

Bulli Beach Dune Vegetation Site Plan 2018

August 2018

REVISION HISTORY

<u>VERSION</u>	<u>DATE</u>	<u>COMMENTS</u>	<u>REVISED BY</u>
0.1	February 2015		Aimee Beardsmore
0.2	August 2016	New vegetation mapping and revised actions	Eli 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 undertaken at Bulli Beach on 15 and 29 September 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 and site plans given the large amount of work already completed, and to guide future works.

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 megalocarpus</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
<i>Scaevola calendulacea</i>	Scented Fanflower

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

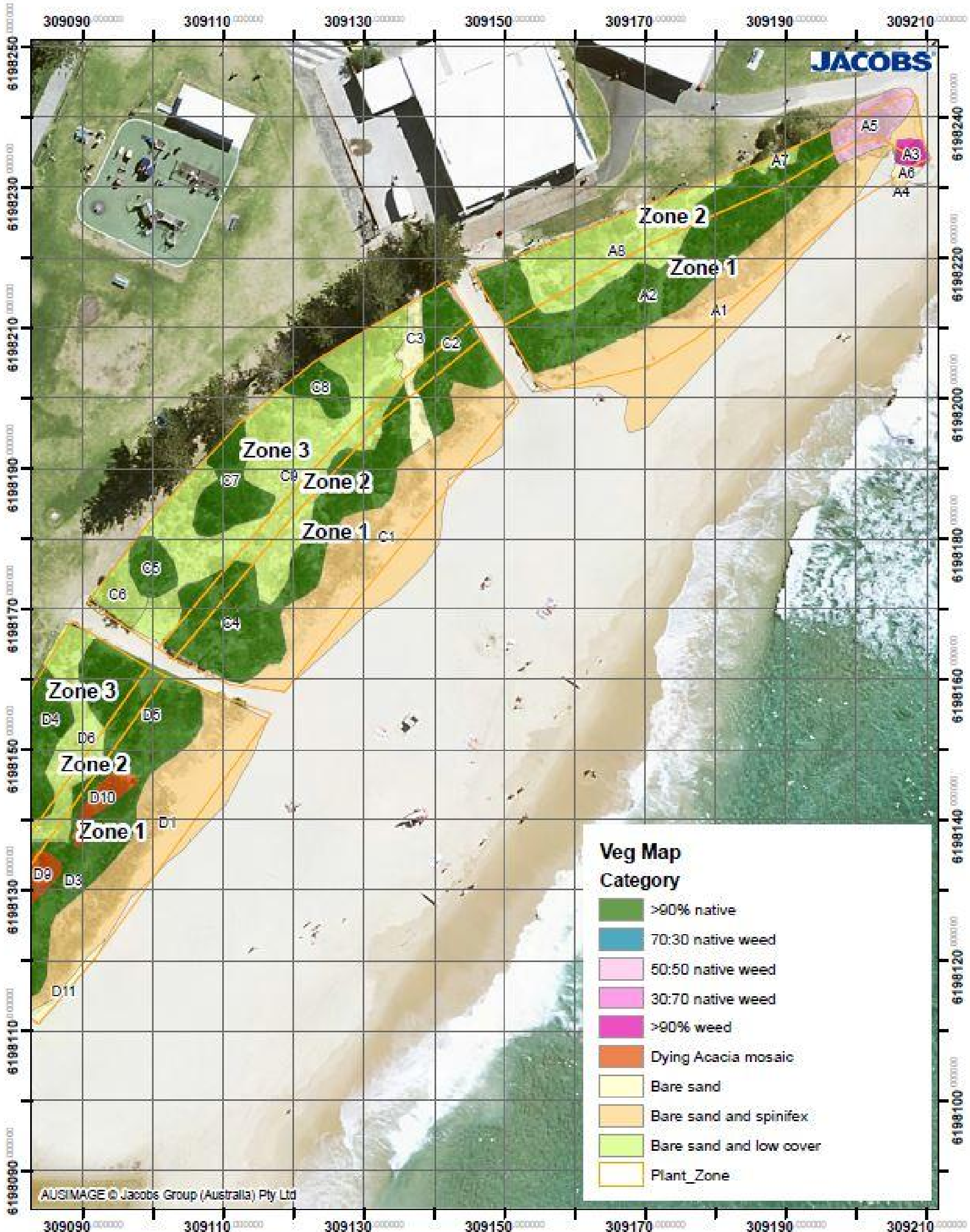
Fore-dune and Crest

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
<i>Corymbia gummifera</i>	Red Bloodwood

Scientific Name	Common Name
<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





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Bulli Beach

GIS ref.: gle00924_09a1_beaches

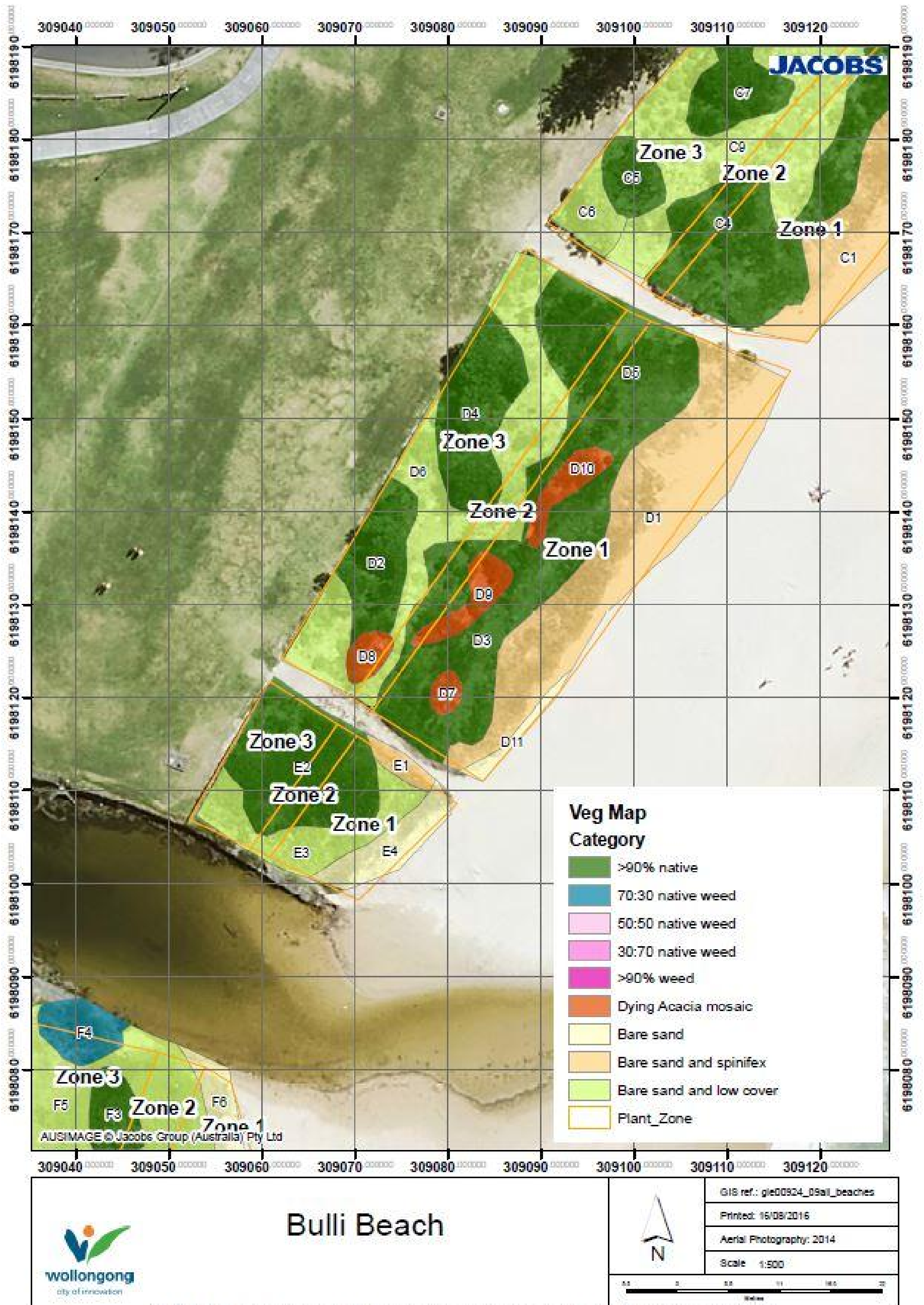
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Scale 1:700



