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LAND MANAGEMENT STRATEGY

**BARWON HEADS GOLF COURSE
BARWON HEADS**

PREPARED FOR:
BARWON HEADS GOLF CLUB



ÖKOLOGIE CONSULTING



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Document Information

Land Management Strategy for Barwon Heads Golf Course, Barwon Heads

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Executive Summary

Okologie Consulting Pty Ltd was engaged by The Barwon Heads Golf Club to prepare a Land Management Strategy for Barwon Heads Golf Course, Barwon Heads.

The aim of Barwon Heads Golf Club is to maintain the heritage status of the Barwon Heads Golf Precinct as Australia's first true classic links golf course. To achieve this aim, the key objective of future land management is to enhance native vegetation on non-course land. This strategy outlines how the long-term conservation goals will be achieved through best practice management of native vegetation.

Barwon Heads Golf Course comprises an 18-hole golf course, interspersed with a modified cover of native vegetation and planted exotic trees along fairways. The non-course land includes an extensive cover of Coastal Alkaline Scrub and Coastal Saltmarsh that is contiguous with the Lorne-Queenscliff Coastal Reserve to the south and Murtnagurt Wetlands to the west.

Coast Tea-tree *Leptospermum laevigatum* has long been recognised as a significant environmental weed of non-course land. The assessment of native vegetation identified that Coast Tea-tree is an ecologically out-of-balance species in several areas of Coastal Alkaline Scrub, forming a closed-canopy cover that dominates and out-competes other native canopy and understorey species.

Review of a Net Gain offset site identified the required understorey and recruitment improvement gains had not been achieved. Further, it is not possible to achieve the specified Net Gain targets due to the suppression of understorey species diversity and cover/abundance from the dense Coast Tea-tree canopy cover.

The Club has identified future areas for conservation management, where the aim is to reduce the Coast Tea-tree canopy to ~30% cover and control other priority weed species. The ecological thinning of Coast Tea-tree has been successfully implemented in several conservation work areas across the golf course and clearly demonstrates the effectiveness of this management action in enhancing biodiversity values.

The recommended mechanism for achieving conservation management of native vegetation is through the Conservation Work Exemption under Clause 52.17 (*Native Vegetation*) under the Greater Geelong Planning Scheme. This process will enable the Club to achieve its objective of enhancing native vegetation and maintain the heritage status of the golf course.

The management actions detailed in this strategy will be reviewed after a five-year period. The strategy also includes an annual schedule of management activities, and reporting procedures for ongoing management.



1 Introduction

1.1 Project Background

Okologie Consulting Pty Ltd was engaged by The Barwon Heads Golf Club (BHGC) to prepare a Land Management Strategy for Barwon Heads Golf Course, Barwon Heads.

Land management is a key focus of the BHGC. The club currently undertakes management of native vegetation at several offset sites and conservation works areas, as well as general weed control across the golf course by management staff and volunteer member working groups. The major land management issue for BHGC is control of exotic and native weed species that have impacted the quality of native vegetation on the non-course land.

The aim of the BHGC is to maintain the heritage status of the Barwon Heads Golf Precinct as Australia's first true classic links golf course. To achieve this aim, the key objective of future land management is to enhance native vegetation on non-course land. This strategy outlines how the long-term conservation goals will be achieved through best practice management of native vegetation.

1.2 Objectives

The objectives of the strategy are to:

- Provide detailed mapping of native vegetation across the course.
- Outline a strategy for inclusion of future conservation works areas.
- Address the relevant environmental legislative requirements for future management of native vegetation.
- Detail the process for assessment and enhancement of native vegetation.

1.3 Site Description

The project area comprises the Barwon Heads Golf Course, Golf Links Road, Barwon Heads (Figure 1). It covers approximately 98-hectares and is bound by private property to the north, Ewing Blyth Drive and residential development to the east, 13th Beach Road, Stephens Parade and residential development to the south, and Murtnagurt Wetlands to the west.

The project area comprises an 18-hole golf course, interspersed with a modified cover of native vegetation and planted exotic trees along fairways. The course clubhouse is located on Golf Links Road, with site infrastructure (maintenance sheds) in the central section of the course.



The project area supports an extensive cover of native vegetation that is contiguous with the Lorne-Queenscliff Coastal Reserve to the south and Murtnagurt Wetlands to the west. Murtnagurt Wetlands forms part of the Lake Connewarre Wildlife Reserve, which occurs within the Port Phillip Bay (western shoreline) and Bellarine Peninsula listed Wetland of International Importance (Ramsar Wetlands) (DCCEEW 2023). The project area also supports three Net Gain offset areas and several permitted conservation work areas that are subject to ongoing management by BHGC.

The topography consists of low to moderate undulating slopes towards the southwest. The underlying geology of the project area is composed of calcarenite sandstone and unconsolidated calcareous and silician sand that forms part of a coastal dune extending from Barwon Heads Bluff to Black Rock. The golf course area historically comprised of Calcarenite Dune Woodland that was cleared for agricultural use in the early 1900's. Coast Tea-tree was planted throughout the course in the 1930s to address soil erosion issues and has become the dominant species in non-course areas (Land Management Advisory Committee 2021). The surrounding land use includes residential development and conservation. A section of the golf course has been identified for future development as a 19th hole.

The project area occurs within the Otway Plain bioregion, the Corangamite Catchment Management Authority boundary, and the City of Greater Geelong municipality (DEECA 2023a). The Native Vegetation Location mapping shows the project area occurs within Location 1 and 2 (DEECA 2023b).

The project area is zoned Special Use Zone – Schedule 3 (SUZ3), Neighbourhood Residential Zone – Schedule 6 (NRZ6) and Rural Conservation Zone – Schedule 10 (RCZ10). It is subject to Environmental Significance Overlay – Schedule 2 (ESO2) and Heritage Overlay – HO1650 under the Greater Geelong Planning Scheme (DTP 2023). The land use of the project area is outlined in Table 1.

Table 1: Land use area

Land Use	Zoning	Overlays	Area
Golf course and associated infrastructure	SUZ3	ESO2	50.6 Ha
Coastal Alkaline Scrub	SUZ3	ESO2	28 Ha
Coastal Salt Marsh	SUZ3	ESO2	20 Ha
Proposed 19th hole	SUZ3	None	1.7 Ha
Neighbourhood Residential Zone – Schedule 6	NRZ6	None	1.76 Ha
Total Area			98 Ha

1.4 Previous Reports

Several flora assessment reports and management plans have previously been prepared for the site, including:

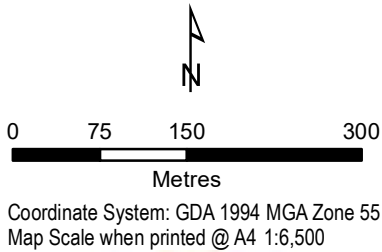


- Flora Survey and Management Recommendations for the Barwon Heads Golf Club (Stockton 2004a).
- Additional Information for the Flora Survey and Management Recommendations for the Barwon Heads Golf Club (Stockton 2004b).
- Terrestrial Flora Environmental Management Plan – Barwon Heads Golf Club Relocated Operations Centre (Mark Trengove Ecological Services 2005).
- Assessment of the remnant vegetation on Barwon Heads Golf Course (Billows 2013).
- Vegetation of the Proposed Barwon Heads Golf Club Course Development Plan Holes 11, 15 and 16, Net Gain Assessment (Mark Trengove Ecological Services 2013a).
- Net Gain Offset Management Plan, Barwon Heads Golf Club Course Development Plan Holes 11, 15 and 16 (Mark Trengove Ecological Services 2013b).
- Offset Site 3A Remnant Patch Offset Management Plan, Barwon Heads Golf Club. First party general offset management plan: Protection and management of remnant patch offset (Mark Trengove Ecological Services 2015a).
- Offset Site 3B Remnant Patch Offset Management Plan, Barwon Heads Golf Club (Mark Trengove Ecological Services 2015b).
- Barwon Heads Golf Course 19th hole ecological assessment (Ecology Australia 2018).
- Review Of Land Management at The Barwon Heads Golf Club' (Land Management Advisory Committee 2021).
- Conservation work exemption application for conservation works at Barwon Heads Golf Course (Okologie Consulting 2021a).
- Review of offset site management works at Barwon Heads Golf Course, Barwon Heads (Okologie Consulting 2021b).

Relevant information from these documents has been cited in this report where appropriate. Detailed history of the site is addressed in the 'Review Of Land Management at The Barwon Heads Golf Club' (Land Management Advisory Committee 2021).

Figure 1
Site Location
Barwon Heads Golf Course,
Barwon Heads

Legend
 Subject Site



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2 Methodology

2.1 Species Information

Scientific and common names of flora species and terrestrial vertebrate fauna follow the Victorian Biodiversity Atlas (VBA) (DEECA 2023c). Vegetation communities follow the Ecological Vegetation Class (EVC) bioregion benchmarks (DEECA 2023a).

Native (terrestrial) flora and fauna species and vegetation communities referred to as 'threatened' include:

- Listed as critically endangered, endangered or vulnerable under the *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act) (DCCEEW 2023).
- Listed as Threatened with a threat category of critically endangered; endangered or vulnerable under the *Flora and Fauna Guarantee Act 1988 – Threatened List* (FFG Act) (DELWP 2022).

2.2 Desktop Assessment

A desktop assessment was undertaken of relevant databases and other resources:

- NatureKit for modelled biodiversity data (DEECA 2023a).
- Native Vegetation Information Management system tool for native vegetation information (DEECA 2023b).
- Planning Schemes Online for planning information (DTP 2023).
- The VBA for threatened flora and fauna species records (DEECA 2023c).
- The Protected Matters Search Tool (PMST) for Matters of National Environmental Significance (MNES) under the EPBC Act (DCCEEW 2023).
- Relevant environmental legislation, policies and strategies.

2.3 Field Assessment

The field assessment was undertaken on 18 November 2022. The project area was traversed on foot to determine the extent of native vegetation and ascertain the presence of any listed threatened flora or fauna species or associated habitats. The extent of native vegetation was mapped using a Trimble Catalyst DA1 differential GPS (sub-metre accuracy post-processing) and recorded to MGA 94, Zone 55 coordinate system. EVCs were determined by reference to the relevant bioregion mapping and benchmarks descriptions, and review of remnant vegetation in the local area.



2.4 Assessment Guidelines

The *Guidelines for the removal, destruction or lopping of native vegetation* (the Guidelines) (DELWP 2017) has been incorporated into the Victoria Planning Provisions and all planning schemes in Victoria. The purpose of the Guidelines is to set out and describe the application of Victoria's statewide policy in relation to assessing and compensating for the removal of native vegetation in response to permit applications under Clause 52.17.

