

# **Towradgi Beach Dune Vegetation Site Plan 2018**

**August 2018**

<u>VERSION</u>	DATE	COMMENTS	REVISED BY
0.1	February 2015		Aimee Beardsmore
0.2	August 2016	New vegetation mapping and revised actions	Elli Kircher
0.3	June 2017	Revised actions	Martine Fraser
0.4	August 2018	Updated due to adoption of Tree and Vegetation Vandalism Policy	Martine Fraser

## Introduction

Council adopted a Wollongong Dune Management Strategy for the Patrolled Swimming Areas of 17 Beaches in March 2014. Management options were identified to address safety and recreational amenity issues, whilst also considering ecological values and the role of dunes in protection against coastal hazards.

Options relating to vegetation management are management of noxious and invasive weed species and management of subspecies of *Acacia longifolia* (Coastal Wattle).

This site plan will guide vegetation management works which will be undertaken by a number of parties including Council's dune crew and contractors, and Dunecare volunteers.

## Vegetation Maps

Vegetation mapping was initially undertaken at Towradgi Beach on 24 July, 4 and 11 August 2014 to inform works and provide a baseline to monitor progress. The site was divided into Bays as delineated by access paths. Each Bay was divided into patches to indicate the location and abundance of weeds and native plants.

Vegetation mapping was re-done in August 2016 to update the maps to inform works given the large amount of work that has already been conducted.

## Management Actions and Priorities

Actions have been prioritised taking into consideration the following factors:

1. The overall aim to improve sight lines for lifeguards and lifesavers, recreational amenity and site access.
2. Safety of those working on the site. For example, potential for cuts from old wire and broken glass and eye injury from sticks and branches.
3. Suitability of actions to be undertaken by different parties. For example, some activities such as spraying and using mechanical equipment cannot be undertaken by Dunecare participants.
4. Severity and type of weed infestation. For example several Weeds of National Significance (WoNS) are present in the dunes. These include *Chrysanthemoides monilifera* subsp. *rotundata* (Bitou Bush), *Lantana camara* (Lantana), *Asparagus asparagoides* (Bridal Creeper), *Asparagus aethiopicus* (Asparagus Fern), *Senecio madagascariensis* (Fireweed), *Anredera cordifolia* (Madeira Vine) and *Opuntia* species (Prickly Pear).
5. Resources available.
6. Need to minimise weed reinfestation.

## General Planting Guidelines

Tube stock should be planted into bare areas at a density of one plant per square metre or one or two per square metre for grasses (NSW DLWC 2001). Planting will only occur in areas where weeds or dead vegetation are removed, or where vegetation vandalism has occurred, in accordance with the Tree and Vegetation Vandalism Policy

Species to be planted should be selected from Council's adopted dune planting list as shown below (GHD 2014). The site has been divided into up to four management zones to aid selection of species for planting. Location of zones shown on the maps is indicative only. Not all zones occur at each beach.

Zone 1 – no planting

Zone 2 – species from incipient dune list can be planted

Zone 3 – species from fore-dune/ crest and incipient dune lists can be planted

Zone 4 – species from hind-dune can be planted

Where planting is to replace tree or vegetation that was subject to vandalism, Council will respond in accordance with the Tree and Vegetation Vandalism Policy, adopted by Council on 23 July 2018. This may result in species selection that varies from these guidelines.

## Plant species list for dune planting – Appendix I Dune Management Strategy (GHD 2014)

For the patrolled beach management zones, Council will consider sight line requirements when selecting suitable species for planting. Note that several patrolled beaches do not have a hind dune, and in some patrolled beach management areas, tall-growing variants of subspecies of *Acacia longifolia* have created sight line problems for lifeguard/lifesavers and can exist as a monoculture.

