



Central Highlands Environmental Consultancy



Flora and Fauna Survey

Listing of Flora and Fauna present on Nuns Beach and Portland Foreshore Cliff areas

(Includes recommendations for revegetation).

Location: Nuns Beach & Portland Foreshore Cliff areas, Portland Vic.

13 April 2021



This Native Vegetation Report has been prepared by a Vegetation Quality Assessor (VQA) (Version 1.3) (Habitat Hectare) Accredited Practitioner:

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Accredited by DELWP - Date of Expiry: 30/01/2022

Document status

Version	Doc Type	Reviewed by	Approved by	Date issued
V01	Flora & Fauna	Jennifer Johnson	Ray Draper	13 April 2021

Project Details

Project Name:	Flora and Fauna Survey – Listing of Flora and Fauna present on Nuns Beach and Portland Foreshore cliff areas. Includes recommendations for revegetation.
Property Location:	Nuns Beach and Portland Foreshore Cliffs, Portland Vic.
Postal address:	Not Supplied
Client:	Glenelg Shire Council and Southwest Environment Alliance (SEA).
Environmental consultants:	Ray Draper and Jennifer Johnson
Photography credits:	Jennifer Johnson & Ray Draper

Declaration and Copyright

Central Highlands Environmental Consultancy has prepared this Native Vegetation Report (NVR) on behalf of **Glenelg Shire Council and Southwest Environment Alliance (SEA)** who has provided information relating to the site. This report contains the following information:

- Identification of fauna
- Identification of flora
- Identification of introduced weeds
- Photographic identification
- Recommendations on management of both sites.

This information is correct as of **April 2021**. Information within this report is based on observations from a field inspection and QIS Near map / Google aerial mapping assessments.

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Table of Contents

1. Background on project site	4
1.1 Compilation of Field data for both sites.....	4
2. Native Fauna Species (Photo Identification)	5
3. Native Flora Species (Photographic identification).....	8
3.1 Nuns beach – Native flora species	8
3.2 Portland Foreshore Cliff – Native flora species.....	11
4. Exotic (weed) Flora species (Photographic identification)	13
4.1 Weeds: Project Site 1 (Nuns Beach).....	13
4.2 Weeds: Project Site 2 (Portland Foreshore cliff).	15
5. List of Flora, Fauna and Weeds found on both survey sites	18
6. Recommendations for Management for both assessed Sites.....	21
Site 1: Nuns Beach – Recommendations for management.....	22
Site 2: Portland Foreshore Cliff – Recommendation for management.....	23
7. Reference areas for Revegetation.....	25
8.1 EVC Benchmarks as reference for Revegetation Species.....	26
REFERENCES.....	30
APPENDICES – PAST REVEGETATION LIST FOR SITE 1	31

1. Background on project site

Central Highlands Environmental Consultancy was requested to undertake a Flora and Fauna survey of two project areas based at Portland for Glenelg Shire Council on behalf of Southwest Environment Alliance (SEA). This is an area currently being managed by Portland Coastal Cliffs Inc. (A volunteer environmental group).

Two project areas were assessed which included:

- Project Site 1: Nuns Beach
- Project Site 2: Portland Foreshore Cliff



Project area 1 is the area the Portland Coastal Cliffs group have been currently working in by weeding and undertaking revegetation (see Appendices for Past Revegetation list). It requires further revegetation and weed control. The group needs further assistance with what is a native grass and what are introduced grasses and herbs.


Project area 2 is an area that the Portland Coastal Cliffs group are considering applying for funding for contractors to work in with council support.



1.1 Compilation of Field data for both sites




A current list of flora and fauna species was requested by Glenelg Shire Council to develop a baseline data to build on knowledge of both project sites. Also, a compilation of photos to identify both flora and fauna species.




Also, key observations and recommendations for future management of the sites was taken into consideration during the field assessment.



2. Native Fauna Species (Photo Identification)



Superb Fairy-wren	Nankeen Kestrel	Little Raven
<i>Malurus cyaneus</i>	<i>Falco cenchroides</i>	<i>Corvus mellori</i>
		



Australian Magpie	Singing Honeyeater
<i>Gymnorhina tibicen</i>	<i>Gavicalis virescens</i>
	

Masked Lapwing	Striated Thornbill	Silvereye
<i>Vanellus miles</i>	<i>Acanthiza lineata</i>	<i>Zosterops lateralis</i>
		

Pacific Gull	Red Wattlebird	New Holland Honeyeater
<i>Larus pacificus</i>	<i>Anthochaera carunculata</i>	<i>Phylidonyris novaehollandiae</i>
		




Welcome Swallow	White's Skink
<i>Hirundo neoxena</i>	<i>Liopholis whitii</i>
	




Swamp Rat <i>Rattus lutreolis</i>	Swamp Rat <i>Rattus lutreolis</i>
	

Bush Rat <i>Rattus fuscipes</i>	Swamp Wallaby or Black-tailed Wallaby <i>Wallabia bicolor</i>
	

Native Flora Species (Photographic identification)




3.1 Nuns beach – Native flora species

Dune fan flower	Creeping Knotweed	Bidgee Widgee
<i>Scaevola calendulacea</i>	<i>Persicaria prostrata</i>	<i>Acaena novae-zelandiae</i>
		


Bower Spinach	Brown algae (Seedweed)	Coast Everlasting
<i>Tetragonia implexicoma</i>	<i>Phaeophyceae</i>	<i>Ozothamnus turbinatus</i>
		



Nuns beach - Native flora species (cont.).

Coastal Beard Heath	Knobby Club-rush	Swamp Club-rush
<i>Leucopogon parviflorus</i>	<i>Ficinia nodosa</i>	<i>Isolepis inundata</i>
		




Wattle Mat-rush	Moonah	Pigface or Karkalla
<i>Lomandra coriacea</i>	<i>Melaleuca lanceolata</i>	<i>Carpobrotus rossii</i>
		

Nuns beach - Native flora species (cont.).

