area.

Based on the FIS search results, 22 species of rare or threatened plants listed on the DSE advisory list occur in the search region. No such species were recorded in the study area.

Table 1: FFG Act and EPBC Act listed flora species and likelihood of occurrence

Common Name	Scientific Name	Conservation status		Preferred habitat	Likelihood of occurrence
		FFG Act	EPBC Act		
Frankston Spider-orchid	<i>Caladenia robinsonii</i>	f	E	Only one remaining population near Rosebud. Grows in Tall heathland dominated by <i>Lepidosperma laevigatum</i> and <i>Acacia sophorae</i> on low (grey) sandy ridges (Entwisle 1994).	No habitat recorded – <b>unlikely to occur</b>
Purple Diuris	<i>Diuris punctata</i> var. <i>punctata</i>	f		Plains country with low heathland or grassland, on heavy soils, with or without trees (Bishop 1996).	No habitat recorded – <b>unlikely to occur</b>
Swamp Fireweed	<i>Senecio psilocarpus</i>		V	Herb-rich winter-wet swamps on volcanic clays or peaty soils (Walsh 1999).	No habitat recorded – <b>unlikely to occur</b>

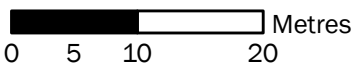
**Key to abbreviations:** EPBC – Status under EPBC Act; C – Critically Endangered; E – Endangered; V – Vulnerable; FFG (f) – Listed as threatened under FFG Act





Legend

- Study area
- Scattered trees to be impacted upon by development



<b>Figure 1 : Study area and native vegetation</b>		
10 Klauer Street, Seaford		
Client: Harvey Norman Pty Ltd & Norwood Hall Pty Ltd		
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### 5.1.2. Ecological Vegetation Classes

Pre-European EVC mapping (DSE 2009a) indicates that the study area and surrounds would have supported Heathy Woodland (EVC 48) prior to European settlement based on modelling of factors including rainfall, aspect, soils and remaining vegetation.

The current investigation found that no remnant patches of native vegetation were identified in the study area.

However, the presence of scattered trees that would have once comprised the canopy of Heathy Woodland (EVC 48) suggested that this form of vegetation would indeed have once been present.

Heathy Woodland (EVC 48) has a bioregional conservation status of Least Concern in the Gippsland Plain bioregion. The benchmark for this EVC describes it as “Eucalypt-dominated low woodland to 10 m tall lacking a secondary tree layer and generally supporting a diverse array of narrow or ericoid-leaved shrubs except where frequent fire has reduced this to a dense cover of bracken. Geophytes and annuals can be quite common but the ground cover is normally fairly sparse.” (Appendix 3).

### 5.1.3. Scattered trees

Scattered trees recorded in the study area would have once comprised the canopy component of Heathy Woodland (EVC 48). A total of three scattered trees occurred within the study area (Figure 1), of which one was very large, one was large, and one was small compared to the benchmark large tree diameter at breast height (DBH) for Heathy Woodland (EVC 48) of 50 centimetres for Coast Manna-gum and 40 centimetres for Coast Banksia (Appendix 3). In addition, three scattered trees on the adjacent property to the east have their root zones within the study area and thus are likely to be impacted by development within the study area. Two of these trees were Large and one was Medium in size compared to the benchmark. Scattered trees are listed in Appendix 2 and summarised in Table 2.

**Table 2: Summary of scattered trees in the study area or in the adjoining property but likely to be impacted by development within the study area**

Tree Species	Size Class	EVC	DBH range (cm)	Conservation Significance	Number of trees
Coast Manna-gum	Very Large	48	75 or greater	Low	1
	Large	48	50 to 74	Low	3
Coast Banksia	Medium	48	30 to 39	Low	1
	Small	n/a	29 or less	Low	1

### 5.1.4. Conservation significance according to the Framework

Very large, large and medium scattered trees in the study area are assigned a low conservation significance based on the bioregional conservation status of the EVC to which they once belonged, as presented in Table 2. Small scattered trees are defined as having low conservation significance according to the Framework.



## 6. IMPACTS AND REGULATORY IMPLICATIONS

This section provides an outline of the regulatory issues related to the flora and native vegetation present in the study area. The implications under national, state and local legislation and policies are discussed.

