WILLIAM MULLIGAN RESERVE BUSHCARE ACTION PLAN - 2017

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CONTACT INFORMATION

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Reserve Name:	William Mulligan Reserve
Reserve Number:	BSU934
Land Tenure:	Crown Land CCM
Comm. Land Type:	N/A

1. BUSHCARE GROUP GOALS

The goals of the William Mulligan Reserve Bushcare Group are as follows:

1. Regeneration of the foreshore bushland areas of William Mulligan reserve along the Sussex Inlet to improve the reserve ecological values and the local biodiversity.
2. Undertake bush regeneration and staged weed control/removal to maintain and improve the health of the Swamp Oak Floodplain Forest and Salt Marsh vegetation, which are listed as Endangered Ecological Communities under the NSW Biodiversity Conservation Act 2016 and provide a buffer between the terrestrial and estuarine environments (see photos in figures 2,3,4,5).
3. Raise community awareness of the environmental values of the remnant vegetation.

2. SHOALHAVEN BUSHCARE GROUP ACTIVITIES TABLE (to be in conjunction with attached site map)
NOTE: Priority should be rated as H = High (within 12 months); M = Medium (1-3 years); L = Low

GROUP ACTION (these should relate to your project description)	PRIORITY	METHOD	TIME
All weed control work should follow best practise bush regeneration principles of starting in healthy or least degraded bushland areas and work progressively towards the areas that are more degraded or have higher density weed populations. Bushcare works should be undertaken in the following priority of weed control.			
Control of *Asparagus aethiopicus* (Ground Asparagus) working from lighter, isolated infestations to heavier infestations	H	1. Smaller isolated plants can be removed manually using the "Crowning method" and all reproductive parts of the plant bagged and removed from site (see Appendix 1 on *Asparagus spp* manual control regeneration information sheet). 2. Larger dense infestations can be sprayed using Metsulfuron Methyl at the manufacturer's recommended rates.	Manual control all year Chemical control spring & early summer
Control of *Asparagus plumosus* (Climbing Asparagus)	M	As there are only isolated small infestations of *Asparagus plumosus* they should be removed manually via "crowning" and all reproductive parts of the plant bagged and removed from site.	All year

GROUP ACTION (these should relate to your project description)	PRIORITY	METHOD	TIME
Spreading of Bridal Veil Creeper biological control rust	H	Bushcare Coordinator to assist group to release the Bridal Creeper rust fungus.	Winter
Control woody weeds on site in the following priority: 1. *Chrysanthemoides monilifera spp. rotunda* - Bitou Bush 2. *Senna pendula spp pendula* - Senna 3. *Comprosma repens* - New Zealand Mirror Bush 4. *Erythrina x sykesii* - Coral Tree (only smaller plants)	H	Cut and paint or hand pull (see Appendix 2 bush regeneration information sheet).	All Year
Rubus fruticosus (Blackberry) and *Lonicera japonica* (Japanese Honeysuckle) and *Passiflora mollissima* (Black Passionfruit) control	M	Scrape and paint stems (see attached information sheet) and hand pull Banana Passionfruit.	All Year
Lilium formosum (Formosan Lily) control	H	Cut top of Lily and drip 1 or 2 drops of neat Glyphosate on the cut stem.	Spring – summer prior to flowering
Olea europaea subsp. *cuspidata (*African Olive)	H	Drill and inject large trees with 1/3 ratio of Glyphosate/Water, smaller shrubs can be cut and painted with the same ratio of glyphosate/water and small plants can be hand pulled	All Year
Revegetation of areas that have had weed control undertaken to improve diversity and provide stability and natural filters to the inlet to improve water quality. Focus of revegetation efforts should be on re-establishment of ground and mid story native species following secondary weed control efforts.	H	Use plant species from the suggested revegetation/planting list	Autumn/ Winter

GROUP ACTION (these should relate to your project description)	PRIORITY	METHOD	TIME
Investigate possible staged removal/control program for the *Pittosporum undulatum* (Sweet Pittosporum by working with NSW Office of Environment and Heritage to prepare a Review of Environmental Factors (REF) for the proposal.	L	Negotiate with Council staff and NSW OEH staff.	All year
Monitor the reserve for any rubbish/garden waste dumping or illegal vegetation removal/damage	H	Report directly to Council Ranger Services P – 44293433 AH – 44293100 or council@shoalhaven.nsw.gov.au	All Year
Under Part 7A 220ZD of the NSW Fisheries Management Act 1994, the legislation states "*By an act or omission, do anything that causes damage to any habitat (other than critical habitat) of a threatened species, population or ecological community if the person knows that the area concerned is habitat of that kind*". As the vegetation on this section of crown land has been identified as saltmarsh which is a threatened ecological community. The vegetation has continued to be mown/slashed by adjacent property owners and vehicles have been driving on the vegetation which has damaged the vegetation (see appendix 4 for photos for evidence of this). Council, as the land manager, is required to take actions to prevent further damage to the saltmarsh community. Council, NSW DPI Fisheries have meet with property owners of 290, 292 & 294 and agreed to the following actions to reduce harm: 1. Slash/mow 2 x 2 metre width paths to allow foreshore/jetty access for residents	H	Property owners of 290.292 & 294 will be required to register under Council Bushcare program and comply with conditions of the permit to harm (see map in appendix 3 for details)	2017 -18