Coast tussock grass	Seaberry Saltbush	Slender Honey Myrtle
<i>Poa poiformis</i>	<i>Rhagodia candolleana</i> subsp. <i>candolleana</i>	<i>Melaleuca gibbosa</i>
		




Hairy Spinifex	Muntries (Planted) – Occurs in far SW Vic.
<i>Spinifex sericeus</i>	<i>Kunzea pomifera</i>
	

3.2 Portland Foreshore Cliff – Native flora species

Bower Spinach	Coast Banksia – <i>Naturalised in Vic.</i>	Silver Banksia
<i>Tetragonia implexicoma</i>	<i>Banksia integrifolia</i>	<i>Banksia marginata</i>
		

Coastal Beard Heath	Golden Wattle	Wattle Mat-rush
<i>Leucopogon parviflorus</i>	<i>Acacia pycnantha</i>	<i>Lomandra filiformis</i>
		



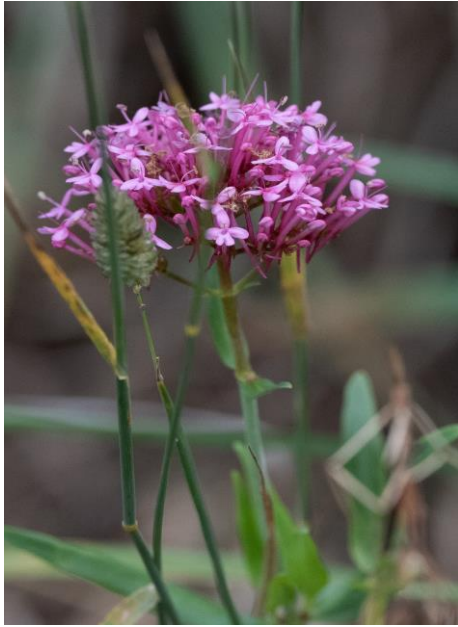
Portland Foreshore Cliff – Native Flora species (cont.).

Moonah	Drooping She-oak	Twiggy Daisy Bush
<i>Melaleuca lanceolata</i>	<i>Allocasuarina verticillata</i>	<i>Olearia ramulosa</i>
		

Seaberry Saltbush	Common Tussock-grass	Prickly Moses
<i>Rhagodia candolleana</i> subsp. <i>candolleana</i>	<i>Poa labillardierei</i>	<i>Acacia verticillata</i>
		



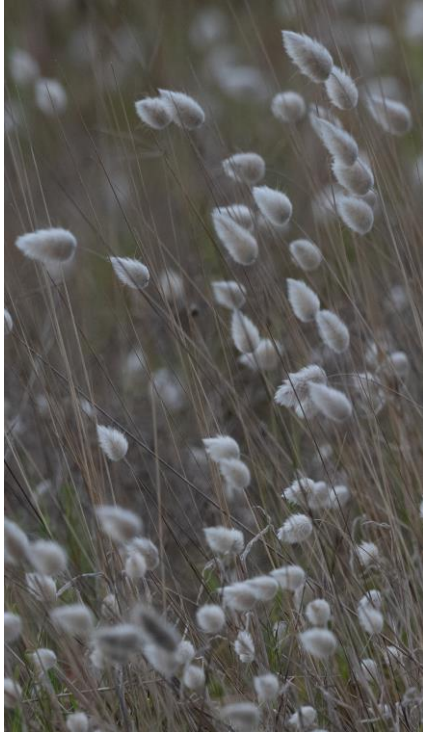
3. Exotic (weed) Flora species (Photographic identification)




4.1 Weeds: Project Site 1 (Nuns Beach)

Hastate Orache	Bristley Ox-tongue	Century weed
<i>Atriplex prostrata</i>	<i>Helminthotheca echioides</i>	<i>Centaurium erythracea</i>
		




Sea Spurge	Couch	Sea Rocket
<i>Euphorbia paralias</i>	<i>Cynodon dactylon</i>	<i>Cakile maritima subsp. maritima</i>
		




Weeds: Project Site 1 (Nuns Beach) (Cont.).

Flaxleaf Fleabane	Hairy Willow Herb	Hare's-tail Grass
<i>Erigeron bonariensis</i>	<i>Epilobium hirtigerum</i>	<i>Lagurus ovatus</i>
		




Sea Barley	Black Medic	Rat's tailed fescue
<i>Hordeum sp.</i>	<i>Medicago lupulina</i>	<i>Vulpia myuros f. myuros</i>
		




4.2 Weeds: Project Site 2 (Portland Foreshore cliff).

Agapanthus	African boneseed	Bridal Creeper
<i>Agapanthus praecox subsp. orientalis</i>	<i>Chrysanthemoides monilifera subsp. monilifera</i>	<i>Asparagus asparagoides</i>
		



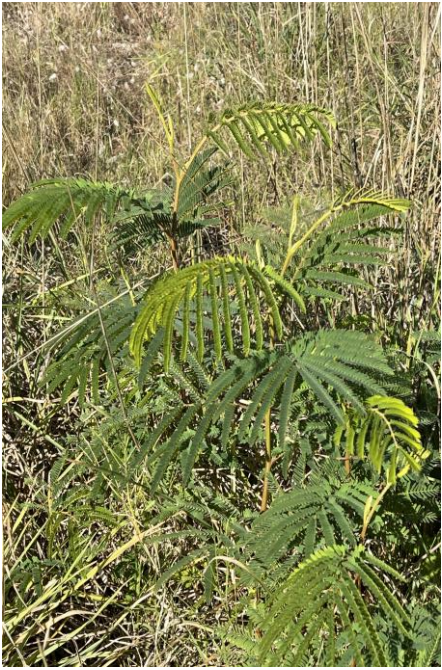
Cocksfoot	Large-leaf Cotoneaster	Cypress
<i>Dactylis glomerata</i>	<i>Cotoneaster glaucophyllus</i>	<i>Cypress sp.</i>
		


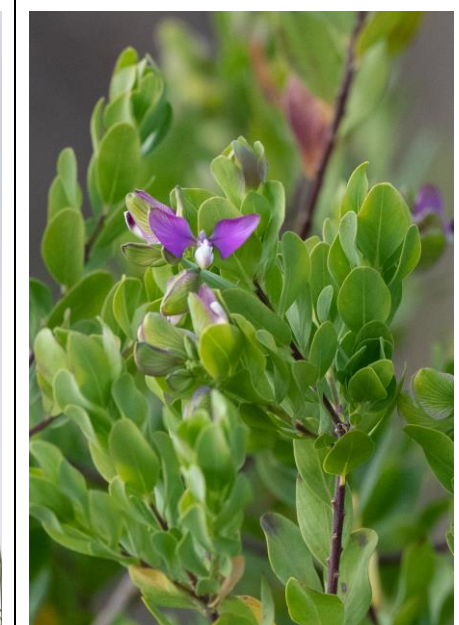
Weeds: Project Site 2 (Portland Foreshore Cliff) (Cont.).