### Incipient dune

Scientific Name	Common Name
<i>Actites megalocarpa</i>	Coastal Sowthistle
<i>Calystegia soldanella</i>	
<i>Canavalia rosea</i>	Beach Bean
<i>Carex pumila</i>	Strand Sedge
<i>Carpobrotus glaucescens</i>	Pigface
<i>Cynodon dactylon</i>	Couch
<i>Dianella congesta</i>	Coastal Flax Lily
<i>Ficinia nodosa</i>	Clubrush
<i>Melanthera biflora</i>	
<i>Poa billardierei</i>	Coastal Fescue

Scientific Name	Common Name
<i>Scaevola calendulacea</i>	Scented Fanflower
<i>Senecio spathulatus</i>	
<i>Spinifex sericeus</i>	Spinifex
<i>Sporobolus virginicus</i>	Sand Couch
<i>Tetragonia tetragonioides</i>	Warrigal Greens, Warrigal Spinach

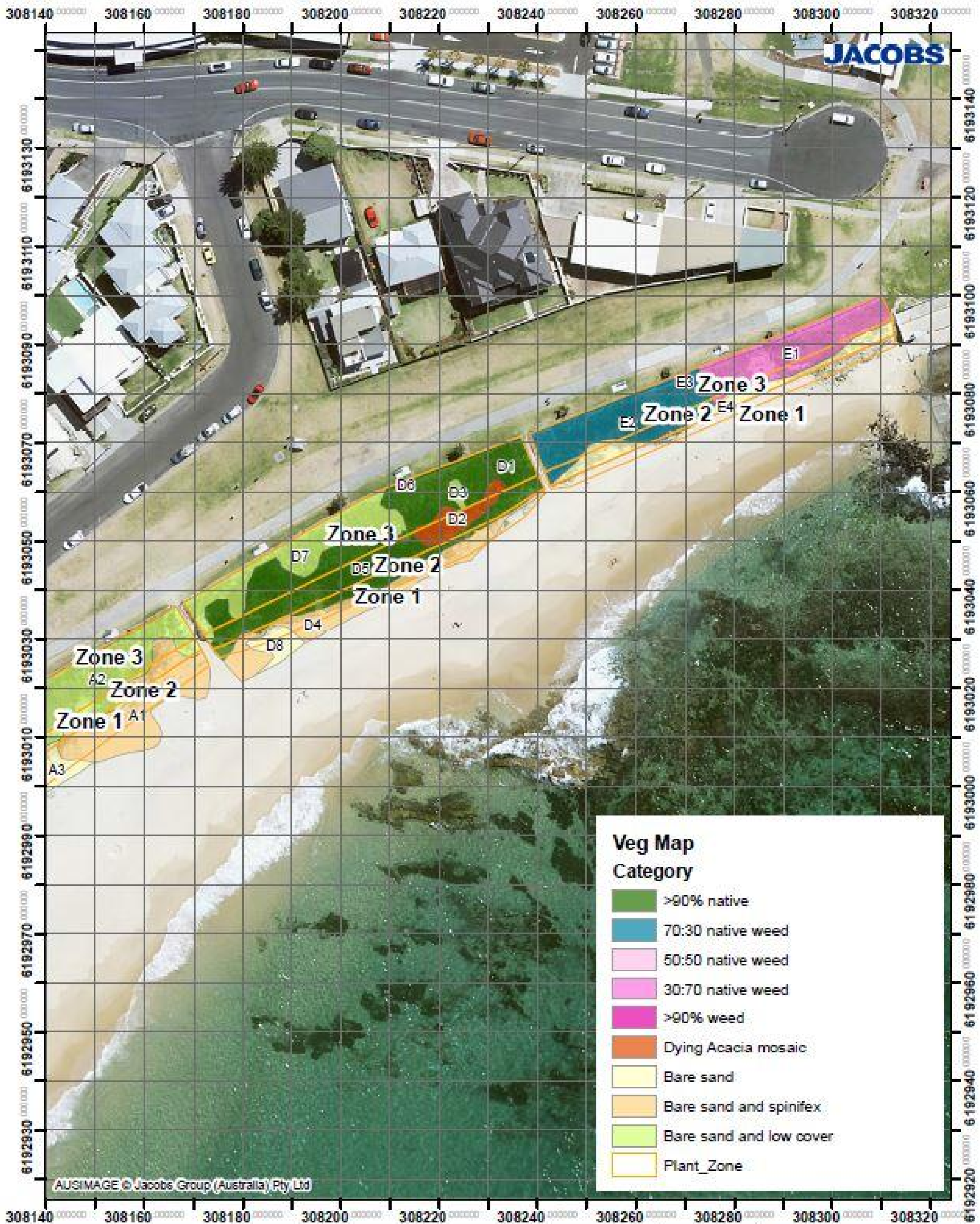
### Fore-dune and Crest

Scientific Name	Common Name
<i>Atriplex australasica</i>	Saltbush
<i>Breynia oblongifolia</i>	Coffee Bush
<i>Cayratia clematidea</i>	Slender Grape
<i>Commelina cyanea</i>	Scurvy Weed
<i>Correa alba</i> var. <i>alba</i>	White Correa
<i>Dichondra repens</i>	Kidney Weed
<i>Hibbertia scandens</i>	Golden Guinea Flower
<i>Imperata cylindrica</i> var. <i>major</i>	Blady Grass
<i>Leucopogon parviflorus</i>	White-beard
<i>Lomandra longifolia</i>	Mat Rush
<i>Monotoca elliptica</i>	Tree Broom-heath
<i>Monotoca scoparia</i>	
<i>Myoporum boninense</i> subsp. <i>australe</i>	Boobialla
<i>Pelargonium australe</i>	Coastal Geranium
<i>Rhagodia candolleana</i> subsp. <i>candolleana</i>	Seaberry Saltbush
<i>Westringia fruticosa</i>	Coastal Rosemary

### Hind-dune and creek mouths

Scientific Name	Common Name
<i>Acronychia oblongifolia</i>	White Aspen
<i>Acronychia wilcoxiana</i>	Silver Aspen
<i>Alphitonia excelsa</i>	Red Ash