Native vegetation is defined in Clause 72 of the Victoria Planning Provisions as *plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses*. Plants from other states or overseas are not native and the permitted clearing regulations do not apply if they are being removed (DELWP 2017). The Guidelines considers the biodiversity value of native vegetation by measuring the following two components:

- Site-based information that can be measured or observed at a site.
- Landscape scale information that cannot be measured or observed at the site and is included in maps and models (DELWP 2017).

Under the Guidelines native vegetation is classified as a *patch* or *scattered tree*.

A patch of native vegetation is:

- An area of vegetation where at least 25 per cent of the total perennial understorey plant cover is native¹; or
- Any area with three or more native canopy trees² where the drip line³ of each tree touches the drip line of at least one other tree, forming a continuous canopy; or
- Any mapped wetland included in the Current wetlands map.

A scattered tree is:

- A native canopy tree that does not form part of a patch (DELWP 2017).

¹ Plant cover is the proportion of the ground that is shaded by vegetation foliage when lit from directly above. Areas that include non-vascular vegetation (such as mosses and lichens) but otherwise support no native vascular vegetation are not considered to be a patch for the purposes of the Guidelines. However, when non-vascular vegetation is present with vascular vegetation, it does contribute to cover when determining the percentage of perennial understorey plant cover.

² A native canopy tree is a mature tree (i.e. it is able to flower) that is greater than 3 metres in height and is normally found in the upper layer of the relevant vegetation type.

³ The drip line is the outermost boundary of a tree canopy (leaves and/or branches) where the water drips on to the ground (DELWP 2017).



2.5 Limitations

The preferred survey period for undertaking vegetation assessments in Victoria is spring, which maximises the likelihood of detecting all flora species within a site. Flora surveys provide a valuable 'snapshot' of vegetation at a point in time; however, the limitations of seasonal influence on the presence/absence of flora species (particularly annuals or cryptic species) must be considered. The short duration of the assessment limited the opportunity to observe migratory, transitory or uncommon fauna species.

The information outlined in this report relies on the accuracy of ecological database information, GIS layers and spatial imagery. To minimise potential errors, the most current available data was obtained from relevant sources.

The Department of Energy, Environment and Climate Action (DEECA) bioregion and EVC mapping are subject to inherently broad environmental and ecological parameters used in the mapping process. Where the observed EVC was not reflective of what would be expected from EVC mapping and classification, it was attributed to the most appropriate EVC based on combination of its floristic, life form and ecological characteristics, and particular environmental conditions.



3 Ecological Values

3.1 Ecological Vegetation Classes

NatureKit (DEECA 2023a) modelling identifies the pre-1750 EVC mapping for the project area predominantly comprised of Coastal Alkaline Scrub (EVC 858) and Coastal Saltmarsh/Mangrove Shrubland Mosaic (EVC 302). Extant (2005) EVC mapping shows a modified cover of Coastal Alkaline Scrub, and a relatively intact cover of Coastal Saltmarsh/Mangrove Shrubland Mosaic in the immediate surrounds (DEECA 2023a).

Native vegetation within the project area was attributed to Coastal Alkaline Scrub and Coastal Saltmarsh (EVC 9) based on floristic, life form and ecological characteristics, and soil type (Figure 2).

3.2 Vegetation Condition

The project area has been modified from use as a golf course and comprises an extensive cover of Coastal Alkaline Scrub and Coastal Saltmarsh, with planted exotic trees also present. Coastal Alkaline Scrub and Coastal Saltmarsh are contiguous with the Lorne-Queenscliff Coastal Reserve to the south and Murtnagurt Wetlands to the west (Figures 2a to 2h).

Coastal Alkaline Scrub

Coastal Alkaline Scrub covers approximately 28-hectares and occurs as narrow linear strips along golf course fairways, with an extensive cover along the southern and eastern boundaries. Native species composition and cover varied considerably within patches, depending on the extent of disturbance from exotic and native weed invasion or conservation management.

Coastal Alkaline Scrub along the southern section of the project area (including two of the offset areas) was highly modified and dominated by Coastal Tea-tree *Leptospermum laevigatum* to five-metres tall. The shrub layer included a sparse cover (<5%) of Coast Beard-heath *Leucopogon parviflorus* and Coastal Wattle *Acacia longifolia* subsp. *sophorae*, with exotic Italian Buckthorn *Rhamnus alaternus*, Myrtle-leaf Milkwort *Polygala myrtifolia* also present. The ground layer was absent in several areas, and where present comprised a scattered cover (~5%) of native Seaberry Saltbush *Chenopodium candolleanum*, Bower Spinach *Tetragonia implexicoma*, Coast Sword-sedge *Lepidosperma gladiatum* and Small-leaved Clematis *Clematis microphylla*, interspersed with exotic Hare's Tail-grass *Lagurus ovatus*, Panic Veldt-grass *Ehrharta erecta*, Perennial Veldt-grass *Ehrharta calycina*, Large Quaking-grass *Briza maxima*, and Sow Thistle *Sonchus oleraceus* (Plates 1 to 4).



Coastal Alkaline Scrub to the immediate north of the maintenance sheds consisted of Coastal Tea-tree and Coastal Wattle shrubs, with Italian Buckthorn *Rhamnus alaternus*, Green Honey-myrtle *Melaleuca diosmifolia*, Sweet Pittosporum *Pittosporum undulatum*, African Boneseed *Chrysanthemoides monilifera* subsp. *monilifera* and Myrtle-leaf Milkwort also present. The ground layer was dominated by exotic Cocksfoot *Dactylis glomerata*, Prairie Grass *Bromus catharticus*, Toowoomba Canary Grass *Phalaris aquatica*, Paspalum *Paspalum dilatatum*, Great Brome *Bromus diandrus*, Perennial Veldt-grass, Flat Weed *Hypochoeris radicata*, Burr Medic *Medicago polymorpha* and Bridal Creeper *Asparagus asparagoides* (Plate 5 and 6).

Patches of Coastal Alkaline Scrub in conservation work areas comprised a diverse species cover (compared to the EVC benchmark), and included Moonah *Melaleuca lanceolata* subsp. *lanceolata*, Coast Rice-flower *Pimelea serpyllifolia*, Common Boobialla *Myoporum insulare*, Coast Rosemary *Westringia fruticosa*, Slender Bush-pea *Pultenaea tenuifolia*, Coast Pomaderris *Pomaderris paniculosa* subsp. *paralia*, Kangaroo Apple *Solanum aviculare*, Silky Guinea-flower *Hibbertia sericea*, Coast Beard-heath, Coast Tea-tree, Seaberry Saltbush, Bower Spinach, Coast Sword-sedge, Coast Flax-lily *Dianella brevicaulis*, Coast Tussock-grass *Poa poiformis*, Bristly Wallaby-grass *Rytidosperma setaceum*, Knobby Club-sedge *Ficinia nodosa*, Coast Spear-grass *Austrostipa flavescens*, Coast Twin-leaf *Roepera billardierei*, Karkalla *Carpobrotus rossii*, Bidgee Widgee *Acaena novae-zelandiae*, Running Postman *Kennedia prostrata*, Kidney Weed *Dichondra repens*, Coast Swainson-pea *Swainsonia lessertiifolia*, Climbing Lignum *Muehlenbeckia australis* and Small-leaved Clematis. Exotic species cover (~10%) included Large Quaking-grass *Briza maxima*, Hare's Tail-grass, Yorkshire Fog-grass, Perennial Veldt-grass, Sow Thistle and Flat Weed *Hypochoeris radicata* (Plates 7 to 10). Small, isolated patches of Coastal Alkaline Scrub typically included Moonah or Coast Tea-tree in the shrub layer, with an exotic dominated ground layer.

Coastal Saltmarsh

Coastal Saltmarsh covers approximately 20-hectares and extends across the northern and western section of the project area, and in low depressions on the golf course. The vegetation was dominated by Sea Rush *Juncus kraussii*, Prickly Spear-grass *Austrostipa stipoides*, Coast Tussock-grass, Knobby Club-sedge, Coast Blown-grass *Lachnagrostis billardierei* ssp. *billardierei*, Creeping Brookweed *Samolus repens*, Australian Salt-grass *Distichlis distichophylla*, with Coast Beard-heath and Common Boobialla shrubs occasionally present. Exotic species included Hastate Orache *Atriplex prostrata*, Buffalo Grass *Stenotaphrum secundatum*, Couch Grass *Cynodon dactylon*, and Hare's Tail-grass (Plates 11 and 12).

Predominantly Introduced Vegetation

The golf course was generally dominated by exotic grasses, although a scattered cover (<5%) of indigenous Australian Salt-grass, Bristly Wallaby-grass and Weeping Grass *Microlaena stipoides* var. *stipoides* were occasionally present along the margins of the



fairways. Planted exotic Monterey Cypress *Hesperocyparis macrocarpa* trees extend along several fairways, with Aleppo pine *Pinus halepensis* also present. The understorey in these areas was highly modified and dominated by exotic grasses, interspersed with a scattered cover of native Seaberry Saltbush, Bower Spinach and Bristly Wallaby-grass.

3.3 Threatened Flora Species

The VBA (DEECA 2023c) contains records of 21 listed threatened flora species in local area within a five-kilometre radius of the project area. The PMST (DCCEEW 2023) identified 16 EPBC Act listed flora species or species habitats as likely to occur within the local area.

Six listed threatened flora species, Leafy Greenhood *Pterostylis cucullata* subsp. *cucullata*, Salt Lawrencia *Lawrencia spicata*, Paper Flower *Thomasia petalocalyx*, Coast Twin-leaf *Zygophyllum billardiarei*, Velvet White Correa *Correa alba* var. *pannosa* and Coast Wirilda *Acacia uncifolia*, have been previously recorded within the project area. Leafy Greenhood is listed as vulnerable under the EPBC Act and is listed as Threatened with a threat category of endangered in Victoria (DELWP 2022). Paper Flower, Salt Lawrencia, Coast Twin-leaf, Coast Wirilda and Velvet White Correa are all listed as Threatened with a threat category of endangered in Victoria (DELWP 2022). There is a low likelihood of occurrence for any additional listed threatened flora species due to the modified condition of habitat.