Black Nightshade	English Ivy	Showy Honey-myrtle
<i>Solanum nigrum s.s.</i>	<i>Hedera helix s.l.</i>	<i>Melaleuca nesophila</i>
		

Pampas grass	Mirror bush	Gorse
<i>Coraderia sellonana</i>	<i>Coprosma repens</i>	<i>Ulex europaeus</i>
		

Weeds: Project Site 2 (Portland Foreshore Cliff) (Cont.).

Montpellier Broom	New Zealand Christmas tree	Cape Wattle
<i>Genista monspessulana</i>	<i>Pohutokawa metrosideros excelsa</i>	<i>Paraserianthes lophantha</i> subsp. <i>lophantha</i>
		

Radiata Pine	Myrtle-leaf Milkwort	Sweet Pittosporum
<i>Pinus radiata</i>	<i>Polygala myrtifolia</i>	<i>Pittosporum undulatum</i>
		

4. List of Flora, Fauna and Weeds found on both survey sites

NATIVE PLANTS FOUND ON SITES 1 & 2

Site 1: Beach	Site 2: Foreshore	SCIENTIFIC NAME	COMMON NAME	ORIGIN
X	X	<i>Acacia longifolia subsp. sophorae</i>	Coast Wattle	Native but some stands may be alien
	X	<i>Acacia melanoxylon</i>	Blackwood	
	X	<i>Acacia pycnantha</i>	Golden Wattle	
X	X	<i>Acacia verticillata</i>	Prickly Moses	
X	X	<i>Acaena novae-zelandiae</i>	Bidgee-widgee	
X	X	<i>Allocasuarina verticillata</i>	Drooping Sheoak	
X	X	<i>Alyxia buxifolia</i>	Sea Box	
X	X	<i>Apium prostratum subsp. prostratum</i>	Sea Celery	
	X	<i>Banksia integrifolia</i>	Coastal Banksia	Local to Victoria but Planted
	X	<i>Banksia marginata</i>	Silver Banksia	
X	X	<i>Carpobrotus rossii</i>	Karkalla	
X		<i>Chenopodium spp.</i>	Salt bush	
	X	<i>Correa spp.</i>	Correa	Local to Victoria but Planted
	X	<i>Dianella brevicaulis</i>	Small-flower Flax-lily	
X	X	<i>Ficinia nodosa</i>	Knobby Club-sedge	
	X	<i>Goodia medicaginea</i>	Western Golden tip	
	X	<i>Grevillea rosmanifolia</i>	Rosemary Grevillea	Local to Victoria but Planted
X		<i>Isolepis inundata</i>	Swamp Club-sedge	
X	X	<i>Juncus kraussii subsp. australiensis</i>	Sea Rush	
X		<i>Juncus spp.</i>	Rush	
X		<i>Kunzea pomifera</i>	Muntries	Local to Victoria but Planted
X	X	<i>Leptospermum laevigatum</i>	Coast Tea-tree	Native but some stands may be alien
X	X	<i>Leucopogon parviflorus</i>	Coast Beard-heath	
X	X	<i>Lomandra filiformis</i>	Wattle Mat-rush	
X		<i>Luzula meridionalis</i>	Common Woodrush	
X	X	<i>Melaleuca gibbosa</i>	Slender Honey-myrtle	
X	X	<i>Melaleuca lanceolata</i>	Moonah	
	X	<i>Myoporum insulare</i>	Common Boobiella	Native but some stands may be alien
	X	<i>Myoporum parvifolium</i>	Boobiella	Local to Victoria but Planted
X		<i>Olearia ramulosa</i>	Twiggy Daisy-bush	
X	X	<i>Ozothamnus turbinatus</i>	Coast Everlasting	
X		<i>Persicaria prostrata</i>	Creeping Knotweed	
X		<i>Phaeophycea</i>	Brown algae	
	X	<i>Pittosporum undulatum</i>	Sweet Pittosporum	Native but some stands may be alien
X	X	<i>Poa labillardierei</i>	Common Tussock-grass	
X	X	<i>Poa poiformis</i>	Coast Tussock-grass	
X	X	<i>Rhagodia candolleana subsp. candolleana</i>	Seaberry Saltbush	
X	X	<i>Rytidosperma spp.</i>	Wallaby Grass	
X		<i>Scaevola calendulacea</i>	Dune Fan Flower	Native but planted

X		<i>Spinifex sericeus</i>	Hairy Spinifex	
X	X	<i>Tetragonia implexicoma</i>	Bower Spinach	
X		<i>Typha domingensis</i>	Narrow-leaf Cumbungi	