<i>Banksia integrifolia</i> subsp. <i>integrifolia</i>	Coastal Banksia
<i>Carex appressa</i>	
<i>Casuarina glauca</i>	Swamp Oak
<i>Celtis paniculata</i>	Native Celtis
<i>Clerodendrum tomentosum</i>	Hairy Clerodendrum

<b>Scientific Name</b>	<b>Common Name</b>
<i>Corymbia gummifera</i>	Red Bloodwood
<i>Crinum pedunculatum</i>	Swamp- Lily
<i>Desmodium brachypodum</i>	
<i>Dodonaea triquetra</i>	Hop Bush
<i>Duboisia myoporoides</i>	Poison Corkwood
<i>Endiandra sieberi</i>	Corkwood
<i>Eucalyptus botryoides</i>	Bangalay
<i>Eucalyptus pilularis</i>	Blackbutt
<i>Eucalyptus robusta</i>	Swamp Mahogany
<i>Eustrephus latifolius</i>	Wombat Berry
<i>Gahnia clarkei</i>	Saw-sedge
<i>Gahnia melanocarpa</i>	Saw-sedge
<i>Geitonoplesium cymosum</i>	Scrambling Lily
<i>Glochidion ferdinandi</i> var. <i>ferdinandi</i>	Smooth Cheese tree
<i>Glochidion ferdinandi</i> var. <i>pubens</i>	Hairy Cheese Tree
<i>Guioa semiglauca</i>	
<i>Hardenbergia violacea</i>	False Sarsparilla
<i>Homalanthus populifolius</i>	Bleeding Heart
<i>Juncus krausii</i> subsp. <i>australiensis</i>	Sea Rush
<i>Kennedia rubicunda</i>	Running Postman
<i>Leptospermum laevigatum</i>	Coastal Tea-tree
<i>Melaleuca linariifolia</i>	Snow in Summer
<i>Myrsine variabilis</i>	Muttonwood
<i>Notelaea venosa</i>	Native Olive
<i>Oplismenus imbecillis</i>	Basket Grass
<i>Pandorea pandorana</i> subsp. <i>pandorana</i>	Wonga Wonga Vine
<i>Pittosporum revolutum</i>	Rough-fruit Pittosporum
<i>Planchonella (Pouteria) australis</i>	Black Apple
<i>Poa poiformis</i>	Coastal Tussock
<i>Pseuderanthemum variabile</i>	Pastel Flower
<i>Synoum glandulosum</i> subsp. <i>glandulosum</i>	Bastard Rosewood
<i>Zoysia macrantha</i>	Coastal Couch