GROUP ACTION (these should relate to your project description)	PRIORITY	METHOD	TIME
2. Allow mowing from the rear of properties down to informal vehicle access track and allow on-going vehicle access across saltmarsh vegetation These actions will form part a Permit to Harm marine vegetation which will be issued by NSW DPI Fisheries. (see map in appendix 3 for details).			

3. WILLIAM MULLIGAN – SUSSEX INLET BUSHCARE GROUP ACTION PLAN MAP

Bushcare site boundary

4. BUSHCARE GROUP WHS & EQUIPMENT REQUIREMENTS

Type of Activity	Yes	Safe Work Instruction (SWI)
Chemical control (spraying of herbicides)	√	SWI129

5. COUNCIL SUPPORT

- Technical assistance
- Tools/equipment (within budgetary constraints)
- Grant funding and management assistance
- Supply of on-site training for 3 hours per month
- Supply of Personal Protective Equipment

6. HAS A SITE HAZARD AND RISK ASSESSMENT BEEN COMPLETED FOR THE BUSHCARE SITE?

Yes √ **No** ☐

7. LIST THE PERSONAL PROTECTION EQUIPMENT REQUIRED FOR VOLUNTEERS WHILST WORKING ON THE SITE

PPE Equipment Required	Date issued
First Aid Kit	Nov 2014
Gloves	Nov 2014
Sunscreen	Nov 2014
Insect repellent	Nov 2014

8. POSSIBLE FUTURE FUNDING

Project	Funding source
Weed control and revegetation works	Various

9. PLAN WILL BE REVIEWED EVERY THREE YEARS

Next review due:

……28……./……11……../……2020…….

10. PLEASE LIST OTHER LOCAL OR REGIONAL MANAGEMENT PLANS OR STRATEGIES THAT THIS PLAN RELATES TO

Name of document	Year it was produced	Produced by
Foreshore Reserve Policy	2005	Shoalhaven City Council
St Georges Basin Revised Estuary Management Plan	2013	Shoalhaven City Council

11. BUSHCARE SITE RECOMMENDED PLANTING/REVEGETATION SPECIES LIST

SHRUBS	
Botanical	**Common**
Acacia longifolia spp. longifolia	Sydney Golden Wattle
Elaeocarpus reticulatus	Blueberry Ash
Pittosporum revolutum	Rough Fruit Pittosporum
UNDERSTOREY (grasses, herbs, climbers)	
Botanical	**Common**
Dianella caerulea	Native Blue Flax Lily
Gahnia clarkei	Sword Grass
Hardenbergia violacea	Happy Wanderer
Juncus kraussii	Sea Rush
Kennedia rubicunda	Dusky Coral Pea
Lomandra longifolia	Spiny Matt Rush
Oplismenus aemulus	Basket Grass
Scaevola ramosissima	Purple Fan Flower
Themeda triandra	Kangaroo Grass
Viola hederacea	Tiny Violet

12. BUSHCARE SITE WEED LIST (The following weeds have been recorded on the site)

Noxious	Environmental	Control Method
Asparagus aethiopicus (Ground Asparagus)		• For smaller isolated infestations dig out crown, bag and remove from site; can be done all year round • Larger denser infestations can be sprayed with Metsulfuron Methyl as per label - should be carried out in Spring
Asparagus plumosus (Climbing Asparagus)		As there are only isolated plants the best method of control/removal is to dig out rhizomes and crowns, bag and remove from site.
Asparagus asparagoides (Bridal Vail Creeper)		Apply rust fungus biological control in the Winter months
Chrysanthemoides monilifera spp rotunda (Bitou Bush)		Hand pull or cut and paint larger plants with Glyphosate
Rubus fruticosus (Blackberry)		Stem scrape and paint with neat Glyphosate
	Senna pendula (Cassia)	Cut and paint larger plants and hand pull smaller ones (use 1:3 ratio of glyphosate to water)
	Coprosma repens (NZ Mirror Bush)	Cut and paint larger plants with Glyphosate hand pull regrowth seedlings
	Ehrhrata stricta (Panic Veldt Grass)	Spot spray with Glyphosate as per label
	Stenotaphrum secundatum (Buffalo Grass)	Hand pull smaller patches around and in native ground covers – larger areas can be spot sprayed with glyphosate as per label
	Lonicera japonica (Japanese Honeysuckle)	Cut and paint or Stem scrape and paint with glyphosate.
	Erythrina x sykesii (Coral Tree)	Cut and paint smaller plants with Glyphosate
	Tradescantia fluminensis (Wandering Jew)	Smaller infestations can be rolled up with a rake and