WEEDS OF SITES 1 & 2

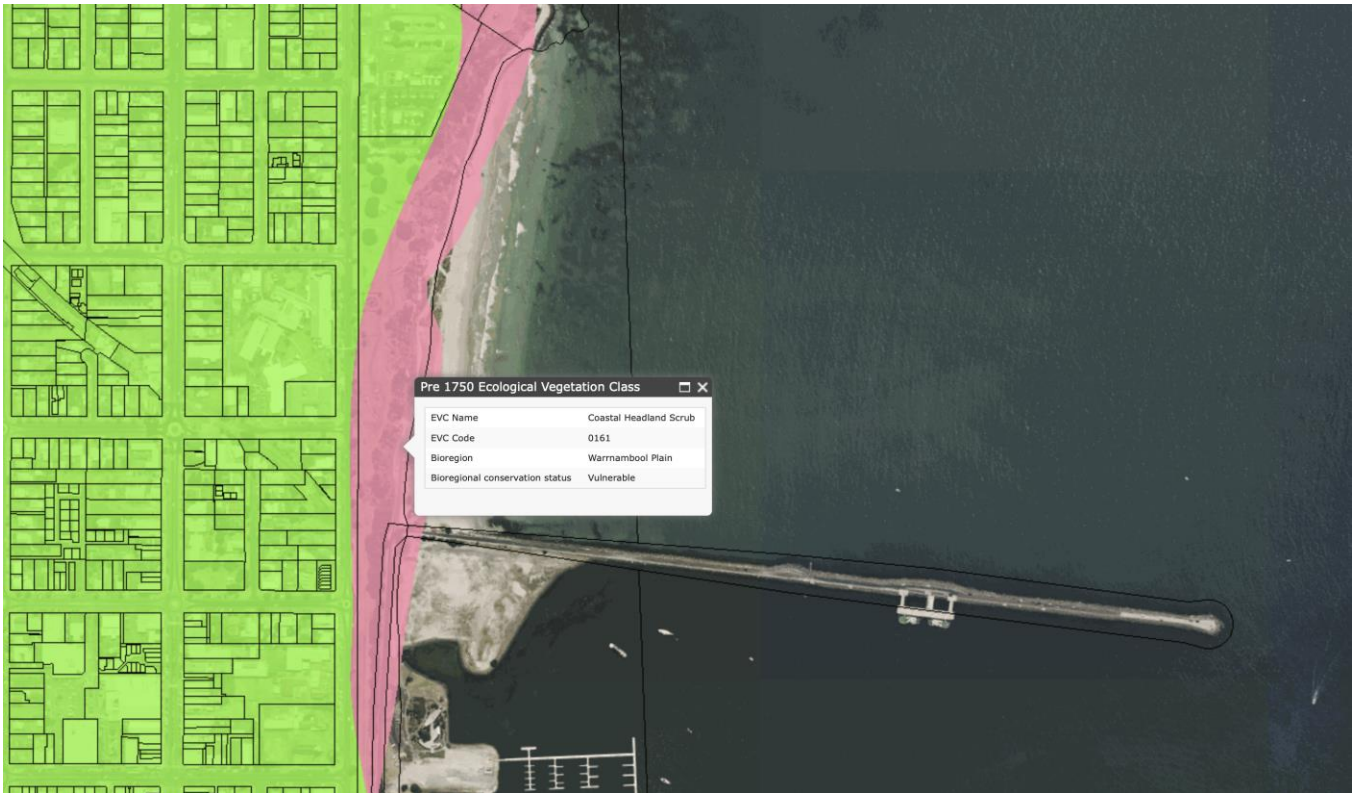
Site 1: Beach	Site 2: Foreshore	SCIENTIFIC NAME	COMMON NAME	ORIGIN
	X	<i>Agapanthus praecox subsp. orientalis</i>	Agapanthus	Introduced
X	X	<i>Agonis flexuosa</i>	Willow Myrtle	Introduced
X	X	<i>Arctotheca calendula</i>	Cape Weed	Introduced
X	X	<i>Asparagus asparagoides</i>	Bridal Creeper	Introduced
X		<i>Atriplex prostrata</i>	Hastate Orache	Introduced
X	X	<i>Brassica rapa</i>	White Turnip	Introduced
X	X	<i>Bromus diandrus</i>	Great Brome	Introduced
X		<i>Cakile maritima subsp. maritima</i>	Sea Rocket	Introduced
	X	<i>Callistemon spp.</i>	Bottlebrush	Introduced - probably WA
X		<i>Centaurium erythraea</i>	Common Centaury	Introduced
X	X	<i>Chrysanthemoides monilifera subsp. monilifera</i>	African Boneseed	Introduced
	X	<i>Cirsium vulgare</i>	Spear Thistle	Introduced
	X	<i>Coprosma repens</i>	Mirror Bush	Introduced
	X	<i>Coraderia sellonana</i>	Pampas Grass	Introduced
	X	<i>Cotoneaster glaucophyllus</i>	Large-leaf Cotoneaster	Introduced
X	X	<i>Cynodon dactylon</i>	Couch	Introduced
	X	<i>Cypress sp.</i>	Cypress	Introduced
X	X	<i>Dactylis glomerata</i>	Cocksfoot	Introduced
X	X	<i>Delairea odorata</i>	Cape Ivy	Introduced
X		<i>Epilobium hirtigerum</i>	Hairy Willow-herb	Introduced
X		<i>Erigeron bonariensis</i>	Flaxleaf Fleabane	Introduced
	X	<i>Erigeron karvinskianus</i>	Seaside Daisy	Introduced
X		<i>Erigeron sumatrensis</i>	Tall Fleabane	Introduced
	X	<i>Eucalyptus cladocalyx spp.</i>	Sugar gum	Introduced
X		<i>Euphorbia paralias</i>	Sea Spurge	Introduced
X		<i>Euphorbia peplus</i>	Petty Spurge	Introduced
	X	<i>Genista monspessulana</i>	Montpellier Broom	Introduced
	X	<i>Hedera helix s.l.</i>	English Ivy	Introduced
X	X	<i>Helminthotheca echioides</i>	Ox-tongue	Introduced
X	X	<i>Holcus lanatus</i>	Yorkshire Fog	Introduced
X		<i>Hordeum sp.</i>	Barley-grass	Introduced
X		<i>Juncus acutus subsp. acutus</i>	Spiny Rush	Introduced
X	X	<i>Lagurus ovatus</i>	Hare's-tail Grass	Introduced
	X	<i>Lolium perenne</i>	Perennial Rye-grass	Introduced
X		<i>Lomandra longifolia subsp.</i>	Spiny-headed Mat-rush	Planted - Possibly NSW form
X		<i>Medicago lupulina</i>	Black Medic	Introduced

X		<i>Medicago spp.</i>	Medic	Introduced
	X	<i>Melaleuca nesophila</i>	Showy Honey-myrtle	Introduced
	X	<i>Oxalis pes-caprae</i>	Soursob	Introduced
X	X	<i>Paraserianthes lophantha subsp. lophantha</i>	Cape Wattle	Introduced
	X	<i>Phalaris minor</i>	Lesser Canary-grass	Introduced
	X	<i>Pinus radiata</i>	Radiata Pine	Introduced
	X	<i>Pohutokawa metrosideros excelsa</i>	New Zealand Christmas tree	Introduced
	X	<i>Polygala myrtifolia</i>	Myrtle-leaf Milkwort	Introduced
	X	<i>Rhamnus alaternus</i>	Italian Buckthorn	Introduced
X	X	<i>Solanum nigrum s.s.</i>	Black Nightshade	Introduced
	X	<i>Sonchus oleraceus</i>	Common Sow-thistle	Introduced
X	X	<i>Ulex europaeus</i>	Gorse	Introduced
X	X	<i>Vulpia myuros f. myuros</i>	Rat's-tail Fescue	Introduced