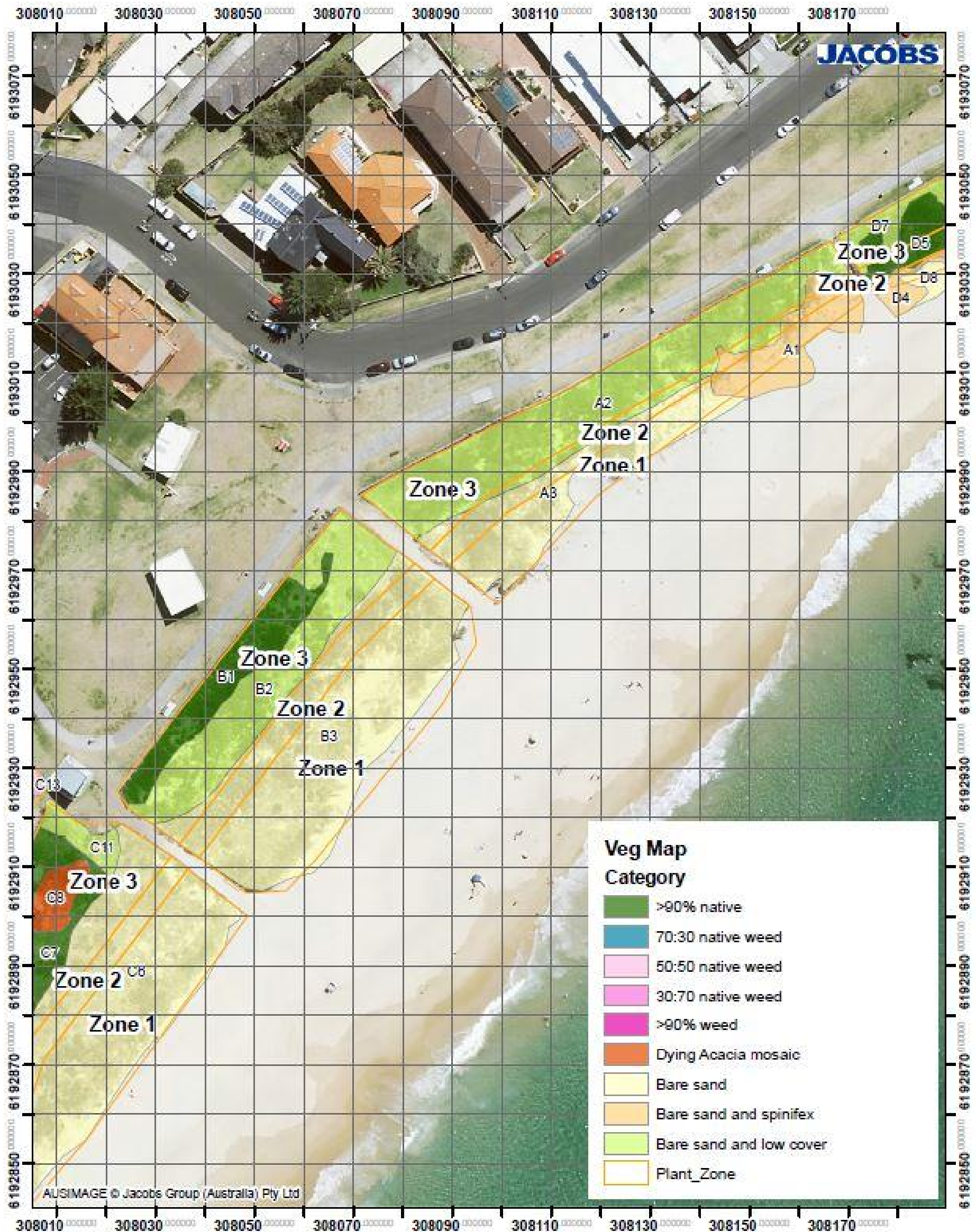
# Towradgi Beach



GIS ref.: gis00924\_09all\_beaches  
 Printed: 16/08/2015  
 Aerial Photography: 2014  
 Scale 1:1,000



While every effort has been made to ensure the highest possible quality of data, no liability will be accepted for any inaccuracy of the information shown. Copyright © Wollongong City Council, Mapping Services Section. This map may not be reproduced in any form whatsoever without the express written permission of Wollongong City Council.