3.4 Threatened Fauna Species

The VBA (DEECA 2023c) contains records of 51 listed threatened fauna species in the local area. The PMST (DCCEEW 2023) identified 50 (terrestrial) EPBC Act listed fauna species or species habitats as likely to occur within the local area. No listed threatened (terrestrial) fauna species have been recorded with the project area; however, several waterbird species are likely to occur in Coastal Saltmarsh habitat to the north of the golf course (associated Lake Murtnagurt) on an occasional basis.

3.5 Threatened Ecological Communities

Commonwealth Listed Ecological Communities

Review of the PMST (DCCEEW 2023) identified six EPBC Act listed ecological communities may or are known to occur within the local area:

- *Grassy Eucalypt Woodland of the Victorian Volcanic Plain* (Critically Endangered).
- *Natural Temperate Grassland of the Victorian Volcanic Plain* (Critically Endangered).



- Natural Damp Grassland of the Victorian Coastal Plains (Critically Endangered).
- *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* (Critically Endangered).
- *Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains* (Critically Endangered).
- *Giant Kelp Marine Forests of South East Australia* (Endangered).

Native vegetation within the project area does not meet the criteria or threshold requirements for any EPBC Act listed ecological communities.

State Listed Ecological Communities

Coastal Alkaline Scrub within the project area classifies as Coastal Moonah (*Melaleuca lanceolata* subsp. *lanceolata*) Woodland Community, listed as Threatened under the FFG Act (DELWP 2022) (mapped as Coastal Alkaline Scrub on Figures 2a-2h).



Plate 1: Coastal Alkaline Scrub in the offset area to the south



Plate 2: Coastal Alkaline Scrub in the offset area to the south



Plate 3: Coastal Alkaline Scrub in the offset area to the south



Plate 4: Coastal Alkaline Scrub in the offset area to the south



Plate 5: Coastal Alkaline Scrub - north of maintenance area



Plate 6: Coastal Alkaline Scrub - north of maintenance area



Plate 7: Coastal Alkaline Scrub in conservation works area



Plate 8: Coastal Alkaline Scrub in conservation works area



Plate 9: Coastal Alkaline Scrub in conservation works area



Plate 10: Coastal Alkaline Scrub in conservation works area



Plate 11: Coastal Saltmarsh within the golf course area

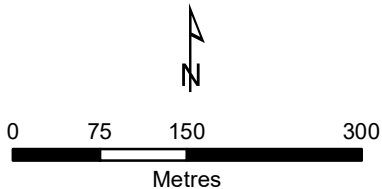


Plate 12: Coastal Saltmarsh within the golf course area

Figure 2
Overview of Ecological Features
Barwon Heads Golf Course,
Barwon Heads

Legend

- Subject Site
- NRZ6
- Proposed 19th Hole
- Coastal Saltmarsh
- Coastal Alkaline Scrub
- Wetland Formation
- Planted Vegetation



Coordinate System: GDA 1994 MGA Zone 55
Map Scale when printed @ A4 1:6,500



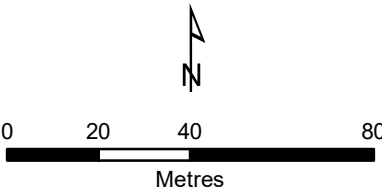
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Figure 2a
Ecological Features
Barwon Heads Golf Course,
Barwon Heads

- Legend**
-  Subject Site
 -  Coastal Saltmarsh
 -  Coastal Alkaline Scrub



Coordinate System: GDA 1994 MGA Zone 55
Map Scale when printed @ A4 1:1,650



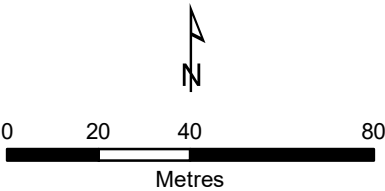
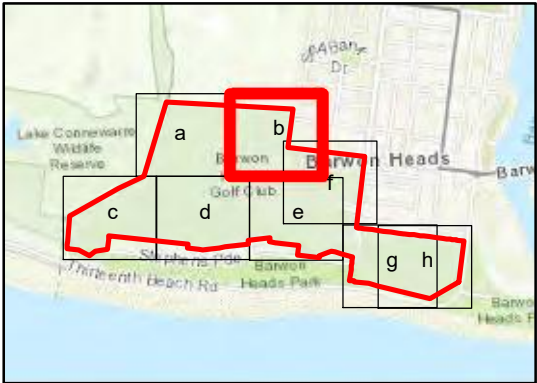
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Figure 2b
Ecological Features
Barwon Heads Golf Course,
Barwon Heads

- Legend**
- Subject Site
 - Coastal Saltmarsh
 - Coastal Alkaline Scrub
 - Wetland Formation



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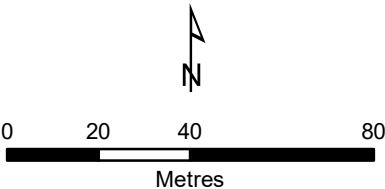


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Figure 2c
Ecological Features
Barwon Heads Golf Course,
Barwon Heads

- Legend**
-  Subject Site
 -  Coastal Saltmarsh
 -  Coastal Alkaline Scrub



Coordinate System: GDA 1994 MGA Zone 55
Map Scale when printed @ A4 1:1,650



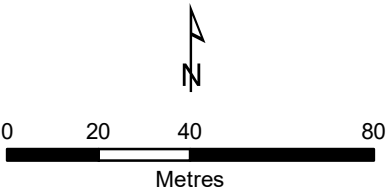
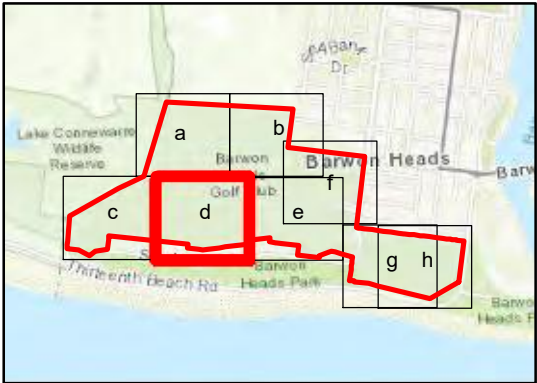
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Figure 2d
Ecological Features
Barwon Heads Golf Course,
Barwon Heads

- Legend**
- Subject Site
 - Proposed 19th Hole
 - Coastal Saltmarsh
 - Coastal Alkaline Scrub



Coordinate System: GDA 1994 MGA Zone 55
Map Scale when printed @ A4 1:1,650

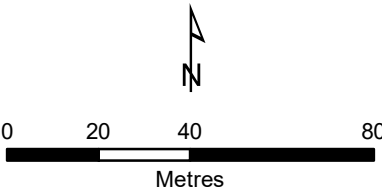
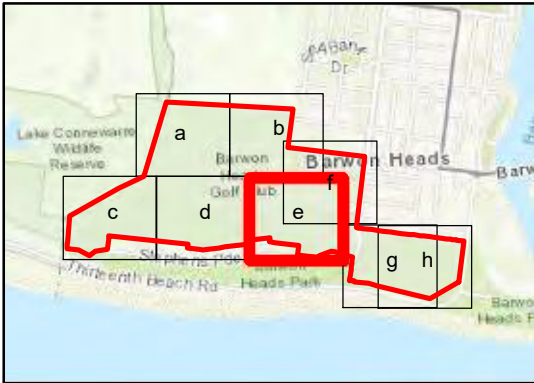


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Figure 2e
Ecological Features
Barwon Heads Golf Course,
Barwon Heads

- Legend**
- Subject Site
 - NRZ6
 - Coastal Alkaline Scrub
 - Planted Vegetation



Coordinate System: GDA 1994 MGA Zone 55
Map Scale when printed @ A4 1:1,650

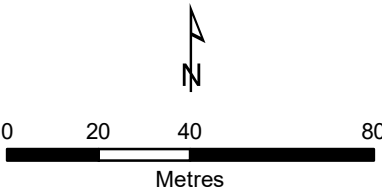


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Figure 2f
Ecological Features
Barwon Heads Golf Course,
Barwon Heads

- Legend**
- Subject Site
 - NRZ6
 - Coastal Alkaline Scrub
 - Wetland Formation
 - Planted Vegetation



Coordinate System: GDA 1994 MGA Zone 55
Map Scale when printed @ A4 1:1,650

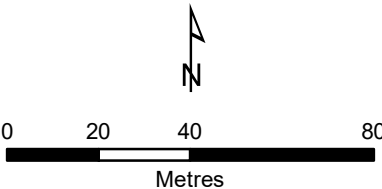
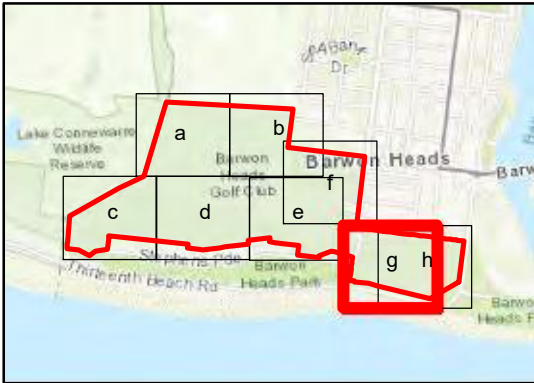


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Figure 2g
Ecological Features
Barwon Heads Golf Course,
Barwon Heads

- Legend**
- Subject Site
 - Coastal Alkaline Scrub
 - Planted Vegetation



Coordinate System: GDA 1994 MGA Zone 55
Map Scale when printed @ A4 1:1,650

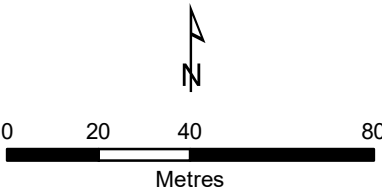
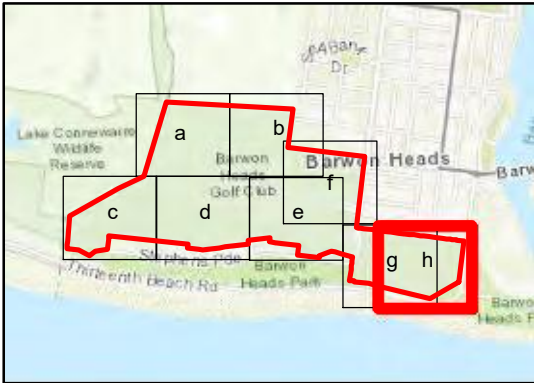


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Figure 2h
Ecological Features
Barwon Heads Golf Course,
Barwon Heads

- Legend**
- Subject Site
 - Coastal Alkaline Scrub



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4 Management Strategy

4.1 Management Objectives

The aim of the BHGC is to maintain the heritage status of the Barwon Heads Golf Precinct as Australia's first true classic links golf course. To achieve this aim, the key management objective for non-course land is to enhance native vegetation through conservation management. In the context of this report, conservation management relates to the preservation, protection, and restoration of an ecosystem, resulting in an overall improvement for biodiversity on the site.