NATIVE FAUNA SPECIES FOUND ON SITES 1 & 2

Site 1: Beach	Site 2: Foreshore	SCIENTIFIC NAME	COMMON NAME	TAXON_TYPE
X	X	<i>Gymnorhina tibicen</i>	Australian Magpie	Passerine birds
	X	<i>Wallabia bicolor</i>	Black-tailed Wallaby	Mammals
X	X	<i>Acanthiza pusilla</i>	Brown Thornbill	Passerine birds
X	X	<i>Rattus fuscipes</i>	Bush Rat	Mammals
X	X	<i>Rattus lutreolis</i>	Swamp Rat	Mammals
	X	<i>Corvus mellori</i>	Little Raven	Passerine birds
X		<i>Vanellus miles</i>	Masked Lapwing	Waders
X	X	<i>Falco cenchroides</i>	Nankeen Kestrel	Non-passerine birds
X	X	<i>Phylidonyris novaehollandiae</i>	New Holland Honeyeater	Passerine birds
X	X	<i>Larus pacificus</i>	Pacific Gull	Waders
X	X	<i>Anthochaera carunculata</i>	Red Wattlebird	Passerine birds
X	X	<i>Chirocephalids novaehollandiae</i>	Silver Gull	Waders
X	X	<i>Zosterops lateralis</i>	Silvereye	Passerine birds
X	X	<i>Gavicalis virescens</i>	Singing Honeyeater	Passerine birds
X	X	<i>Acanthiza lineata</i>	Striated Thornbill	Passerine birds
X		<i>Limnodynastes peronii</i>	Striped Marsh Frog	Amphibians
X	X	<i>Malurus cyaneus</i>	Superb Fairy-wren	Passerine birds
X	X	<i>Hirundo neoxena</i>	Welcome Swallow	Passerine birds
X	X	<i>Liopholis whitii GROUP</i>	White's Skink	Reptiles

5. Recommendations for Management for both assessed Sites.



Site 1 & 2 are classified as Ecological Vegetation Class (EVC): 161 – Coastal Headland Scrub which falls within the Warrnambool Plain Bioregion with a bioregional conservation status of Vulnerable. (Source of map information: Nature Vegetation Information Management System (NVIM)).



The map above has been provided to provide a reference to the EVC above.

Site 1: Nuns Beach – Recommendations for management

- Avoid any Soil related work along the bottom edge of the cliffs, as this is where there is existing Bush Rat and Swamp Rat habitat (Holes and burrows) along the west side of the beach track in the area behind the dune running north – south from the Carpark to the Cliff stairs at the north end.
- Although EVC 161 has no Log component to it, it could be argued that natural driftwood offers additional habitat features. This would provide additional natural habitat for White's skink.
- Revegetation species (where possible) should be based on what is found within EVC 161, however it was observed that there were no nearby sites that had not been highly modified in which to collect seed or plant material from for revegetation or used as a "Reference area" as a revegetation guide.
- To some degree, both EVC 161 and also EVC 160: Coastal Headland shrub (further north) could be referenced for revegetation species including:
 - Medium shrubs such as:
 - Seaberry Saltbush (*Rhagodia candolleana* ssp. *Candolleana*)
 - Coast Beard-heath (*Leucopogon parviflorus*)
 - Coast Daisy-bush (*Olearia axillaris*)
 - Small Herbs such as:
 - Karkalla (*Carprobrotus rossii*) – which can be revegetated by cuttings
 - Sea celery (*Apium prostratum* ssp. *prostratum*)
 - Medium Tufted Graminoids such as:
 - Coast Tussock-grass (*Poa poiformis* var. *poiformis*),
 - Common grass-sedge (*Carex beviculmis*) – closer to cliff along drain.
 - Medium Non-tufted Graminoids such as:
 - Knobby Club-sedge (*Ficinia nodosa*)
 - Australian Salt-grass (*Distichilis distichopylla*)
 - Scrambler / Climbers:
 - Bower Spinach (*Tetragonia implexicoma*) – which can be revegetated by cuttings
 - Small-leaved clematis (*Clematis microphylla* var. *microphylla*)
- Remove all weeds from the dunes and revegetation with local indigenous species – refer to plant list for what is a weed and what is a native. The current *Lomandra* growing on the dunes is thought to be an NSW form of *Lomandra longifolia* and not the local indigenous *Lomandra species*.



Site 2: Portland Foreshore Cliff – Recommendation for management

- This site covers a steep cliff face which runs north south of Site 1 to just south of the Portland Jetty.
- The majority of site 2 is covered either in non-native plants, introduced weeds or garden plants with a small percentage covered by native local indigenous plant species.
- Any weed control should include gradual removal of woody weeds using a cut and paint method which leaves the roots in place to stabilise the cliff face. No grass should also be removed to stabilise the soil and to stop any wind erosion. Removal small sections, followed by revegetation should be undertaken to protect the cliff face and reduce potential erosion. Any native plants should be left untouched.
- Also rabbit holes SHOULD NOT BE FILLED IN. Some of these holes were observed to be being used by the native bush rat and also may be being used by native reptiles. Also avoid disturbing any holes or burrows of Bush rats right along the edge of west side of Lee Breakwater road.
- Revegetation could be based on a combination of EVC 161 and EVC 23: Herb-rich Foothill Forest.
- A small element of EVC 23: Herb-rich Foothill Forest could be incorporated along the very top of the cliff top with some taller plants. However, it should be noted that EVC 23 probably would have been located closer to 50 – 100 m further west away from the foreshore area on the Volcanic plain area and there would have been an eco-tone (mixing of two EVC types) between EVC 23 and EVC 161.
- Both EVC 161, EVC 160 & EVC 23: could be referenced for revegetation species including:
 - Understorey Trees >5m (Mid to top of slope only) such as:
 - Blackwood (*Acacia melanoxylon*)
 - Drooping Sheoak (*Allocasuarina verticillata*)
 - Medium shrubs such as:
 - Prickly Moses (*Acacia verticillata*)
 - Golden Wattle (*Acacia pycnantha*)
 - Silver Banksia (*Banksia marginata*)
 - Manuka (*Leptospermum scoparium*)
 - Prickly Tea tree (*Leptospermum continentale*)
 - Seaberry Saltbush (*Rhagodia candolleana* ssp. *Candolleana*)
 - Coast Beard-heath (*Leucopogon parviflorus*)
 - Coast Daisy-bush (*Olearia axillaris*)
 - Small shrubs such as:
 - Cushion Bush (*Leucophyta brownii*)
 - Rigid Bush-pea (*Pultenaea stricta*)
 - Thyme Rice-flower (*Pimelea serphyllifolia*)
 - Small Herbs such as:
 - Karkalla (*Carprobrotus rossii*) – which can be revegetated by cuttings
 - Sea celery (*Apium prostratum* ssp. *prostratum*)
 - Large Tufted Graminoid such as:
 - Coast Saw-sedge (*Gahnia trifida*)
 - Variable Sword-sedge (*Lepidosperma laterale* var. *majus*)
 - Medium Tufted Graminoids such as:
 - Coast Tussock-grass (*Poa poiformis* var. *poiformis*),
 - Common grass-sedge (*Carex beviculmis*) – closer to cliff along drain.
 - Wattle Mat-rush (*Lomandra filiformis* ssp. *coriacea*)
 - Small-flower Flax-lily (*Dianella brevicaulis*)
 - Medium Non-tufted Graminoids such as:
 - Knobby Club-sedge (*Ficinia nodosa*)
 - Australian Salt-grass (*Distichilis distichopylla*)
 - Scrambler / Climbers:
 - Bower Spinach (*Tetragonia implexicoma*) – which can be revegetated by cuttings
 - Small-leaved clematis (*Clematis microphylla* var. *microphylla*)

Photos of Site 2:



Photo above: Looking south down across Site 2.