		disposed of or covered with black plastic and solarised
	Ochna serrulata (Micky Mouse Plant)	Stem scrape or cut and paint with glyphosate (never hand pull as this plant has a large tap root)
	Physalis peruviana (Cape Gooseberry)	Hand pull and dispose of any seed
	Olea europeaea spp. cuspidate (African Olive)	Drill and inject larger trees or cut and paint smaller shrubs with Glyphosate

13. BUSHCARE SITE SPECIES LIST (The following species have been recorded on the site)

OVERSTOREY TREES	
Botanical	**Common**
Acmena smithii	Lilli Pilli
Angophora floribunda	Rough Barked Apple Box
Casuarina glauca	Swamp She Oak
Eucalyptus agglomerata	Blue-Leaved Stringybark
Eucalyptus botryoides	Bangalay Gum
Eucalyptus pilularis	Blackbutt
SHRUBS	
Botanical	**Common**
Acacia longifolia spp. longifolia	Sydney Golden Wattle
Breynia oblongifolia	Native Privet
Elaeocarpus reticulatus	Blueberry Ash
Exocarpos cupressiformis	Ballart Cherry
Hakea salicifolia	Willow Leaf Hakea
Melaleuca ericifolia	Swamp Paperbark
Monotoca elliptica	Pigeon Berry Ash
Notelaea longifolia	Mock Olive
Pittosporum revolutum	Rough Fruit Pittosporum
Pittosporum undulatum	Sweet Pittosporum
Podolobium ilicifolium	Prickly Shaggy Pea
UNDERSTOREY (grasses, herbs, orchids)	
Botanical	**Common**
Adiantum aethiopicum	Common Maidenhair Fern
Baumea articulata	Jointed Twig Rush
Dianella caerulea	Native Blue Flax Lily
Dichondra repens	Yillibilli
Doodia aspera	Prickly Rasp Fern
Gahnia clarkei	Sword Grass
Juncus kraussii	Sea Rush
Lomandra longifolia	Spiny Matt Rush
Oplismenus aemulus	Basket Grass

Ozothamnus ferrugineus	Tree Everlasting
Phragmites australis	Common Reed
Pimelea linifolia	Slender Rice Flower
Plectranthus parviflorus	Cockspur Flower
Pteridium esculentum	Common Bracken Fern
Rytidosperma fulvum	Wallaby Grass
Scaevola ramosissima	Purple Fan Flower
Themeda triandra	Kangaroo Grass
Viola hederacea	Tiny Violet
UNDERSTOREY (vines & climbers)	
Botanical	**Common**
Billardiera scandens	Hairy Apple Dumpling
Cassytha glabella	Slender Devils Twine
Eustrephus latifolius	Wombat Berry
Marsdenia rostrata	Milk Vine
Parsonsia straminea	Monkey Rope Vine

Appendix 1 – Bush Regeneration Information Sheets - Control of Weeds with Underground Reproductive Structures

BUSH REGENERATION INFORMATION SHEET

Control of Weeds with Underground Reproductive Structures cont..

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NSW NATIONAL PARKS AND WILDLIFE SERVICE

AABR

Australian Association of Bush Regenerators

METHODS OF REMOVAL

❸ *REMOVAL OF PLANTS WITH BULBS, CORMS OR TUBERS*

Examples: onion weed, watsonia, arrowhead vine, montbretia

STEP 1 Move leaf litter away from base of plant.