The areas identified for future conservation works specifically relate to Coastal Alkaline Scrub that is highly modified due to overabundant Coast Tea-tree cover. These areas include the three Net Gain offset sites. The BHGC have identified the importance of restoring the Coastal Moonah Woodland Community (Coastal Alkaline Scrub) towards its pre-1750 condition. The results of recent conservation work across the non-course land clearly demonstrates the effectiveness of these management actions that have enhanced the biodiversity values of these sites.

4.2 Review of Previous and Current Land Management

Several land management plans have previously been prepared for BHGC (Stockton 2004a; 2004b, Billows 2013). The principal objective of each management plan has been the enhancement of native vegetation through the removal of exotic and native weed species.

Stockton (2004a) identified ecological values across the course and the threatening processes requiring management. The report noted Coast Tea-tree had replaced Moonah as the dominant canopy species in Coastal Alkaline Scrub across the golf course, and the main threat to 'Calcarene Dune Woodland' (Coastal Alkaline Scrub) were from environmental weeds such as Coast Tea-tree and Aleppo Pine. Stockton (2004a) highlighted future management should aim to develop an open woodland structure (of Coastal Alkaline Scrub), with Moonah as the dominant species, which would enable the re-establishment of native species in the ground layer.

Billows (2013) identified 28 vegetation management units (VMU's) across the non-course land and provided recommendations for their management. Each VMU was applied to a patch of native vegetation. The focus of management in each VMU was the removal and control of priority weeds. This included 'trial of canopy thinning of Coast Tea-tree to investigate re-emergence potential of understorey species from soil seed bank'. Following recommendations in the Billows (2013) report, ecological burns was undertaken in Coastal Alkaline Scrub in conjunction with DELWP and the Country Fire Authority in 2014 and 2016, with the aim of removing exotic and native weed species (Figure 3e).



Working bees by volunteer BHGC working groups have been undertaken throughout the non-course land since 2011, with a focus on the removal of priority weed species (particularly Aleppo Pine, Italian Buckthorn, Myrtle-leaf Milkwort and Dolichos Pea) in Coastal Alkaline Scrub and Coastal Saltmarsh, based on the VMU management recommendations (Plates 21 to 24). The locations of the working bee activity are shown on Figures 3a to 3h.

Offset Management Plans (Mark Trengove Ecological Services 2013b, 2015a, 2015b) have been prepared for three separate offset areas (Figures 3a to 3h), for the permitted removal of native vegetation on the site. The offset areas are subject to a Section 173 Agreement that provides security and protection of these sites in perpetuity. The plans detail management commitments (i.e., weed control) that BHGC have implemented and will continue as part of the ongoing management of non-course land.

The BHGC has previously received a conservation work exemption approval for biodiversity conservation purposes (Okologie Consulting 2021a). The aim of the conservation works was to reinstate the species composition and structure of the Coastal Alkaline Scrub EVC. This involved ecological thinning of Coastal Tea-tree to approximately 30% of the overall canopy cover (down from 90-100% cover) and removal of other woody weed species in two patches of Coastal Alkaline Scrub.

The location of the offset sites, working bee areas and conservation work areas are shown on Figures 3a to 3h.

4.3 Role of Coast Tea-tree on the Golf Course

Coast Tea-tree is described as *a shrub or tree to five-metres tall. It is native to Victoria and occurs on sandy coastal foreshores and dunes from east of Anglesea* (Flora of Victoria 2023). Coast Tea-tree forms part of the Coastal Alkaline Scrub canopy (to 30% cover) (DSE 2004). However, Coast Tea-tree is highly invasive and rapidly colonises sites, forming a dense, closed canopy that out-competes other indigenous shrubs, resulting in low species diversity (Lam 2002), particularly in areas where fire is suppressed (Stockton 2004a).

Coastal Tea-tree is identified as an environmental weed in Victoria (White *et al.* 2018). The City of Greater Geelong identifies this species as an environmental weed in the municipality (other than within the coastal fringe) (City of Greater Geelong 2022). Stockton (2004a; 2004b) described Coastal Tea-tree as a significant environmental weed of Coastal Alkaline Scrub of the non-course area and identified this species as the main threat to this vegetation community. In the context of the current site condition, Coast Tea-tree is considered an overabundant, environmental weed of the non-course land.



The key issues regarding to the role of Coastal Tea-tree within the project area, relate to the heritage status of the site and the ecological impact on Coastal Alkaline Scrub (Coastal Moonah Woodland Community), which are outlined below.

Heritage Values

Prior to acquisition of land that formed the golf course, the site was cleared of native vegetation for agricultural use (grazing and cropping) in the late 1800's and early 1900's. Soil conservation became an important issue on the site in the 1930's due to severe erosion (from vegetation removal), and working parties planted Coastal Tea-tree to stabilise the sand on cleared areas of land adjoining the golf course fairways (Land Management Advisory Committee 2021). The initial objective of BHGC was to establish a links style golf course, with most of the early course work undertaken in the 1920's. The heritage values of the golf course form an important part of the golf links precinct. The BHGC land is subject to Heritage Overlay HO1650: Golf Links Heritage Area, which specifies a policy position to *Encourage a carefully considered and managed program of tea tree and coastal wattle removal within the precinct to ensure that the original links character and topography of the precinct is retained* (City of Greater Geelong 2006). The status of Coast Tea-tree as the dominant species threatens the heritage status of the course due to the change in landscape character and highlights the requirement for management.

Ecological Values

The non-course area comprises several large patches of Coastal Alkaline Scrub (including the three offset areas) dominated by a dense canopy (90-100% cover) of Coast Tea-tree. The ground layer in these patches was often absent, and where present comprised a scattered cover (~5%) of common native shrubs and sedges, along with a dense layer of leaf-litter (Plates 13 to 16). The low native species diversity and cover/abundance cover was attributed to the dense Coast Tea-tree cover, which is consistent with the previous vegetation assessments (Stockton 2004a, Billows 2013).

Conversely, in areas subject to previous conservation works (and BHGC working bees) where Coast Tea-tree had been removed, there has been a significant increase in the diversity and cover/abundance of understorey and canopy species lifeforms (compared to the Coastal Alkaline Scrub EVC benchmark) including the presence of listed threatened flora species (Coast Twin-leaf and Velvet White Correa). Moonah has emerged in several locations and up to 25 native understorey species were recorded in these patches, that were otherwise not observed in Coast Tea-tree dominated areas (Plates 21 to 24). This outcome clearly demonstrates the improvement to native vegetation condition from the management of Coastal Tea-tree.

The BHGC currently manages three separate Net Gain offset sites on the non-course land that are subject to 10-year offset management plans. The required management actions of these plans include Maintenance Gains (gain from commitments that contribute to the maintenance of current vegetation quality over time (avoiding any



decline)) and Improvement Gains (gain resulting from management commitments beyond existing obligations under legislation to improve the current vegetation quality) (Mark Trengove Ecological Services 2013b, 2015a, 2015b).

The largest of the three offset sites is located on the southwestern section of the project area (identified as HZ1 on Figures 3c and 3d). Mark Trengove Ecological Services (2013a) specified maintenance and improvement gains for 'increasing the understorey improvement' included 'eliminating high threat woody weeds' and 'ensuring weed does not increase on current levels' at this site. The BHGC has successfully undertaken woody weed control across this site in accordance with the offset plan, which was audited by (Okologie Consulting 2021b).

The plan also identified the calculated Net Gain improvements for understorey gains and recruitment gains 'are to be achieved through natural regeneration utilising the weed control measures' (Mark Trengove Ecological Services 2013a).

A habitat hectare assessment was undertaken to determine the current condition of the offset site (HZ1) and a conservation work area (subject to Coast Tea-tree canopy removal) (HZ2) (Table 2) (Figures 3a to 3h). Review of previous habitat hectare assessment scores for the offset site and conservation work area (HZ1b, HZ2b, Table 2) (Mark Trengove Ecological Services 2013a, 2013b) were undertaken to provide a comparison of the site condition (Note that the Landscape Value scores calculated by Trengove (2013a, 2013b) were incorrect, and the updated scores have been applied to HZ1 and HZ2 in Table 2).

Comparison of the habitat scores (HZ1 and HZ1b) in the offset site identify that the understorey and recruitment condition has declined, with a decrease in the understorey species diversity and cover to <50% and a decrease in recruitment from 30-70% to no recruitment recorded (Plates 13 to 16). Conversely, the conservation work areas subject to Coast Tea-tree canopy removal recorded an increase in understorey species diversity and cover to >90% of lifeforms present (from >50% lifeforms present) and a decrease in weed cover to 5-25% cover (from >50% cover) (Plates 17 to 20).

The habitat hectare assessment results identified that the required understorey and recruitment improvement gains for the offset site (HZ1) has not been achieved, which has implications for future management of the offset site. Further, it is not possible to achieve the required Net Gain targets (understorey and recruitment gains) within the offset site, due to the suppression of understorey species diversity and cover/abundance from the dense Coast Tea-tree canopy cover. The strategy for future management of native vegetation on non-course land is outlined in Section 5.

**Table 2: Habitat Hectare Assessment Results**

Habitat Zone			HZ1	HZ1b*	HZ2	HZ2b*
Bioregion			OP	OP	OP	OP
Bioregional Conservation Status			En	En	En	En
EVC Name			CAS	CAS	CAS	CAS
EVC Number			858	858	858	858
Max Score			Score	Score	Score	Score
Site Condition	Large Old Trees	10	0	0	0	0
	Canopy Cover	5	0	0	0	0
	Understorey	25	5	15	20	15
	Lack of Weeds	15	7	4	9	4
	Recruitment	10	0	6	6	6
	Organic Matter	5	3	5	3	3
	Logs	5	4	5	2	3
EVC Standardiser	Multiplier	1.15	1.15	1.15	1.15	1.15
	Subtotal	0	21.85	40.25	46	35.65
Landscape value	Patch Size	10	8	2	8	1
	Neighbourhood	10	4	1	4	1
	Distance to Core	5	4	3	4	3
Habitat score (out of 100)		100	37.85	46.25	62	40.65
Habitat points (habitat points/100)			0.38	0.46	0.62	0.41

Notes: CAS = Coastal Alkaline Scrub; OP = Otway Plain bioregion; En = Endangered; *Previous habitat hectare assessment data (Mark Trengove Ecological Services 2013a, 2013b).