# Towradgi Beach

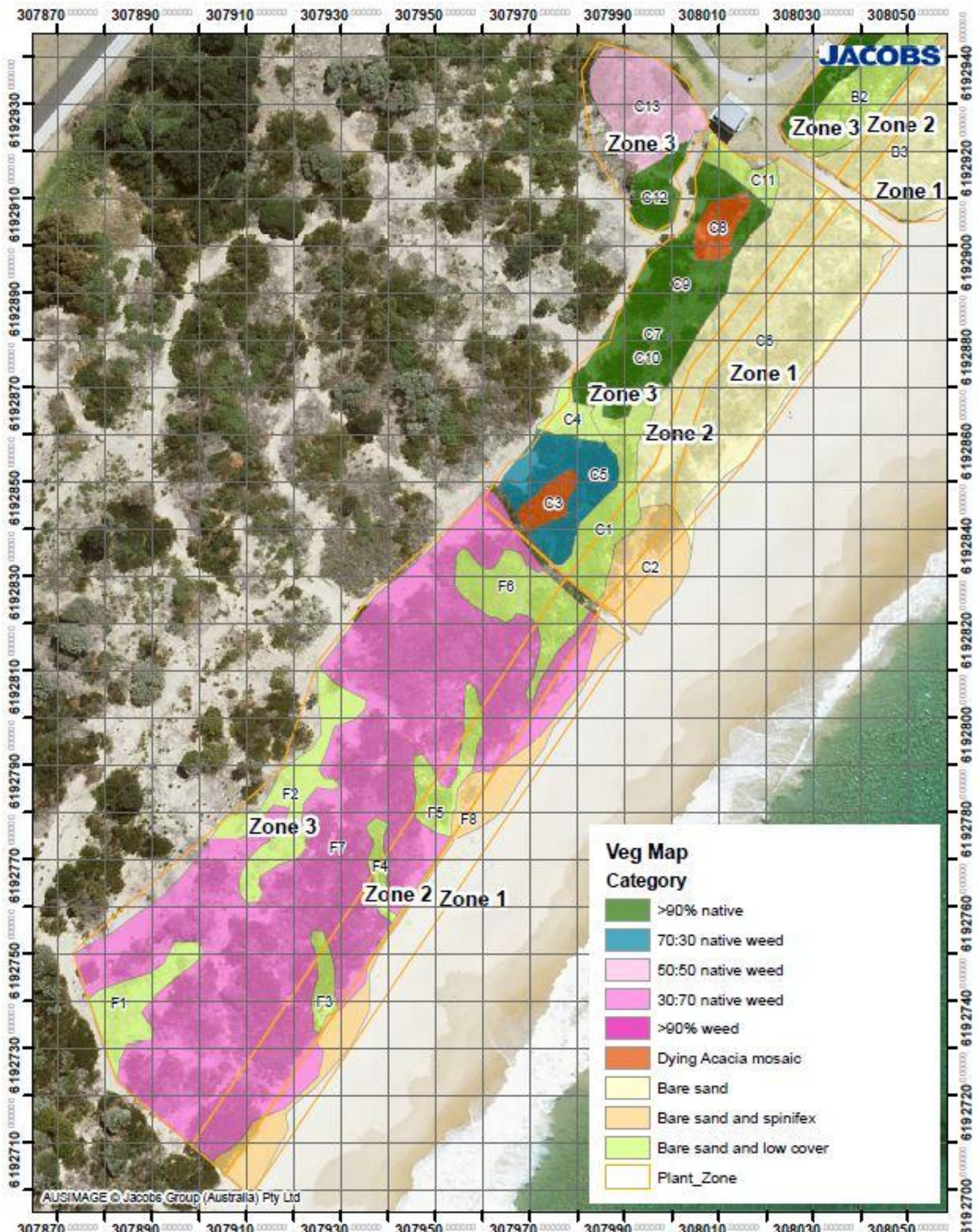


GIS ref.: gle00924\_09all\_beaches  
 Printed: 16/08/2016  
 Aerial Photography: 2014  
 Scale: 1:1,000



While every effort has been made to ensure the highest possible quality of data, no liability will be accepted for any inaccuracy of the information shown. Copyright © Wollongong City Council, Mapping Services Section. This map may not be reproduced in any form whatever without the express written permission of Wollongong City Council.