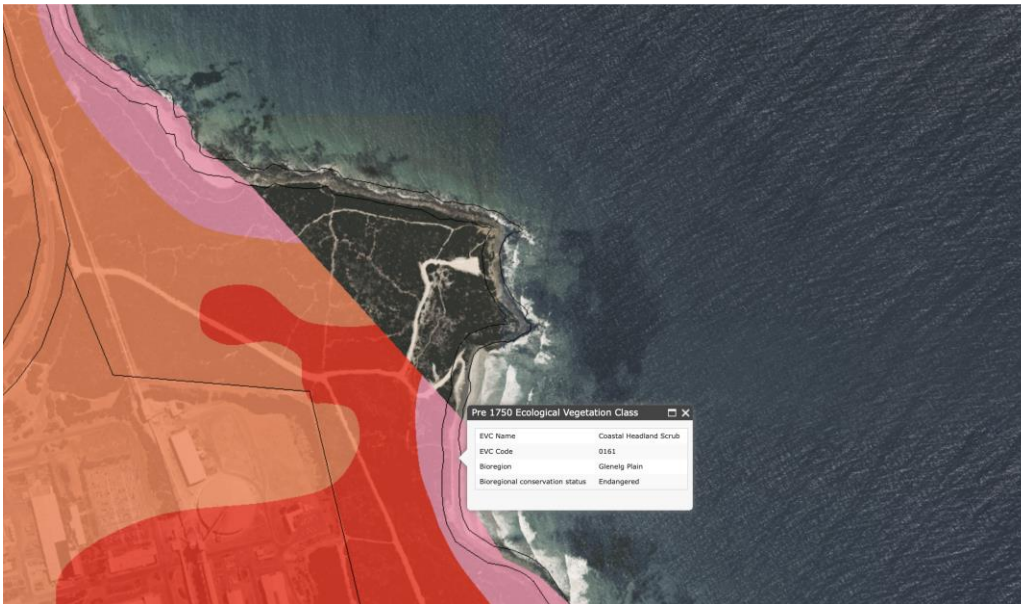


Photo looking northwest up at the small cliff area of Site 2.

6. Reference areas for Revegetation

What is a Reference area?

A Reference area is an area of where a similar EVC type is still in its natural state, being unaltered by development or clearing and contains a low weed cover. Reference areas can provide a good source of local indigenous provenance seed and biological material which can be collected and propagated (where the seed can be grown by a local nursery and used for revegetation projects) or transplanted into a revegetation site.



Reference area 1: Point Danger Gannet Colony (See map below). Although located within a different bioregion (Glenelg Plain), it is located within 5-10 mins drive south of the revegetation sites. Point Danger has an area near the Gannett colony which contains a lot of the original EVC vegetation with low weed cover and although not mapped, it appears to best represent EVC 161: Coastal Headland Scrub.



Reference area 2: Narrawong Foreshore (See map above). Located in the bioregion of Warrnambool Plain and located approximately 15 minutes' drive to the north. It consists of EVC 160: Coastal Dune Scrub and the best native plant specimens are found closer to the estuary bridge. The front dunes however unfortunately are covered in exotic Marram Grass and does not provide a good source of any local native seed.

8.1 EVC Benchmarks as reference for Revegetation Species



Description:

Scrub or shrubland to 0.5 m tall on steep, rocky coastal headlands often associated with cliffs exposed to the stresses of extreme salt-laden winds and salt spray from the south west. Occurs on shallow sands in association with rocky sections of the coast.

Life forms:

Life form	#Spp	%Cover	LF code
Medium Shrub	5	50%	MS
Small Shrub	2	10%	SS
Prostrate Shrub	1	1%	PS
Large Herb	2	1%	LH
Medium Herb	4	10%	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	5	15%	MTG
Medium to Tiny Non-tufted Graminoid	2	5%	MNG
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>Leucopogon parviflorus</i>	Coast Beard-heath
MS	<i>Leptospermum scoparium</i>	Manuka
MS	<i>Banksia marginata</i>	Silver Banksia
MS	<i>Acacia verticillata</i>	Prickly Moses
SS	<i>Leucophyta brownii</i>	Cushion Bush
SS	<i>Acrotriche affinis</i>	Ridged Ground-berry
SS	<i>Pultenaea stricta</i>	Rigid Bush-pea
PS	<i>Acrotriche serrulata</i>	Honey-pots
PS	<i>Bossiaea prostrata</i>	Creeping Bossiaea
MH	<i>Viola hederacea</i> sensu Willis (1972)	Ivy-leaf Violet
MH	<i>Gonocarpus tetragynus</i>	Common Raspwort
SH	<i>Selliera radicans</i>	Shiny Swamp-mat
SH	<i>Oxalis corniculata</i> s.l.	Yellow Wood-sorrel
LTG	<i>Gahnia trifida</i>	Coast Saw-sedge
MTG	<i>Poa poiformis</i> var. <i>poiformis</i>	Coast Tussock-grass
MTG	<i>Schoenus apogon</i>	Common Bog-sedge
MTG	<i>Dianella revoluta</i> s.l.	Black-anther Flax-lily
MTG	<i>Carex breviculmis</i>	Common Grass-sedge
MNG	<i>Ficinia nodosa</i>	Knobby Club-sedge
MNG	<i>Distichlis distichophylla</i>	Australian Salt-grass

Recruitment:

Continuous

Organic Litter:

40 % cover

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	<i>Sonchus oleraceus</i>	Common Sow-thistle	high	low
MH	<i>Hypochoeris radicata</i>	Cat's Ear	high	low
MH	<i>Centaurium erythraea</i>	Common Centaury	high	low
MH	<i>Anagallis arvensis</i>	Pimpernel	high	low
LNG	<i>Holcus lanatus</i>	Yorkshire Fog	high	high

EVC/Bioregion Benchmark for Vegetation Quality Assessment Warrnambool Plain bioregion

EVC 23: Herb-rich Foothill Forest

Description:

Occurs on relatively fertile, moderately well-drained soils on an extremely wide range of geological types and in areas of moderate to high rainfall. Occupies easterly and southerly aspects mainly on lower slopes and in gullies. A medium to tall open forest or woodland to 25 m tall with a small tree layer over a sparse to dense shrub layer. A high cover and diversity of herbs and grasses in the ground layer characterise this EVC.