### 6.1. Planning Controls

Removal of native vegetation on allotments of 0.4 hectares or more requires a planning permit under Clause 52.17 of all Victorian Planning Schemes. Before issuing a planning permit, Responsible Authorities are obligated to refer to Clause 15.09 (Protection of Flora and Fauna) in the Planning Scheme. This refers in turn to the Native Vegetation Management Framework, discussed in the following section.

### 6.2. Native Vegetation Management Framework

This part of the report describes the Framework and applies its provisions to the proposed development. The Framework is a state-wide policy, separate from local planning overlays that may also require a permit for the removal of trees or vegetation. In the latter case, different criteria and controls may apply to those described below.

#### 6.2.1. How the Framework operates

Any proposal to remove native vegetation from the study area must demonstrate that the three-step approach of 'Net Gain' outlined in the Framework has been applied. This approach is hierarchical and includes the following principles:

- Adverse impacts on native vegetation should be **avoided**, particularly removal of vegetation;
- Where impacts cannot be avoided, impacts should be **minimised** through responsive planning and design, with input from relevant experts; and
- Appropriate **offsets** need to be identified to compensate for native vegetation removal.

A combination of project design and offsetting should aim to achieve a net gain in the area and quality of native vegetation across Victoria.

Clause 66.02 of the planning scheme determines the role of the DSE in the assessment of indigenous vegetation removal planning permit applications. If an application is referred to the DSE then the Responsible Authority must follow that department's recommendation in relation to that permit application. The criteria presented in Table 3 indicate when the DSE becomes a referral authority.

**Table 3: Application referral criteria**

Applications will be referred to the Department of Sustainability and Environment under the following circumstances:

#### Scattered Trees

- To remove more than 15 trees of DBH less than 40 centimetres
- To remove more than 5 trees of DBH 40 centimetres or greater (DBH = diameter at 1.3 metres above ground)

For the current proposal, a referral to DSE would be triggered if five 5 scattered trees of DBH 40 centimetres or greater were proposed for removal.

The current development proposal involves the removal of all vegetation within the study area and their replacement with a warehouse, related infrastructure and associated landscaping. This will result in the removal of three indigenous trees within the study area and the effective removal of three trees within an adjoining property. Of the six trees to be removed, four have a DBH of 40 centimetres or greater. Therefore, a referral to DSE is unlikely to be triggered.

### 6.2.2. Offset targets for removal of scattered trees

Any approved removal of scattered trees will attract an offset target comprising protection and recruitment components, whereby a prescribed number of trees of the same size class must be protected and recruitment (planting or assisted regeneration) of indigenous plants undertaken. The scale of the offset is determined by the size class of the trees proposed to be removed. Alternatively, in the event that the protection of existing trees is considered not to be feasible, a 'recruit only' offset for tree removal may apply, subject to negotiation with the Responsible Authority.

Offset targets for approved removal of scattered trees, as determined by the Framework and the Port Phillip and Westernport Catchment Management Authority Native Vegetation Plan (PPWCMA 2006), are presented in Appendix 2. A summary of the required offsets is provided in Table 4.

**Table 4: Summary of offset targets for scattered tree removal**

Size Class	Conservation Significance	No. trees to be removed	Protect and Recruit option		Recruit Only option*
			Protect	Recruit*	
Very large	Low	1	2	10	70
Large	Low	3	3	30	105
Medium	Low	1	1	10	30
Small	Low	1	n/a	n/a	4
<b>Totals</b>		<b>6</b>	<b>6</b>	<b>50</b>	<b>209</b>

\* = 15% of plants recruited must be canopy trees

Given the proposed intensity of development within the offset site the most appropriate offset strategy would involve providing a financial contribution to the responsible authority for their use in delivering an offset elsewhere. This arrangement would require negotiating with the responsible authority.

### 6.3. EPBC Act

The *Environment Protection and Biodiversity Conservation Act 1999* contains a list of threatened species and ecological communities that are considered to be of national conservation significance. Any impacts on these species considered significant requires the approval of the Australian Minister for the Environment. If there is a possibility of a significant impact on nationally threatened species or communities or listed migratory species, a Referral under the EPBC Act should be considered. The Minister will decide after 20 business days whether the project will be a 'controlled action' under the EPBC Act, in which case it cannot be



undertaken without the approval of the Minister. This approval depends on a further assessment and approval process (lasting between three and nine months, depending on the level of assessment).