Plate 13: Coastal Alkaline Scrub in the offset area (HZ1)



Plate 14: Coastal Alkaline Scrub in the offset area (HZ1)



Plate 15: Coastal Alkaline Scrub in the offset area (HZ1)



Plate 16: Coastal Alkaline Scrub in the offset area (HZ1)



Plate 17: Coastal Alkaline Scrub in the conservation area (HZ2)



Plate 18: Coastal Alkaline Scrub in the conservation area (HZ2)



Plate 19: Coastal Alkaline Scrub in the conservation area (HZ2)



Plate 20: Coastal Alkaline Scrub in the conservation area (HZ2)



Plate 21: Aleppo Pine removal in a working bee area



Plate 22: Aleppo Pine removal in a working bee area



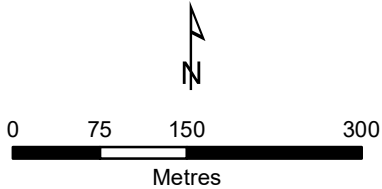
Plate 23: Coastal Alkaline Scrub subject to thinning of Tea-tree



Plate 24: Coastal Alkaline Scrub subject to thinning of Tea-tree

Figure 3
Management of Ecological Values - Overview
Barwon Heads Golf Course, Barwon Heads

- Legend**
- Subject Site
 - NRZ6
 - Proposed 19th Hole
 - Coastal Saltmarsh
 - Coastal Alkaline Scrub
 - Wetland Formation
 - Planted Vegetation
 - Offset Sites
 - Conservation Work Areas
 - Club Working Bee Areas
 - Ecological Burn Area



Coordinate System: GDA 1994 MGA Zone 55
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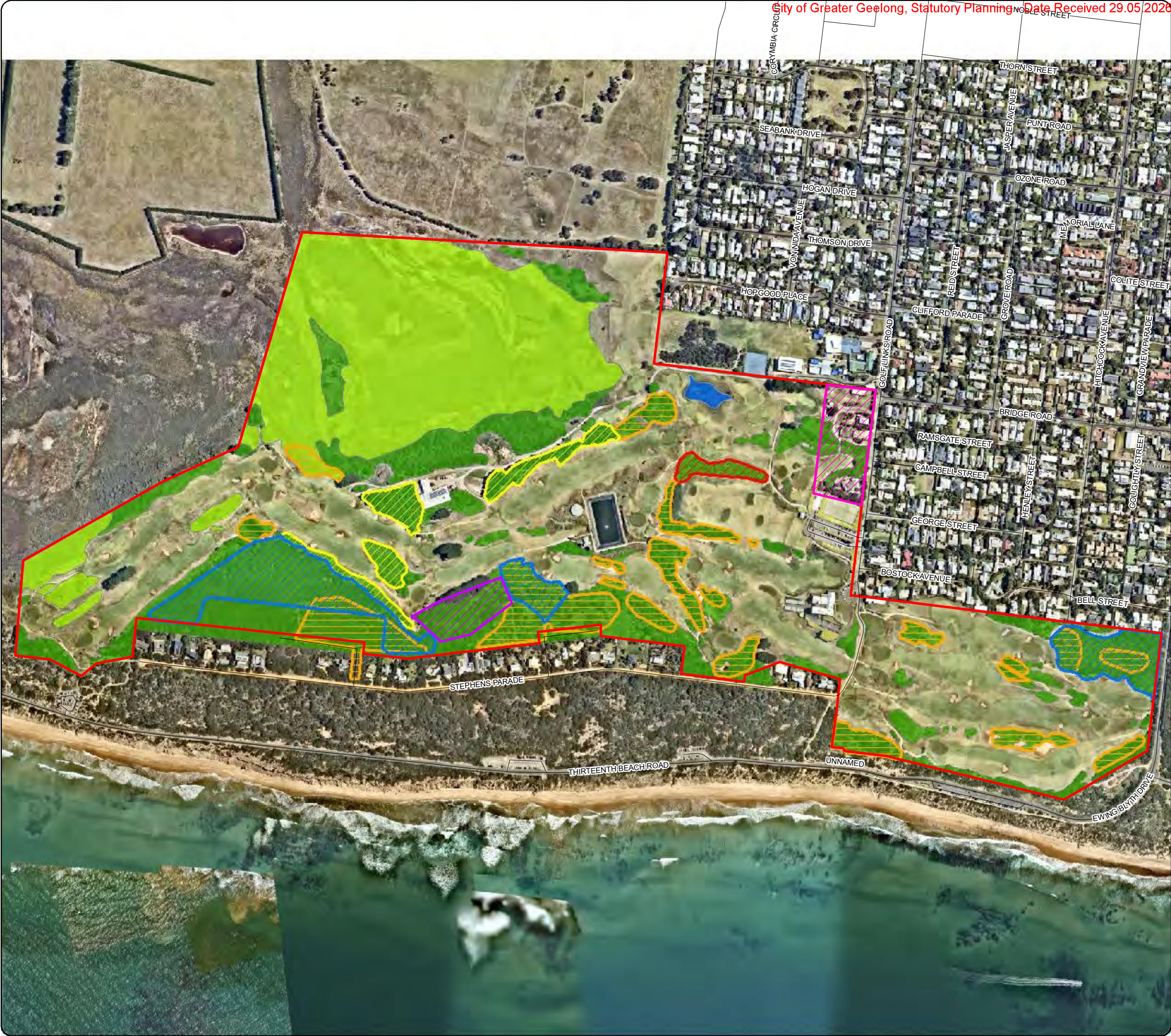
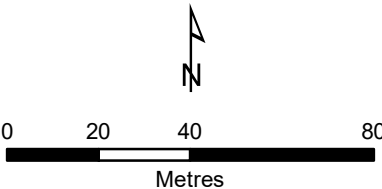


Figure 3a
Management of Ecological Values
Barwon Heads Golf Course,
Barwon Heads

- Legend**
- Subject Site
 - Coastal Saltmarsh
 - Coastal Alkaline Scrub
 - Club Working Bee Areas



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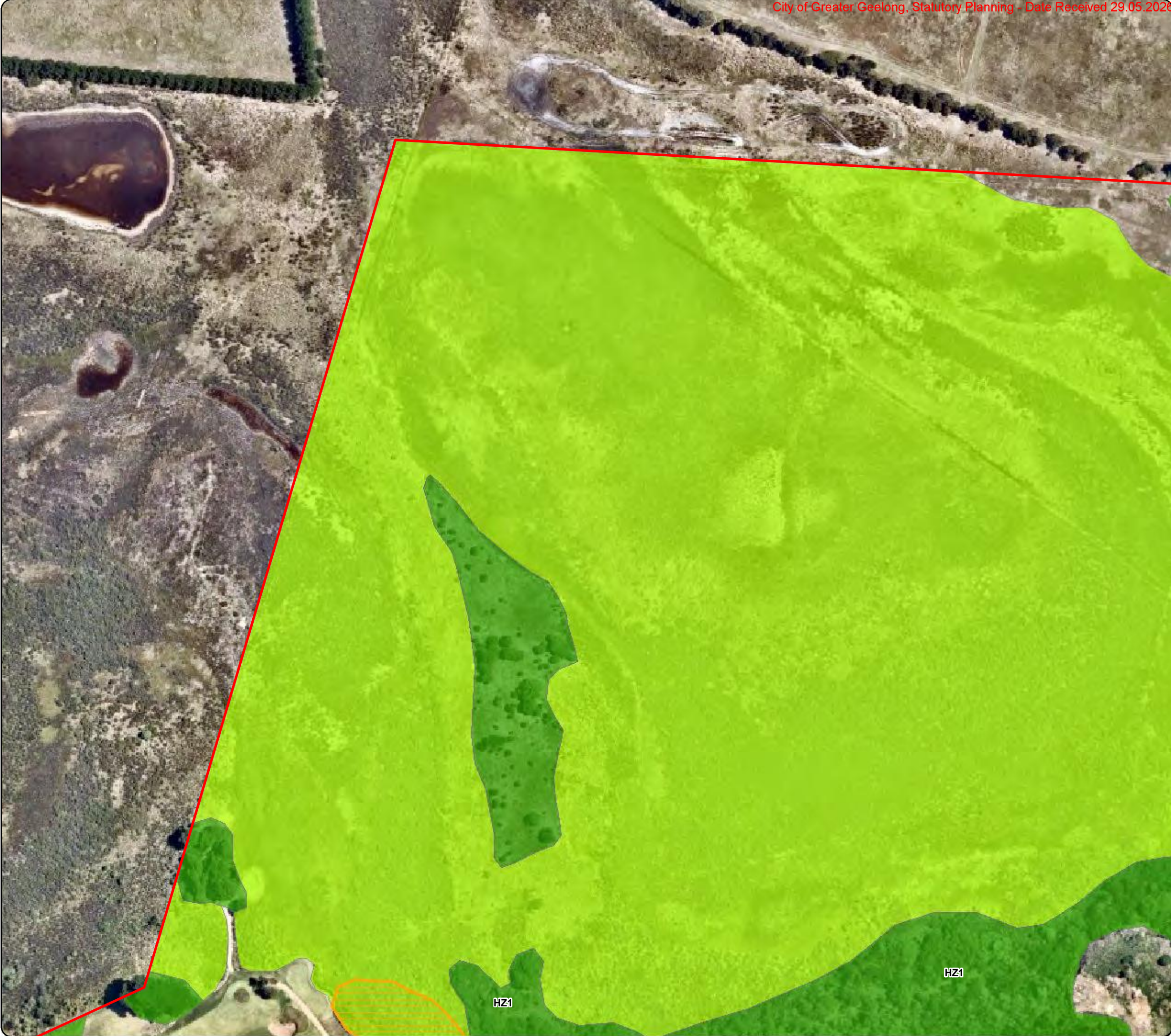
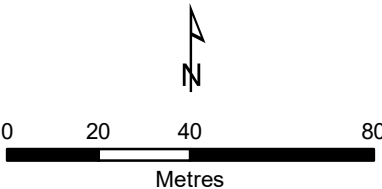
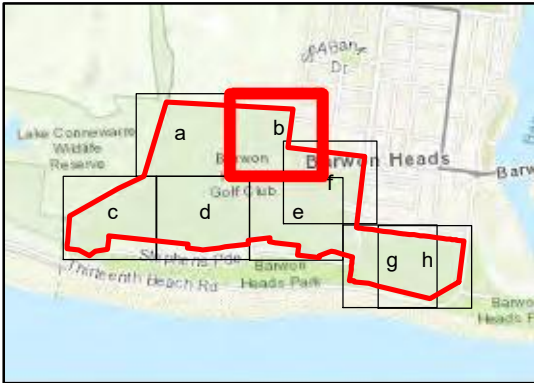