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Dune Vegetation Management Actions and Priorities – Bulli Beach

Information for mapping collected on the **25 and 27 of July 2016** and updates to actions were undertaken annually on the **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	4	5	6	7	8			
Ongoing	Depending on stability of dune; removal of all <i>Acacia longifolia</i> subsp. <i>sophorae</i> , or trimming to less than 1m height	I	X	X			X			X			
TBA	Installation of low growing plant species in bare areas at the rear of the dunes in Zone 2	L								X	X		
Ongoing	Treatment of weed grasses	I	X	X	X	X	X			X	X		
Ongoing	Treatment of <i>Senecio madagascariensis</i> Fireweed	I	X	X							X		
Ongoing	Removal of <i>Brassica</i> spp.	I					X						
TBA	Installation of low growing plant species along fence line following treatment of non-native grasses e.g. Kikuyu	L								X	X		
Complete	Removal of <i>Solanum</i> spp.	L											
Complete	Removal of <i>Lantana camara</i> seedlings	L											
Complete	Treatment of <i>Asparagus aethiopicus</i> Asparagus Fern	L											
Complete	Treatment of <i>Acetosa sagittata</i> Turkey Rhubarb	L											
Complete	Removal of <i>Parietaria judaica</i> Asthma Weed	L											
Complete	Removal of weeds outside of the fence line at the north of the site and handover to Works for inclusion in Council mowing schedule												
Bay C	Actions	Priority	1	2	3	4	5	6	7	8	9		
Ongoing	Remove from site, dead and senescent <i>Acacia longifolia</i> subsp. <i>sophorae</i>	H				X							
Ongoing	Removal of dead <i>Leptospermum laevigatum</i> (Teatree) and <i>Banksia integrifolia</i> branches	M							X				
Ongoing	Removal of <i>Acacia longifolia</i> subsp. <i>sophorae</i> at the front of the dunes in Zone 1	H		X		X							
TBA	Installation of low growing plant species in bare areas at the rear of the dunes in Zones 2 and 3 (species other than <i>Lomandra longifolia</i>)	L			X			X			X		
Ongoing	Treatment of <i>Acetosa sagittata</i> Turkey Rhubarb	I	X								X		
Ongoing	Treatment of <i>Asparagus aethiopicus</i> Asparagus Fern	I								X			
Ongoing	Treatment of <i>Dysphania ambrosioides</i> Wormseed	I				X					X		
Ongoing	Treatment of <i>Acacia saligna</i> Golden Wreath Wattle	I								X			
Complete	Treatment of <i>Senecio madagascariensis</i> Fireweed	L											
Complete	Removal of <i>Opuntia</i> spp. Prickly Pear	L											
Complete	Removal of <i>Parietaria judaica</i> Asthma Weed	L											
Bay D	Actions	Priority	1	2	3	4	5	6	7	8	9	10	11
Ongoing	Remove from site, dead and senescent <i>Acacia longifolia</i> subsp. <i>sophorae</i>	H							X	X	X	X	
Ongoing	Removal of <i>Acacia longifolia</i> at the front of the dunes in Zone 1	H			X		X						
TBA	Installation of low growing plant species at the rear of the dunes in Zone 2	L						X					
TBA	Installation of small number of low growing plant species at the rear of the dunes in Zone 3 to increase biodiversity (species other than <i>Lomandra longifolia</i> , <i>Westringia</i> , <i>Correa</i> , <i>Rhagodia</i> , <i>Tetragonia</i>)	L						X					
Ongoing	Removal of <i>Lantana camara</i> seedlings	I		X									
Ongoing	Treatment of <i>Asparagus aethiopicus</i> Asparagus Fern	I				X							
Ongoing	Treatment of <i>Senecio madagascariensis</i> Fireweed	I					X						
Complete	Treatment of resprouting <i>Senna pendula</i>	L											
Complete	Removal of <i>Coprosma repens</i> Mirror Bush	L											
Complete	Treatment of <i>Acetosa sagittata</i> Turkey Rhubarb	L											
Bay E	Actions	Priority	1	2	3	4							