No flora species listed as threatened under the EPBC Act were recorded during the current assessment. No listed flora species are considered likely to occur in the study area because of the absence of suitable habitat.

The provisions of the EPBC Act, therefore, do not currently apply to the study area – no referral under the Act would be required.

#### 6.4. FFG Act

The Victorian *Flora and Fauna Guarantee Act 1988* lists threatened flora and fauna species to provide for their protection and management. The FFG Act has limited direct application to private land. However, Clause 15.09 of the Planning Scheme makes reference to this Act. The local planning authority is likely to consider impacts on FFG Act-listed species and communities when deciding on planning permit applications.

No flora species listed as threatened under the FFG Act were recorded during the current assessment. No listed flora species are considered likely to occur in the study area because of the absence of suitable habitat.

The provisions of the FFG Act, therefore, do not currently apply to the study area – no licence would be required from DSE.

#### 6.5. EE Act

Under the *Environment Effects Act 1978*, proponents are required to prepare a Referral to the state minister for Planning, which will determine if an Environment Effects Statement (EES) is required for the project. Criteria related to flora and fauna are:

- Potential clearing of 10 ha or more of native vegetation from an area with endangered EVC, or vegetation that is or is likely to be, of very high conservation significance according to Victoria's Native Vegetation Management Framework, except where authorised under an approved Forest Management Plan or Fire Protection Plan;
- Potential long-term loss of a significant proportion (1 to 5% depending upon conservation status of species concerned) of known remaining habitat or population of a threatened species in Victoria;
- Potential long-term change to a wetland's ecological character, where that wetland is Ramsar listed, or listed in 'A Directory of Important Wetlands in Australia';
- Potential major effects upon the biodiversity of aquatic ecosystems over the long term; and
- Potential significant effects on matters listed under the *Flora and Fauna Guarantee Act 1988*.

One or a combination of these criteria may trigger a requirement for a Referral to the Victorian Minister for Planning who will determine if an EES is required.

The provisions of the EE Act, therefore, do not currently apply to the study area – no referral under the Act would be required.

## 6.6. DSE advisory lists

Rare and threatened species advisory lists administered by the Department of Sustainability and Environment include flora and fauna species known to be rare or threatened throughout the state. Although the advisory list has no statutory status, the Responsible Authority will consider impacts on any species on the list when assessing a planning application.

No flora species from the *Advisory List of Rare and Threatened Plants in Victoria* (DSE 2005) were recorded from the study area during the current investigation. No listed flora species are considered likely to exist in the study area due to the absence of suitable habitat.

## 7. CONCLUSIONS AND RECOMMENDATIONS

The following section outlines recommendations and mitigations measures to address ecological constraints and issues identified on the site.

### 7.1. Conclusions

Under Clause 52.17, a planning permit would be required to remove six scattered indigenous trees and the scattered native plants within the study area.

The current development proposal would not trigger a referral to DSE.

The offset target involves the permanent protection of two Very large trees, three Large trees and one Medium tree and the recruitment of 50 indigenous plants (with 15% to be canopy species) or the recruitment of 209 indigenous plants (with 15% to be canopy species).

The most appropriate offset strategy would involve providing a financial contribution to the responsible authority for their use in delivering an offset elsewhere. This arrangement would need to be negotiated with the responsible authority.

The provisions of the EPBC Act, therefore, do not currently apply to the study area – no referral under the Act would be required.

The provisions of the FFG Act, therefore, do not currently apply to the study area – no licence would be required from DSE.

The provisions of the EE Act, therefore, do not currently apply to the study area – no referral under the Act would be required.