Figure 3b
Management of Ecological Values
Barwon Heads Golf Course,
Barwon Heads

- Legend**
- Subject Site
 - Coastal Saltmarsh
 - Coastal Alkaline Scrub
 - Wetland Formation
 - Conservation Work Areas
 - Club Working Bee Areas
 - Ecological Burn Area



Coordinate System: GDA 1994 MGA Zone 55
Map Scale when printed @ A4 1:1,650

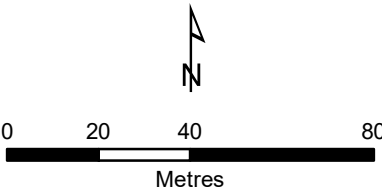


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Figure 3c
Management of Ecological Values
Barwon Heads Golf Course,
Barwon Heads

- Legend**
- Subject Site
 - Coastal Saltmarsh
 - Coastal Alkaline Scrub
 - Offset Sites
 - Conservation Work Areas
 - Club Working Bee Areas



Coordinate System: GDA 1994 MGA Zone 55
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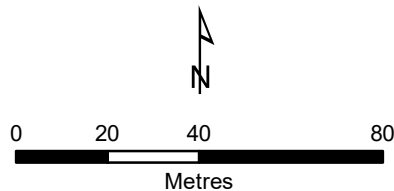
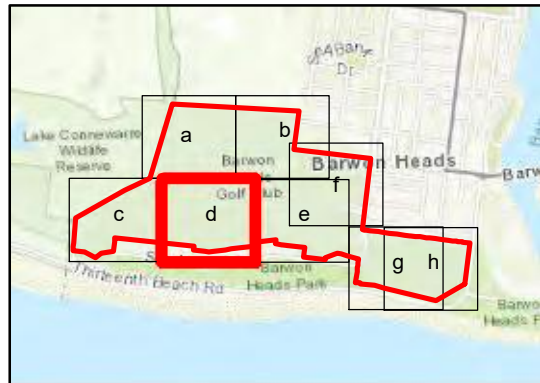
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Figure 3d
Management of Ecological Values
Barwon Heads Golf Course,
Barwon Heads

Legend

- Subject Site
- Proposed 19th Hole
- Coastal Saltmarsh
- Coastal Alkaline Scrub
- Offset Sites
- Conservation Work Areas
- Club Working Bee Areas



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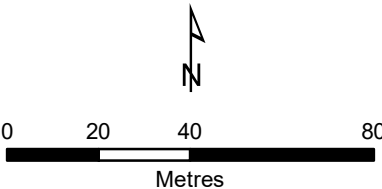
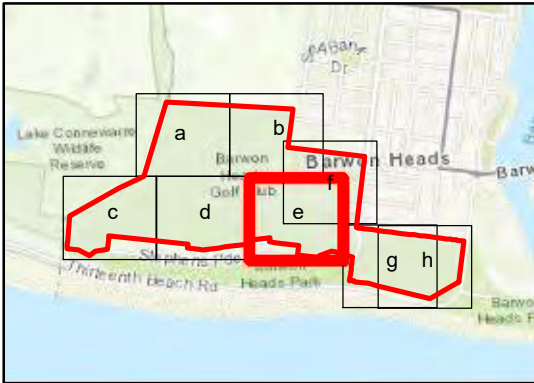
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Figure 3e
Management of Ecological Values
Barwon Heads Golf Course,
Barwon Heads

Legend

- Subject Site
- NRZ6
- Coastal Alkaline Scrub
- Planted Vegetation
- Offset Sites
- Conservation Work Areas
- Club Working Bee Areas
- Ecological Burn Area



Coordinate System: GDA 1994 MGA Zone 55
Map Scale when printed @ A4 1:1,650

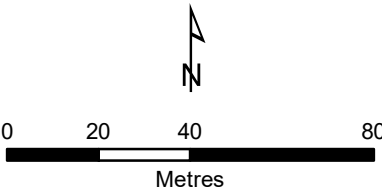


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Figure 3f
Management of Ecological Values
Barwon Heads Golf Course,
Barwon Heads

- Legend**
- Subject Site
 - NRZ6
 - Coastal Alkaline Scrub
 - Wetland Formation
 - Planted Vegetation
 - Club Working Bee Areas
 - Ecological Burn Area



Coordinate System: GDA 1994 MGA Zone 55
Map Scale when printed @ A4 1:1,650

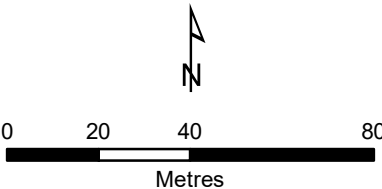
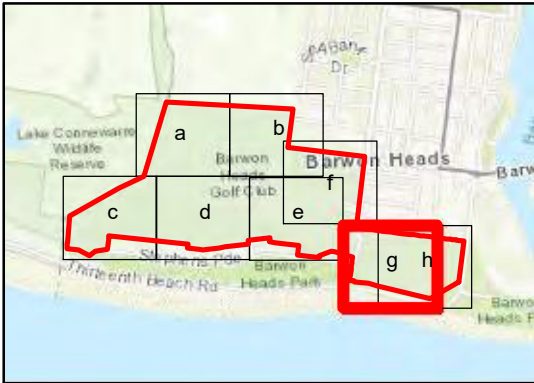


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Figure 3g
Management of Ecological Values
Barwon Heads Golf Course,
Barwon Heads

- Legend**
- Subject Site
 - Coastal Alkaline Scrub
 - Planted Vegetation
 - Offset Sites
 - Club Working Bee Areas



Coordinate System: GDA 1994 MGA Zone 55
Map Scale when printed @ A4 1:1,650

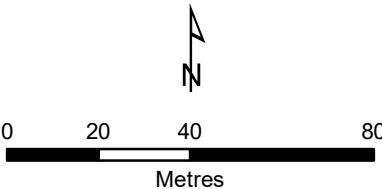
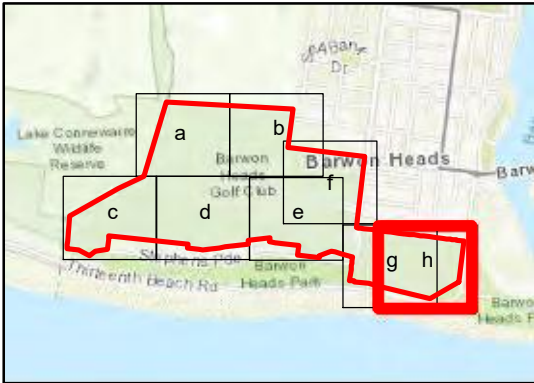


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Figure 3h
Management of Ecological Values
Barwon Heads Golf Course,
Barwon Heads

- Legend**
- Subject Site
 - Coastal Alkaline Scrub
 - Offset Sites
 - Club Working Bee Areas



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5 Protection and Enhancement of Native Vegetation

5.1 Conservation Management Actions

The assessment of native vegetation throughout the non-course area identified that Coast Tea-tree is an ecologically out-of-balance species, with a closed-canopy cover that dominates and out-competes other native canopy and understorey species.

The BHGC has identified future conservation management areas (Figure 4), where the primary purpose of the work is for biodiversity conservation purposes. The aim of conservation management is to reduce the Coast Tea-tree canopy cover to ~30% and control other priority weed species. The ecological thinning of Coast Tea-tree is undertaken by manual removal and has been successfully implemented on other conservation work areas. This will enable the BHGC to achieve its objective of enhancing native vegetation and maintain the heritage status of the golf course. Management of Coast Tea-tree in offset areas will also assist in meeting the overall Net Gain targets for these sites.

Billows (2013) identified 25 vegetation management units (VMU's) across the non-course land. This approach to site management has been revised to focus on the removal and control of noxious or environmental weed species across the entire non-course area. This work will be undertaken by BHGC staff and volunteer member working groups.

The management actions outlined below will ensure the protection of native vegetation from identified key threatening processes. The Coastal Alkaline Scrub EVC benchmark (DEECA 2023a) will be used as a guide for vegetation condition. The annual schedule of management activities is shown in Appendix 2.

5.2 Weed Management

The *Catchment and Land Protection Act 1994* (CaLP Act) is the key legislation for management of noxious weeds in Victoria, and land managers have obligations regarding the management of declared noxious weeds on their land (Agriculture Victoria 2023). The project area contains numerous listed noxious and environmental weed species and control of these weeds is a key management action to protect to native vegetation. Measures to control noxious and environmental weed species in areas of native vegetation are outlined below. Note that control of emergent native species such as Common Boobilla and Coastal Wattle may also be required in Coastal Saltmarsh.

Noxious and environmental species that require control within the project area are outlined in Table 3. The aim of the weed management plan is to effectively eliminate woody weeds from non-course land (to <1% cover wherever practicable) and control



herbaceous weeds and grassy weeds to <5% cover, as complete elimination of these species is not considered feasible. Weed management works must also include scope to control outbreaks of any additional noxious or environmental weed species. The ongoing actions for weed management of the project area are outlined in Table 4.