Large trees:

Species	DBH(cm)	#/ha
<i>Eucalyptus</i> spp.	70 cm	20 / ha

Tree Canopy Cover:

%cover	Character Species	Common Name
40%	<i>Eucalyptus obliqua</i> <i>Eucalyptus ovata</i>	Messmate Stringybark Swamp Gum

Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Understorey Tree or Large Shrub	1	5%	T
Medium Shrub	5	15%	MS
Small Shrub	2	1%	SS
Prostrate Shrub	2	5%	PS
Large Herb	1	1%	LH
Medium Herb	10	20%	MH
Small or Prostrate Herb	3	5%	SH
Large Tufted Graminoid	3	10%	LTG
Large Non-tufted Graminoid	2	10%	LNG
Medium to Small Tufted Graminoid	5	20%	MTG
Medium to Tiny Non-tufted Graminoid	2	5%	MNG
Ground Fern	3	10%	GF
Scrambler or Climber	2	1%	SC
Bryophytes/Lichens	na	20%	BL

EVC 23: Herb-rich Foothill Forest - Warrnambool Plain bioregion

LF Code	Species typical of at least part of EVC range	Common Name
T	<i>Acacia melanoxylon</i>	Blackwood
MS	<i>Leptospermum continentale</i>	Prickly Tea-tree
MS	<i>Banksia marginata</i>	Silver Banksia
MS	<i>Acacia verticillata</i>	Prickly Moses
MS	<i>Acacia mucronata ssp. longifolia</i>	Narrow-leaf Wattle
SS	<i>Tetraloche ciliata</i>	Pink-bells
SS	<i>Amperea xiphoclada var. xiphoclada</i>	Broom Spurge
PS	<i>Acrotriche serrulata</i>	Honey-pots
PS	<i>Bossiaea prostrata</i>	Creeping Bossiaea
PS	<i>Acrotriche prostrata</i>	Trailing Ground-berry
LH	<i>Pterostylis longifolia s.l.</i>	Tall Greenhood
MH	<i>Gonocarpus tetragynus</i>	Common Raspwort
MH	<i>Drosera peltata ssp. auriculata</i>	Tall Sundew
MH	<i>Helichrysum scorpioides</i>	Button Everlasting
MH	<i>Viola hederacea sensu Entwisle (1996)</i>	Ivy-leaf Violet
SH	<i>Goodenia lanata</i>	Trailing Goodenia
SH	<i>Lobelia pedunculata s.l.</i>	Matted Pratia
SH	<i>Oxalis exilis</i>	Shady Wood-sorrel
SH	<i>Galium ciliare</i>	Hairy Bedstraw
LTG	<i>Lepidosperma laterale var. majus</i>	Variable Sword-sedge
LTG	<i>Austrostipa pubinodis</i>	Tall Spear-grass
LNG	<i>Tetrarrhena juncea</i>	Forest Wire-grass
MTG	<i>Dianella revoluta s.s.</i>	Black-anther Flax-lily
MTG	<i>Lomandra filiformis ssp. filiformis</i>	Wattle Mat-rush
MTG	<i>Poa sieberiana var. hirtella</i>	Grey Tussock-grass
MTG	<i>Lomandra filiformis ssp. coriacea</i>	Wattle Mat-rush
MNG	<i>Microlaena stipoides var. stipoides</i>	Weeping Grass
GF	<i>Pteridium esculentum</i>	Austral Bracken
GF	<i>Lindsaea linearis</i>	Screw Fern
GF	<i>Adiantum aethiopicum</i>	Common Maidenhair
SC	<i>Cassytha pubescens s.s.</i>	Downy Dodder-laurel
SC	<i>Billardiera scandens</i>	Common Apple-berry
SC	<i>Clematis aristata</i>	Mountain Clematis

Recruitment:

Continuous

Organic Litter:

40 % cover

Logs:

20 m/0.1 ha.

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
MH	<i>Hypochoeris radicata</i>	Cat's Ear	high	low

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www.dse.vic.gov.au

EVC/Bioregion Benchmark for Vegetation Quality Assessment Warrnambool Plain bioregion

EVC 161: Coastal Headland Scrub

Description:

Scrub or shrubland to 0.5 m tall on steep, rocky coastal headlands often associated with cliffs exposed to the stresses of extreme salt-laden winds and salt spray from the south west. Occurs on shallow sands in association with rocky sections of the coast.

Life forms:

Life form	#Spp	%Cover	LF code
Medium Shrub	5	50%	MS
Small Shrub	2	10%	SS
Prostrate Shrub	1	1%	PS
Large Herb	2	1%	LH
Medium Herb	4	10%	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	5	15%	MTG
Medium to Tiny Non-tufted Graminoid	2	5%	MNG
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>Leucopogon parviflorus</i>	Coast Beard-heath
MS	<i>Leptospermum scoparium</i>	Manuka
MS	<i>Banksia marginata</i>	Silver Banksia
MS	<i>Acacia verticillata</i>	Prickly Moses
SS	<i>Leucophyta brownii</i>	Cushion Bush
SS	<i>Acrotriche affinis</i>	Ridged Ground-berry
SS	<i>Pultenaea stricta</i>	Rigid Bush-pea
PS	<i>Acrotriche serrulata</i>	Honey-pots
PS	<i>Bossiaea prostrata</i>	Creeping Bossiaea
MH	<i>Viola hederacea</i> sensu Willis (1972)	Ivy-leaf Violet
MH	<i>Gonocarpus tetragynus</i>	Common Raspwort
SH	<i>Selliera radicans</i>	Shiny Swamp-mat
SH	<i>Oxalis corniculata</i> s.l.	Yellow Wood-sorrel
LTG	<i>Gahnia trifida</i>	Coast Saw-sedge
MTG	<i>Poa poiformis</i> var. <i>poiformis</i>	Coast Tussock-grass
MTG	<i>Schoenus apogon</i>	Common Bog-sedge
MTG	<i>Dianella revoluta</i> s.l.	Black-anther Flax-lily
MTG	<i>Carex breviculmis</i>	Common Grass-sedge
MNG	<i>Ficinia nodosa</i>	Knobby Club-sedge
MNG	<i>Distichlis distichophylla</i>	Australian Salt-grass