### 7.2. Mitigation Recommendations

Consideration should be given to including the mitigation measures described below in a construction and operational environmental management plan for the project:

- During any construction all machinery traffic and earthworks should be excluded from the tree protection zones and such zones should be appropriately signed as tree protection zones;
- Any tree pruning should be undertaken by an experience arborist to prevent disease or unnecessary damage to the tree;
- The use of local indigenous plant species, of local genetic provenance, should be considered in the landscaping of any development on the site. Locally indigenous species generally have low water-use requirements, high survival rates and provide habitat to local fauna species. The site provides a large reservoir for seed collection within wetland and forested areas;
- All environmental controls should be checked for compliance on a regular basis.
- Recommendations for tree protection zones and pruning (Treelogic 2008) should be implemented.

## 8. REFERENCES

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**Appendix 1: Flora species recorded in or adjoining the study area and threatened species known (or with the potential) to occur in the search region**

Origin	Common Name	Scientific Name	Conservation Status			Recorded
			FFG	EPBC	VROTS	
*	Barley-grass	<i>Hordeum leporinum</i>				X
#	Blackwood	<i>Acacia melanoxylon</i>				X
	Bronze Bird-orchid	<i>Chiloglottis X pescottiana</i>			r	
*	Cluster Pine	<i>Pinus pinaster</i>				X
	Coast Banksia	<i>Banksia integrifolia</i> subsp. <i>integrifolia</i>				X
	Coast Fescue	<i>Austrofestuca littoralis</i>			r	
	Coast Manna-gum	<i>Eucalyptus viminalis</i> subsp. <i>pryoriana</i>				X
#	Coast Tea-tree	<i>Leptospermum laevigatum</i>				X
#	Coast Wattle	<i>Acacia longifolia</i> subsp. <i>sophorae</i>				X
*	Flatweed	<i>Hypochoeris radicata</i>				X
	Flax Lily	<i>Dianella</i> spp.				X
#	Floating Bladderwort	<i>Utricularia gibba</i>			v	
	Frankston Spider-orchid	<i>Caladenia robinsonii</i>	f	E	e	
	Fringed Helmet-orchid	<i>Corybas fimbriatus</i>			r	
#	Giant Honey-myrtle	<i>Melaleuca armillaris</i> subsp. <i>armillaris</i>			r	
	Grampians Thryptomene	<i>Thryptomene calycina</i>			r	
	Green Leek-orchid	<i>Prasophyllum lindleyanum</i>			v	
	Green Scentbark	<i>Eucalyptus fulgens</i>			r	
	Green-comb Spider-orchid	<i>Caladenia dilatata</i> s.s.			k	
	Grey Spike-sedge	<i>Eleocharis macbarronii</i>			k	
*	Kikuyu	<i>Pennisetum clandestinum</i>				X
	Lacey River Buttercup	<i>Ranunculus amplus</i>			r	

#	Lemon-scented Tea-tree	Leptospermum petersonii				X
	Lizard Orchid	Burnettia cuneata			r	
	Mentone Greenhood	Pterostylis X toveyana			v	
*	Paspalum	Paspalum dilatatum				X
	Prawn Greenhood	Pterostylis pedoglossa			v	
	Purple Diuris	Diuris punctata var. punctata	f		v	
*	Ribwort	Plantago lanceolata				X
#	River Sheoak	Allocasuarina cunninghamiana			X	
*	Rye Grass	Lolium spp.				X
#	Smooth Nardoo	Marsilea mutica			k	
#	Southern Blue-gum	Eucalyptus globulus				X
	Southern Bristle-sedge	Chorizandra australis			k	
*	Sow-thistle	Sonchus sp.				X
	Spiny-headed Mat-rush	Lomandra longifolia				X
#	Spotted Gum	Corymbia maculata				X
#	Sticky Wattle	Acacia howittii			r	
	Swamp Fireweed	Senecio psilocarpus		V	v	
#	Sydney Blue Gum	Eucalyptus saligna				X
	Upright Panic	Entolasia stricta			k	
#	Victorian Blue Gum	Eucalyptus bicostata				X
#	Willow Myrtle	Agonis flexuosa				X
	Yarra Gum	Eucalyptus yarraensis			r	

\* = introduced species; # = native species occurring outside of natural range; **FFG (f)** = Listed as threatened under FFG Act; **EPBC** = Status under EPBC Act; **DSE** = Status in DSE Advisory List; **C** = critically endangered; **E, e** = endangered; **V, v** = vulnerable; **R, r** = rare; **k** = insufficiently known