Table 3. Weed Management Plan

Target Weed	Aim	Work Plan	Timing	Control Method
African Boneseed	Effectively eliminate to <1% overall cover	- Hand Pull or Grubb out individual seedlings. - Spot spray or cut and paint with registered herbicide - Monitor treated areas and treat new seedling within 18 months of germination	Spray February to April or September to December	HP, G, CP, & SS
Bridal Creeper	Effectively eliminate to <1% overall cover	- Grubb out individual plants and small patches. Ensure the rhizome is removed. - Spot spray with registered herbicide	Year round	G & SS
Spear Thistle	Control existing population to <1% cover within 5 years	- Grubb out individual plants and small patches. Ensure the growing point and top of taproot is removed. - Spot spray with registered herbicide	Spray during active growth periods – autumn and spring	G & SS
Coast Tea-tree	Reduce canopy cover to 30% in accordance with approved conservation work exemption	- Hand Pull and Grubb out individual plants - Cut and paint with registered herbicide - Cut Trunk	Year round	HP, G & CP, MR
Italian Buckthorn	Effectively eliminate to <1% overall cover	- Hand Pull and Grubb out individual plants - Cut and paint with registered herbicide	Year round	HP, G & CP
Green Honey Myrtle	Effectively eliminate to <1% overall cover	- Hand Pull and Grubb out individual plants - Cut and paint with registered herbicide - Cut Trunk	Year round	HP, G & CP
Myrtle-leaf Milkwort	Effectively eliminate to <1% overall cover	- Hand Pull and Grubb out individual plants - Cut and paint with registered herbicide - Cut Trunk	Year round	HP, G & CP
Sweet Pittosporum	Effectively eliminate to <1% overall cover	- Hand Pull and Grubb out individual plants - Cut and paint with registered herbicide	Year round	HP, G & CP
Small-leaved Cotoneaster	Effectively eliminate to <1% overall cover	- Hand Pull and Grubb out individual plants - Cut and paint with registered herbicide	- Hand pull year round - Cut and paint after fruiting in autumn	HP, G & CP
Mirror Bush	Effectively eliminate to <1% overall cover	- Hand Pull and Grubb out individual plants - Cut and paint with	Year round	HP, G & CP



Target Weed	Aim	Work Plan	Timing	Control Method
		registered herbicide		
Aleppo Pine	Effectively eliminate to <1% overall cover	- Hand Pull and Grubb out individual plants - Cut and paint with registered herbicide - Cut Trunk	Year round	HP, G, CP & CT
Dolichos Pea	Control to <5% cover in areas of native vegetation by suppressing growth and spread	- Hand Pull and Grubb out individual plants - Dig out root - Cut and paint with registered herbicide	Year round	HP, G & CP
Cape Ivy	Control to <5% cover in areas of native vegetation by suppressing growth and spread	- Hand Pull and Grubb out individual plants - Dig out root - Cut and paint with registered herbicide	Year round	HP, G & CP
Soursob	Control to <5% cover in areas of native vegetation by suppressing growth and spread	Spot spray with registered herbicide on commencement of flowering	Year round	SS
Freesia	Control to <5% cover in areas of native vegetation by suppressing growth and spread	Spot spray with registered herbicide on commencement of flowering	July and August	SS
Grassy and herbaceous weeds: Panic Veldt-grass, Perennial Veldt-grass, Buffalo-grass, Hare's-tail Grass, Yorkshire Fog-grass, Black Nightshade, Flat Weed, Aster Weed	Control to <5% cover in areas of native vegetation by suppressing growth and spread	- Mow and slash areas of exotic grassland near native vegetation to reduce spread - Hand Pull and Grubb out individual plants - Spot spray with registered herbicide	Year round	HP, G, & SS, MS

Notes: SS = Spot-spray; CP = Cut and Paint; HH = Hand Hoe; G = Grubb; MR = Mechanical Removal; CT = Cut Trunk; MS = Mowing/Slashing

Table 4. Weed Management Actions

Management Action	Key Performance Indicator	Trigger Actions	Corrective Actions
Control of listed noxious and environmental weeds	Effectively eliminate all woody weed species to <1% overall cover and control herbaceous weeds and grassy weeds to <5% cover in areas of native vegetation	Emergence of new woody weed species outbreaks in control areas Herbaceous and grassy weeds exceed 5% cover	Record location and control as soon as possible using the appropriate control methods Increased monitoring of problematic weed species

5.3 Vegetation Condition Assessment

The condition of native vegetation in conservation works areas will be assessed through a Habitat Hectare Assessment following the *Vegetation quality assessment manual – Guidelines for applying the habitat hectares scoring method Version 1.3* (DSE 2004).



An accredited Vegetation Quality Assessment (habitat hectare) assessor will undertake the habitat hectare assessment during spring each year, to monitor and measure the condition and quality of native vegetation. The initial habitat hectare assessment will provide a baseline habitat hectare score for the site.

Comparison of the habitat hectare data (to the original score) will be reviewed annually to determine the overall condition of vegetation on the site and inform the effectiveness of weed and pest management. The results of the annual habitat hectare assessment are to be included in the annual report.

Table 5. Vegetation Condition Assessment Actions

Management Action	Key Performance Indicator	Trigger Actions	Corrective Actions
Undertake a habitat hectare assessment of the site annually during spring to monitor the condition and quality of vegetation/habitat.	The condition of native vegetation/habitat is maintained or improved from the previous year	The habitat hectare score declines from the previous year	Investigate cause of condition decline to determine appropriate action. Actions may include increased/targeted weed control

5.4 Resource commitments for ongoing management

The BHGC will supply all necessary resources to meet ongoing management activities specified in this strategy. The Club will have a full-time, suitable qualified staff member that is dedicated to implementing all management actions and monitoring measures specified in this plan. Specialist consultants will be engaged as required (i.e. habitat hectare assessments).

5.5 Procedures for Reporting

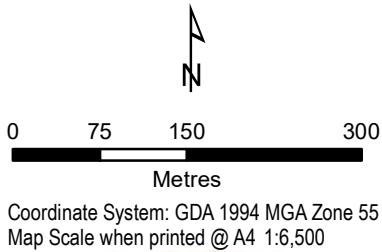
The BHGC will prepare an annual report detailing the effectiveness of conservation management and weed control actions and whether key performance targets are being met.

Information to be provided in each report includes:

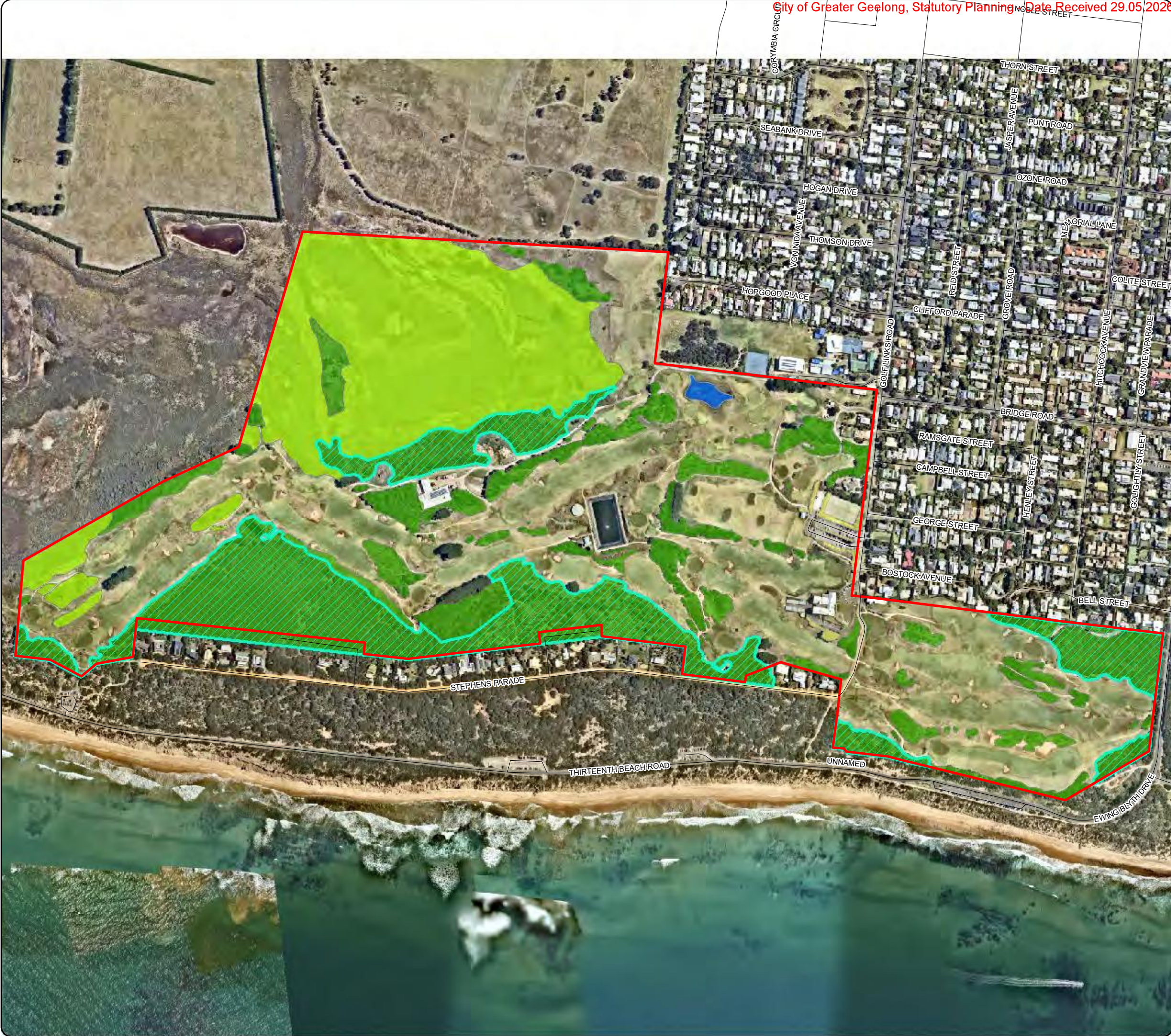
- Results of the annual habitat hectare assessment.
- Results of weed management.
- Any problems or issues experienced (i.e. new infestation of weed species).
- Photographic evidence of management works.

Figure 4
Future Conservation Works
Barwon Heads Golf Course,
Barwon Heads

- Legend**
- Subject Site
 - Coastal Saltmarsh
 - Coastal Alkaline Scrub
 - Wetland Formation
 - Planted Vegetation
 - Future Conservation Works Zone



VicMap Data: The state of Victoria does not warrant the accuracy or correctness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.





6 Environmental Legislation and Policy Implications

6.1 Planning and Environment Act 1987

The purpose of the *Planning and Environment Act 1987* is to establish a framework for planning the use, development and protection of land in Victoria. Native vegetation clearance is managed under the Act and through municipal planning schemes (DTP 2023).

A permit is required under Clause 52.17 (Native Vegetation) to remove, destroy or lop native vegetation, including dead vegetation, unless the action is exempt. To ensure that there is no net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation, the following three step approach is applied in accordance with the Guidelines:

1. Avoid the removal, destruction or lopping of native vegetation.
2. Minimise impacts from the removal, destruction or lopping of native vegetation that cannot be avoided.
3. Provide an offset to compensate for the biodiversity impact if a permit is granted to remove, destroy or lop native vegetation.

If native vegetation removal is required, a permit application must be categorised as a basic, intermediate or detailed assessment pathway as specified in the Guidelines (DELWP 2017). Each assessment pathway has specific application requirements and decision guidelines that must be considered by the responsible authority.