**Towradgi Beach**



GIS ref.: gle00924\_09a1\_beaches

Printed: 15/08/2016

Aerial Photography: 2014

Scale 1:1,050



## Dune Vegetation Management Actions and Priorities August 2018 – Towradgi Beach

Information for mapping collected on the **24 July, 4 and 11 August 2016**; and updates to actions were undertaken annually on **8 of August 2016, 19 June 2017 and 6 August 2018**.

Priorities are Immediate (I), High (H), Medium (M) and Low (L). Timeframes - Immediate to start within <3 months, High 3-6 months, Medium 6-12 months, Low 12-18 months, subject to availability of resources.

Action statuses are either Ongoing, New, Complete or TBA (to be advised): Ongoing actions are actions stated in the previous dune management plan that remain relevant; New actions are newly arisen since the previous plan creation and currently relevant; Complete actions are completed since the previous plan, but may become relevant again in the future. TBA actions are relevant pending future decisions (e.g. due to threat of vandalism to plants) and funding availability.

Bay A Status	Actions	Priority (I,H,M,L)	Patches within bay												
			1	2	3										
Ongoing	Crush/remove from site, dead and senescent <i>Acacia longifolia</i> subsp. <i>sophorae</i>	H		X											
Ongoing	Remove dead <i>Banksia integrifolia</i> Coastal Banksia	H		X											
Ongoing	Maintain new plantings in foredune area	I													
TBA	Installation of low growing plant species in bare areas at the rear of the dunes in Zone 3 and Zone 2	L		X	X										
Complete	Installation of Spinifex in southern part of Zone 2 following reshaping work	H			X										
Complete	Treatment of <i>Acetosa sagittata</i> Turkey Rhubarb	L													
Complete	Removal of <i>Syagrus romanzoffiana</i> Cocos Palm	L													
Complete	Removal of <i>Parietaria judaica</i> Asthma Weed	L													
Complete	Treatment of <i>Asparagus aethiopicus</i> Asparagus Fern	L													
Complete	Removal of <i>Lobularia maritima</i>	L													
Complete	Remove dead <i>Leptospermum laevigatum</i> Teatree														
Bay B Status	Actions	Priority	1	2	3										
TBA	Installation of low growing plant species in bare areas at the rear of the dunes in Zone 3	H		X											
Complete	Installation of Spinifex in Zone 2 following reshaping works	H			X										
Ongoing	Maintain new plantings in foredune area	I													
Ongoing	Crush down/ remove dead <i>Acacia longifolia</i> ssp. <i>sophorae</i>	H	X												
Complete	Remove dead branches from site														
Complete	Transplantation of some <i>Spinifex</i> and <i>Lomandra</i> from Zone 1 and Zone 2 prior to reshaping works														
Complete	Treatment of grasses around native plants	L													
Bay C Status	Actions	Priority	1	2	3	4	5	6	7	8	9	10	11	12	13
Ongoing	Crush/ remove from site dead plant material including <i>Acacia longifolia</i> ssp. <i>sophorae</i> , <i>Banksia integrifolia</i> and <i>Chrysanthemoides monilifera</i> subsp. <i>rotundata</i>	I			X					X	X	X			X
Ongoing	Treat mature and resprouting <i>Acacia saligna</i>	I													X
TBA	Installation of low growing plant species in bare areas at the rear of the dunes in Zone 3	L	X			X							X		
Complete	Installation of <i>Spinifex</i> in Zone 2 following reshaping work	I						X							
Ongoing	Removal of mature <i>Chrysanthemoides monilifera</i> subsp. <i>rotundata</i> Bitou Bush	I	X				X		X		X			X	X
Ongoing	Removal of <i>Chrysanthemoides monilifera</i> subsp. <i>rotundata</i> Bitou Bush seedlings	I	X				X		X		X			X	X
Ongoing	Removal of <i>Lantana camara</i> Lantana seedlings	I												X	
Ongoing	Treatment of <i>Acetosa sagittata</i> Turkey Rhubarb	H					X		X		X			X	X
TBA	Installation of native plants following treatment of weeds and removal of dead plants	L			X		X			X	X	X			X
Complete	Transplantation of some <i>Spinifex</i> , <i>Lomandra</i> and <i>Actites</i> from Zone 1 and Zone 2 prior to reshaping works (particularly <i>Actites megalocarpa</i> )														
Complete	Treatment of <i>Araujia sericifera</i> Moth Vine	L													
Complete	Treatment of <i>Asparagus aethiopicus</i> Asparagus Fern	L													
Complete	Removal of <i>Chenopodium album</i>	L													