## Appendix 2: Scattered trees in the study area

Tree no.	Common Name	DBH (cm)	Size Class	Conservation Significance	Objective	Offset target if removed		
						Protect and Recruit option		Recruit Only option (no. plants)*
						Protect (no. trees)	Recruit (no. plants)*	
26	Coast Manna-gum	79	Very large	Low	Remove	2	10	70
27	Coast Manna-gum	61	Large	Low	Remove	1	10	35
28	Coast Banksia	12	Small	Low	Remove	na	na	4
30	Coast Banksia	~30	Medium	Low	On adjacent property, root zone within study area - retain but offset	1	10	30
31	Coast Manna-gum	~68	Large	Low	On adjacent property, root zone within study area - retain but offset	1	10	35
32	Coast Manna-gum	~65	Large	Low	On adjacent property, root zone within study area - retain but offset	1	10	35
					<b>Totals</b>	<b>2 Very large 3 Large 1 Medium</b>	<b>50</b>	<b>209</b>

DBH = Diameter at breast height (130 cm from the ground)

\* = 15% of plants must be canopy species

### Appendix 3: EVC benchmarks

- Heathy Woodland (EVC 48) – Gippsland Plain bioregion



# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Gippsland Plain bioregion

### EVC 48: Heathy Woodland

#### Description:

Spans a variety of geologies but is generally associated with nutrient-poor soils including deep uniform sands (aeolian or outwash) and Tertiary sand/clay which has been altered to form quartzite gravel. Eucalypt-dominated low woodland to 10 m tall lacking a secondary tree layer and generally supporting a diverse array of narrow or ericoid-leaved shrubs except where frequent fire has reduced this to a dense cover of bracken. Geophytes and annuals can be quite common but the ground cover is normally fairly sparse.

#### Large trees:

Species	DBH(cm)	#/ha
<i>Eucalyptus</i> spp.	50 cm	15 / ha
<i>Banksia serrata</i>	40 cm	

#### Tree Canopy Cover:

%cover	Character Species	Common Name
10%	<i>Eucalyptus willisii</i>	Jimmy's Shining Peppermint
	<i>Eucalyptus obliqua</i>	Messmate Stringybark
	<i>Eucalyptus radiata</i> s.l.	Narrow-leaf Peppermint
	<i>Eucalyptus viminalis</i> ssp. <i>pryoriana</i>	Rough-barked Manna Gum
	<i>Banksia serrata</i>	Saw Banksia

#### Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Medium Shrub	5	30%	MS
Small Shrub	5	20%	SS
Medium Herb	2	5%	MH
Small or Prostrate Herb	2	5%	SH
Large Tufted Graminoid	1	5%	LTG
Large Non-tufted Graminoid	1	1%	LNG
Medium to Small Tufted Graminoid	1	5%	MTG
Medium to Tiny Non-tufted Graminoid	2	5%	MNG
Ground Fern	1	5%	GF
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	10%	S/C

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Epacris impressa</i>	Common Heath
MS	<i>Leptospermum myrsinoides</i>	Heath Tea-tree
MS	<i>Leptospermum continentale</i>	Prickly Tea-tree
MS	<i>Monotoca scoparia</i>	Prickly Broom-heath
SS	<i>Amperea xiphoclada</i> var. <i>xiphoclada</i>	Broom Spurge
SS	<i>Leucopogon virgatus</i>	Common Beard-heath
SS	<i>Dillwynia glaberrima</i>	Smooth Parrot-pea
LTG	<i>Gahnia sieberiana</i>	Red-fruit Saw-sedge
MTG	<i>Xanthorrhoea minor</i> ssp. <i>lutea</i>	Small Grass-tree
MNG	<i>Hypolaena fastigiata</i>	Tassel Rope-rush
SC	<i>Cassytha glabella</i>	Slender Dodder-laurel

# EVC 48: Heathy Woodland - Gippsland Plain bioregion

**Recruitment:**

Episodic/Fire. Desirable period between disturbances is 20 years.

**Organic Litter:**

40 % cover

**Logs:**

15 m/0.1 ha.

**Weediness:**

There are no consistent weeds in this EVC.

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