Clause 66 (Referral and Notice Provisions) requires that the following applications to remove native vegetation be referred to the Secretary to DTP:

- To remove, destroy or lop native vegetation in the Detailed Assessment Pathway
- To remove, destroy or lop native vegetation if a Property Vegetation Plan applies to the site.
- To remove, destroy or lop native vegetation on Crown land, which is occupied or managed by the responsible authority (DTP 2023).

Implications under the Victorian Planning Provisions

The mechanism for the conservation management of native vegetation on the non-course area will be achieved by applying for the Conservation Work Exemption under Clause 52.17 (*Native Vegetation*).

The exemption specifies:



Native vegetation that is to be removed, destroyed or lopped to the minimum extent necessary to enable the carrying out of conservation work: – which provides an overall improvement for biodiversity; and – with written agreement of the Secretary to the Department of Environment, Land, Water and Planning (as constituted under Part 2 of the Conservation, Forests and Lands Act 1987) (DTP 2023).

The BHGC will prepare a conservation work exemption application following the *Conservation work exemption – application process* guidelines (DELWP 2018) for the locations identified on Figure 4. The application will include the three offset areas. The Section 173 Agreement for the ongoing security and protection of the offset sites will remain.

The conservation work exemption application requires the proponent to address the following information (DELWP 2017b):

- The primary purpose of the work is for biodiversity conservation.
- Steps are taken to avoid and minimise impacts on native vegetation when undertaking the work.
- A comparison assessment shows that the losses to biodiversity due to the removal of native vegetation are outweighed by the expected improvements to biodiversity due to the work. The assessment should consider impacts on the values of native vegetation, and the information used to measure these values, described in Section 3 of the Guidelines for the removal, destruction or lopping of native vegetation. The assessment should include:
 - An estimate of the losses to biodiversity due to the removal of native vegetation.
 - An estimate of the improvements to biodiversity due to the work, including any expected improvement to:
 - native vegetation condition and extent
 - outcomes for rare or threatened species
 - ecosystem function, and the improvements that will flow from this to biodiversity.
- Monitoring will be undertaken to ensure the objectives of the conservation work are being achieved.
- There is a management plan for the works that explains how they will be undertaken.

The project area is subject to Environmental Significance Overlay – Schedule 2 (ESO2) and Heritage Overlay – HO1650 under the Greater Geelong Planning Scheme (DTP 2023). An approved conservation works exemption also exempts the requirement to obtain a permit for the removal of native or exotic vegetation under ESO2 or HO1650.



7 Conclusion and Recommendations

The assessment of native vegetation identified that Coast Tea-tree is an ecologically out-of-balance species in several areas of Coastal Alkaline Scrub, forming a closed-canopy cover that dominates and out-competes other native canopy and understorey species.

Review of an offset site identified that the required understorey and recruitment improvement gains for the offset site has not been achieved. Further, it is not possible to achieve the specified Net Gain targets due to the suppression of understorey species diversity and cover/abundance from the dense Coast Tea-tree canopy cover.

The Club has identified several areas for future conservation management, where the aim is to reduce the Coast Tea-tree canopy to ~30% cover and control other priority weed species. The ecological thinning of Coast Tea-tree has been successfully implemented in several conservation work areas across the golf course and clearly demonstrates the effectiveness of this management action in enhancing biodiversity values.

The recommended mechanism to achieve conservation management of native vegetation is through a Conservation Work Exemption application under Clause 52.17 (*Native Vegetation*) under the Greater Geelong Planning Scheme. This process will enable the Club to achieve its objective of enhancing native vegetation and maintain the heritage status of the golf course.

The management actions detailed in this strategy will be reviewed after a five-year period. The strategy also includes an annual schedule of management activities, and reporting procedures for ongoing management.



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Appendix 1 – Flora Species

Table 5: Flora species recorded

Scientific Name	Common Name
<i>Acacia longifolia</i> subsp. <i>sophorae</i>	Coast Wattle
<i>Acaena novae-zelandiae</i>	Bidgee-widgee
<i>Aira elegantissima</i>	Delicate Hair-grass*
<i>Asparagus asparagoides</i>	Bridal Creeper*
<i>Austrostipa flavescens</i>	Coast Spear-grass
<i>Austrostipa stipoides</i>	Prickly Spear-grass
<i>Avena barbata</i>	Bearded Oat*
<i>Briza maxima</i>	Large Quaking-grass*
<i>Briza minor</i>	Lesser Quaking-grass*
<i>Bromus catharticus</i>	Prairie Grass*
<i>Carpobrotus rossii</i>	Karkalla
<i>Cenchrus clandestinus</i>	Kikuyu*
<i>Centaurium erythraea</i>	Common Centaury*
<i>Clematis microphylla</i> s.l.	Small-leaved Clematis
<i>Coprosma repens</i>	Mirror Bush*
<i>Cotoneaster glaucophyllus</i>	Large-leaf Cotoneaster*
<i>Cynodon dactylon</i> var. <i>dactylon</i>	Couch*
<i>Dactylis glomerata</i>	Cocksfoot*
<i>Dianella brevicaulis</i>	Coast Flax-lily
<i>Dianella revoluta</i> s.l.	Black-anther Flax-lily
<i>Dichondra repens</i>	Kidney-weed
<i>Distichlis distichophylla</i>	Australian Salt-grass
<i>Ehrharta calycina</i>	Perennial Veldt-grass*
<i>Ehrharta erecta</i> var. <i>erecta</i>	Panic Veldt-grass*
<i>Ehrharta longiflora</i>	Annual Veldt-grass*
<i>Ficinia nodosa</i>	Knobby Club-sedge
<i>Galenia pubescens</i> var. <i>pubescens</i>	Galenia*
<i>Hibbertia sericea</i>	Silky Guinea-flower
<i>Holcus lanatus</i>	Yorkshire Fog*
<i>Hordeum leporinum</i>	Barley-grass*
<i>Hypochaeris radicata</i>	Flatweed*
<i>Kennedia prostrata</i>	Running Postman
<i>Lachnagrostis billardiarei</i> subsp. <i>billardiarei</i>	Coast Blown-grass
<i>Lagurus ovatus</i>	Hare's-tail Grass*
<i>Lepidosperma concavum</i>	Sandhill Sword-sedge
<i>Lepidosperma gladiatum</i>	Coast Sword-sedge
<i>Leptospermum laevigatum</i>	Coast Tea-tree
<i>Leucopogon parviflorus</i>	Coast Beard-heath



Scientific Name	Common Name
<i>Lolium perenne</i>	Perennial Rye-grass*
<i>Lomandra filiformis</i>	Wattle Mat-rush
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush
<i>Medicago polymorpha</i>	Burr Medic*
<i>Melaleuca lanceolata</i> subsp. <i>lanceolata</i>	Moonah
<i>Microlaena stipoides</i> var. <i>stipoides</i>	Weeping Grass
<i>Muehlenbeckia australis</i>	Climbing Lignum
<i>Myoporum insulare</i>	Common Boobialla
<i>Oxalis pes-caprae</i>	Soursob**
<i>Paspalum dilatatum</i>	Paspalum*
<i>Pinus halepensis</i>	Aleppo Pine*
<i>Pimelea serpyllifolia</i>	Coast Rice-flower
<i>Pittosporum undulatum</i>	Sweet Pittosporum*
<i>Plantago coronopus</i>	Buck's-horn Plantain*
<i>Plantago lanceolata</i>	Ribwort*
<i>Poa poiformis</i>	Coast Tussock-grass
<i>Polygala myrtifolia</i>	Myrtle-leaf Milkwort*
<i>Pomaderris paniculosa</i> subsp. <i>paralia</i>	Coast Pomaderris
<i>Pteridium esculentum</i>	Austral Bracken
<i>Pultenea tenuifolia</i>	Slender Bush-pea
<i>Rhagodia candolleana</i> subsp. <i>candolleana</i>	Seaberry Saltbush
<i>Rhamnus alaternus</i>	Italian Buckthorn*
<i>Roepera billardierei</i>	Coast Twin-leaf (r)
<i>Rytidosperma caespitosum</i>	Common Wallaby-grass
<i>Rytidosperma racemosum</i>	Slender Wallaby-grass
<i>Rytidosperma setaceum</i>	Bristly Wallaby-grass
<i>Solanum aviculare</i>	Kangaroo Apple
<i>Solanum nigrum</i>	Black Nightshade*
<i>Sonchus asper</i>	Rough Sow-thistle*
<i>Sonchus oleraceus</i>	Common Sow-thistle*
<i>Sporobolus africanus</i>	Rat-tail Grass*
<i>Stellaria media</i>	Chickweed*
<i>Stenotaphrum secundatum</i>	Buffalo Grass*
<i>Swainsonia lessertiifolia</i>	Coast Swainson-pea
<i>Tetragonia implexicoma</i>	Bower Spinach
<i>Themeda triandra</i>	Kangaroo Grass
<i>Trifolium repens</i> var. <i>repens</i>	White Clover*
<i>Trifolium subterraneum</i>	Subterranean Clover*
<i>Vicia sativa</i>	Common Vetch*
<i>Westringia fruticosa</i>	Coast Rosemary

Notes: *Exotic species; **Listed noxious weed



Appendix 2 - Project Implementation Schedule

The overall project implementation schedule, management actions and timelines are detailed in Table 6.

Table 6. Management actions and implementation schedule

Year	Management Action	Activity	Timing	Standard to be achieved
Weed Management				
1-5	Weed Management	Control any noxious or environmental weed species observed on the site	Specific to weed species present on site in Table 3	- Effectively eliminate woody weed species to <1% overall cover and control herbaceous weeds and grassy weeds to <5% cover - Control of listed noxious weeds meets CaLP Act requirements
1-5	Weed Monitoring	Monthly monitoring for any noxious or environmental weed species	Monthly throughout the year	No disturbance to native vegetation or habitat from weed species
Vegetation Condition Assessment				
1-5	Assessment of habitat quality/vegetation condition	Habitat hectare assessment undertaken by qualified Vegetation Quality Assessor	November each year	Habitat hectare assessment determines the condition and quality of vegetation/habitat within the site
Reporting				
1-5	Monitoring	Photo records of all management works	Following completion of any management works	Photos of all ongoing management works for reporting purposes.
1	Monitoring of management actions	Staff to keep records of all management works	Following completion of any management works	Maintain records of all management works for reporting purposes, including any change in activity and the results of works
1	Reporting	Prepare annual report	Report completed by the end of December	The report will include a review of management works against the activity and performance targets. Future management priorities will also be detailed.