Recruitment:

Continuous

Organic Litter:

40 % cover

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	<i>Sonchus oleraceus</i>	Common Sow-thistle	high	low
MH	<i>Hypochoeris radicata</i>	Cat's Ear	high	low
MH	<i>Centaureum erythraea</i>	Common Centaury	high	low
MH	<i>Anagallis arvensis</i>	Pimpernel	high	low
LNG	<i>Holcus lanatus</i>	Yorkshire Fog	high	high

REFERENCES

- Alcoa of Australia (1980). Alcoa Portland Aluminium Smelter – Environment Effects Statement and Draft Environmental Impact Statement. Kinhill Planners Pty Ltd.
- Farnes, Robert F. (2019). Birds of Portland District Victoria 2nd Ed. Portland Field Naturalist Club.
- Sparrow, Kevin (2020). Plants of the Great South West. Australian Plants Society – Warrnambool & District Group Inc.

Website references:

Native Vegetation Information Management System (NVIM): <https://nvim.delwp.vic.gov.au>

NatureKit: <http://maps.biodiversity.vic.gov.au/viewer/?viewer=NatureKit>

APPENDICES – PAST REVEGETATION LIST FOR SITE 1

Plant list for Portland Cliffs

Latin name	Common name
<i>Acacia longifolia</i>	Sallow Wattle
<i>Alyxia buxifolia</i>	Sea Box
<i>Beyeria leschenaultii</i>	Pale Turpentine Bush
<i>Leucopogon parviflorus</i>	Coast Beard Heath
<i>Rhagodia candolleana</i>	Seaberry Salt Bush
<i>Myoporum insulare</i>	Common Boobialla
<i>Solanum laciniatum</i>	Kangaroo Apple
<i>Ixodia achillaeoides</i>	Small Ixodia
<i>Leucophyta brownii</i>	Cushion Bush
<i>Correa alba var. pannosa</i>	White Correa
<i>Carpobrotus rossii</i>	Karkalla or Native Pig Face
<i>Tetragonia implexicoma</i>	Bower Spinach
<i>Lepidosperma gladiatum</i>	Coast Saw-sedgge
<i>Lomandra longifolia</i>	Spinyheaded Mat-rush
<i>Poa labillardieri</i>	Common Tussock Grass
<i>Austrostipa flavescens</i>	Coast Spear grass
<i>Poa poiformis</i>	Blue Tussock grass
<i>Clematis microphylla</i>	Small leaved Clematis
<i>Pultenaea canaliculata</i>	Coast Bush pea
<i>Dianella brevicalis</i>	Short stalk Flax lily
<i>Acaena novae-zealandiae</i>	Bidgee Widgee

Record of plants from ~~Evan~~ → From Evan Roberts in Wendt's account

PLANT ORDER

Group Portland Coastal Cliffs Inc Address PO Box 580 Portland VIC 3305		Contact Person Raelene Mibus Phone 0409 964 466 Date of order						
Delivery date & details:								
Plant species	common name	total no. required	tray type	no. units per tray	no. of units	cost per unit	Cost \$	
TREES								
<i>Melaleuca lanceolata</i>	Moonah							
<i>Allocasuarina verticillata</i>	Drooping Sheoak							
<i>Eucalyptus brownii</i>	Brown stringy bark							
<i>Eucalyptus obliqua</i>	Messmate							
<i>Eucalyptus ovata</i>	Swamp Gum							
<i>Acacia pycnantha</i>	Golden wattle							
<i>Banksia marginata</i>	Silver Banksia							
SHRUBS								
<i>Oleria axillaris</i>	Coast Dasiy							
<i>Senecia odoratus</i>	Scented Goundsel							
<i>Acacia verticillata</i>	Prickly Moses	20						
<i>Acacia myrtifolia</i>	Heath Wattle							
<i>Allocasuarina paludosa</i>	Scrub sheoak							
<i>Leptospermum continentale</i>	Prickly teatree							
<i>Leptospermum myrsinoides</i>	Heath (Silkie) Teatree							
<i>Ozothamnus ferrugineus</i>	Coast Everlasting							
<i>Ozothamnus turbinatus</i>	Tree helichrysum							
<i>Leucopogon parviflorus</i>	Coast Beard-heath							
<i>Leucophyta brownii</i>	Cushion Bush							
<i>Correa alba</i>	White Correa - tall form	6						
<i>Correa reflexa</i>	Native fuchsia	21						
<i>Rhagodia candolleana</i>	Sea Berry Saltbush							
<i>Enchalema</i>	Ruby Slatbush							
<i>Pimelea serpyllifolia</i> or <i>P. flavo</i>	Rice flower							
<i>Hakea nodosa</i> or <i>H. rostrate</i>	Yellow or Beaked Hakea							
<i>Alyxia buxifolia</i>	Sea box							
<i>Pomaderris oraria</i>	Coast Omoaderris							
<i>Kunzea parvifolia</i>	Violet Kunzea							
<i>Melaleuca gibbosa</i>	Slender Honey Myrtle							
<i>Melaleuca squarosa</i>	Scented Paperbark							
GROUND COVERS								
<i>Tetragonia implexicoma</i>	Bower Spinach							
<i>Carpobrotus rossi</i>	Karkala/Pigfice							
<i>Aceana novae-zealandiae</i>	Bidgee-Widgee							
<i>Kennedia pomifera</i>	Muntries							
<i>Kennedia prostrata</i>	running postman	10						
GRASSES/TUFTED SPP.								
<i>Poa poiformis</i>	Blue Tussock	80						
<i>Dianlla revolulta</i>								
<i>Gahnia sp.</i>								
<i>Allodanthonia</i>	Wallaby grass							
<i>Themeda australis</i>	Roo Grass							
<i>Ficinia nodosa</i>	Knobby Club-rush							
TOTAL								

4/1/000 -
payable in 2011.

- *Stipa mollis* 40.
- *Themeda Australis* 2x40
- *Clematis microphylla* 56
- *Spindium parvifolium* 20.
- *Disphyma crasefolia* 40.