Bay D Status	Actions	Priority	1	2	3	4	5	6	7	8					
Ongoing	Remove from site, dead and senescent <i>Acacia longifolia</i> subsp. <i>sophorae</i>	H					X								
TBA	Installation of low growing plant species at the rear of the dunes in Zone 3 and Zone 2	H		X	X				X						
Ongoing	Treatment of <i>Trachyandra divaricata</i> Onion Weed	H				X	X								
Ongoing	Treatment of <i>Parietaria judaica</i> Asthma Weed	H							X						
Ongoing	Treatment of <i>Asparagus aethiopicus</i> Asparagus Fern	H							X						
Ongoing	Remove weeds (e.g. <i>Ehrhata erecta</i> and <i>Gazania rigens</i> ) that are smothering natives	H		X	X			X	X						
TBA	Installation of low growing native plant species on the slope, as weeds are removed	L			X			X	X						
Ongoing	Spray <i>Pennisetum clandestinum</i> Kikuyu and plant low lying natives along fence line to prevent further spread of weedy grasses.	H						X	X						
Ongoing	Removal of <i>Brassica</i> sp.	H		X											
Complete	Removal of <i>Aloe maculata</i>	L							X						
Bay E Status	Actions	Priority	1	2	3	4									
Ongoing	Remove weeds where they are smothering natives (e.g. <i>Gazania rigens</i> , <i>Ehrhata erecta</i> , <i>Pennisetum clandestinum</i> , <i>Hydrocotyle bonariensis</i> )	H	X	X	X										
TBA	Plant low lying natives in bare patches following weed removal in zones 2 and 3	L	X	X	X										
Bay F Status	Actions	Priority	1	2	3	4	5	6	7	8					
Ongoing	Treatment of <i>Chrysanthemoides monilifera</i> ssp. <i>rotundata</i> Bitou Bush	I				X	X	X	X	X					
Ongoing	Treatment of <i>Lantana camara</i>	H						X	X						
TBA	Installation of a diversity of appropriate native plant species in bare areas of zones 2 and 3	L	X	X	X	X	X	X							
TBA	Installation of a diversity of appropriate native plant species following removal of weeds in zones 2 and 3	L	X	X	X	X	X	X	X						

### General actions across the whole site

Status	Actions	Priority (I, H, M, L)
Ongoing	Remove new seedling growth in bare sand areas to ensure no new plant growth in Zone 1	H
Ongoing	Litter removal	I
Ongoing	Removal of annual weeds, eg, <i>Solanum</i> sp., <i>Bidens pilosa</i> , <i>Conyza</i> sp.	H
Ongoing	Removal of <i>Ammophila arenaria</i> Marram Grass	H
Ongoing	Treatment of weed grasses eg. <i>Ehrharta erecta</i> around native plants	H
Ongoing	Management of regenerating taller growing native plants	M
Complete	Removal of old fence wire	L

### References

GHD (2014) Wollongong Dune Management Strategy for the Patrolled Swimming Areas of 17 Beaches. Adopted by Wollongong City Council March 2014.

NSW Department of Land and Water Conservation (2001), Coastal Dune Management: A Manual of Coastal Dune Management and Rehabilitation Techniques, Coastal Unit, DLWC, Newcastle.