Ongoing	Removal of <i>Acacia longifolia</i> at the front of the dunes in zone 1	H		X														
TBA	Installation of low growing plant species in zones 2 and 3 to prevent spread of kikuyu into bay	H			X													
Complete	Treatment of <i>Senecio madagascariensis</i> Fireweed	L																
Complete	Treatment of <i>Solanum seaforthianum</i>	L																
Bay F	Status	Actions	Priority	1	2	3	4	5	6									
Ongoing		Removal of <i>Acacia longifolia</i> seaward of the old fence line in Zone 1	H	X														
TBA		Installation of low growing plant species at the rear of the dunes in Zones 2 and 3	L					X										
Ongoing		Treatment of <i>Acetosa sagittata</i> Turkey Rhubarb	I	X		X		X										
Ongoing		Treatment of <i>Asparagus aethiopicus</i> Asparagus Fern	I	X			X											
Ongoing		Treatment of <i>Ipomoea indica</i> Morning Glory	I	X	X	X	X											
Ongoing		Treatment of resprouting <i>Lantana camara</i> and seedlings	I	X	X	X	X	X										
Ongoing		Treatment of <i>Cestrum parqui</i> Green Cestrum	I			X												
Ongoing		Treatment of <i>Senecio madagascariensis</i> Fireweed	I					X										
Ongoing		Treatment of <i>Ageratina adenophora</i> Crofton Weed	I					X										
Complete		Removal of dead plant material, particularly piles of <i>Lantana camara</i> Lantana																
Complete		Treatment of <i>Senna pendula</i>	L															
Complete		Treatment of mature <i>Lantana camara</i> Lantana																
Complete		Treatment of <i>Solanum seaforthianum</i>																
Bay G	Status	Actions	Priority	1	2	3	4	5	6	7	8	9						
Ongoing		Treatment of mature <i>Acacia saligna</i> Golden Wreath Wattle	H		X	X												
Ongoing		Treatment of mature <i>Lantana camara</i>	I		X	X	X	X	X	X	X							
Ongoing		Treatment of resprouting <i>Lantana camara</i> and seedlings	I									X						
Ongoing		Treatment of <i>Asparagus aethiopicus</i> Asparagus Fern	H				X		X									
Ongoing		Treatment of <i>Acetosa sagittata</i> Turkey Rhubarb	H			X												
Ongoing		Treatment of <i>Cestrum parqui</i> Green Cestrum	H			X												
Ongoing		Treatment of <i>Ipomoea indica</i> Morning Glory	H									X						
TBA		Installation of native plants in bare areas and following weed removal in zones 2 and 3	L									X						

General actions across the whole site

Status	Actions	Priority (I, H, M, L)
Ongoing	Litter removal	I
Ongoing	Removal of annual weeds, eg, <i>Solanum</i> spp., <i>Bidens pilosa</i> , <i>Conyza</i> spp.	H
Ongoing	Removal of <i>Ammophila arenaria</i> Marram Grass	M
Ongoing	Treatment of weed grasses eg. <i>Ehrharta erecta</i>	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.