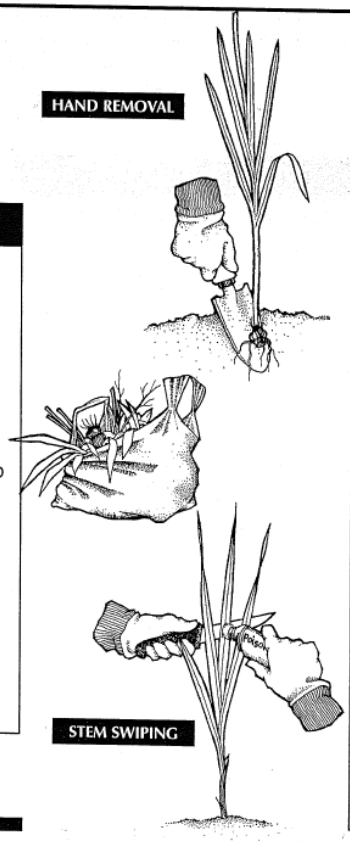
STEP 2 Dig down next to the stem until the bulb or tuber is reached.

STEP 3 Remove plant and carefully bag the bulb or tuber.

❹ *HERBICIDE TREATMENT - STEM SWIPING*

STEP 1 Gently remove any seed or fruit and carefully place into a bag.

STEP 2 Using a herbicide applicator, swipe the stems/leaves.



considerations

- Further digging may be required for plants with more than one tuber (e.g. arrow head vine).
- Some bulbs (e.g. oxalis, onion weed) may have small bulbils attached or present in the soil around it. These need to be removed.
- It may be quicker and more effective to dig out the weed.
- Make sure native plants and seedlings will not be affected.
- Learn and understand how the herbicide works - for bulb and corm species the most effective time is after flowering and before fruit is set.
- Have you addressed all safety issues ?

BUSH REGENERATION INFORMATION SHEET

Control of Weeds with Underground Reproductive Structures

Examples: Weeds with
- Tap roots - catsear, dandelion
- Rhizomes - asparagus fern, ginger plant
- Bulbs and corms - oxalis, onion weed, watsonia, freesias, montbretia
- Tubers - madiera vine, arrow head vine

METHODS OF REMOVAL

❶ *HAND REMOVAL OF PLANTS WITH A TAPROOT*

Examples: Paddy's lucerne, dandelion

STEP 1 Gently remove and bag seeds or fruit.

STEP 2 Push a narrow trowel or knife into the ground next to the taproot. Carefully loosen soil. Repeat this step around the taproot.

STEP 3 Grasp stem at ground level, rock plant back wards and forwards and pull gently.

STEP 4 Gently tap the roots to dislodge soil. Replace disturbed soil and lightly pat down.

❷ *CROWNING (Many grasses can be crowned)*

Example: asparagus fern

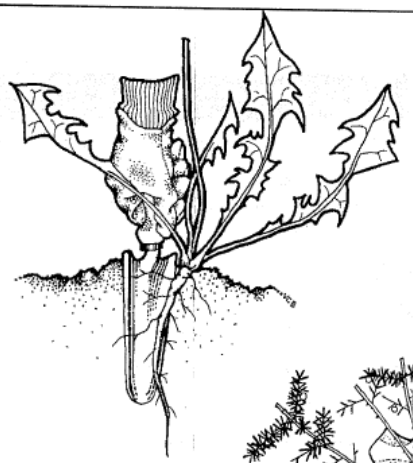
STEP 1 Gently remove and bag stems with seed or fruit.

STEP 2 Grasp the leaves or stems together so that the base of the plant is visible.

STEP 3 Insert, at an angle, a knife or lever, close to the "crown".

STEP 4 Cut through all the roots around the crown.

STEP 5 Remove and bag the crown.



HAND REMOVAL

CROWNING

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Appendix 2 – Controlling Woody Weeds – Bush Regeneration Information Sheets

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BUSH REGENERATION INFORMATION SHEET

Control of Woody Weeds

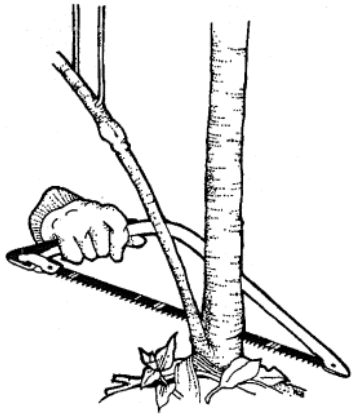
Examples of woody weeds include:
- lantana, bitou bush, cotoneaster, privet (cut and paint)
- camphor laurel, Mickey Mouse bush (ochna) and cassia/senna (stem scrape)

METHODS OF REMOVAL

1. *CUT AND PAINT* —Useful for small to medium sized woody weeds up to 10cm basal diameter

STEP 1 Make a horizontal cut as close to the ground as possible with secateurs, loppers or a bush saw.

STEP 2 Immediately apply herbicide to the exposed flat stump surface.



SAFETY CONSIDERATIONS

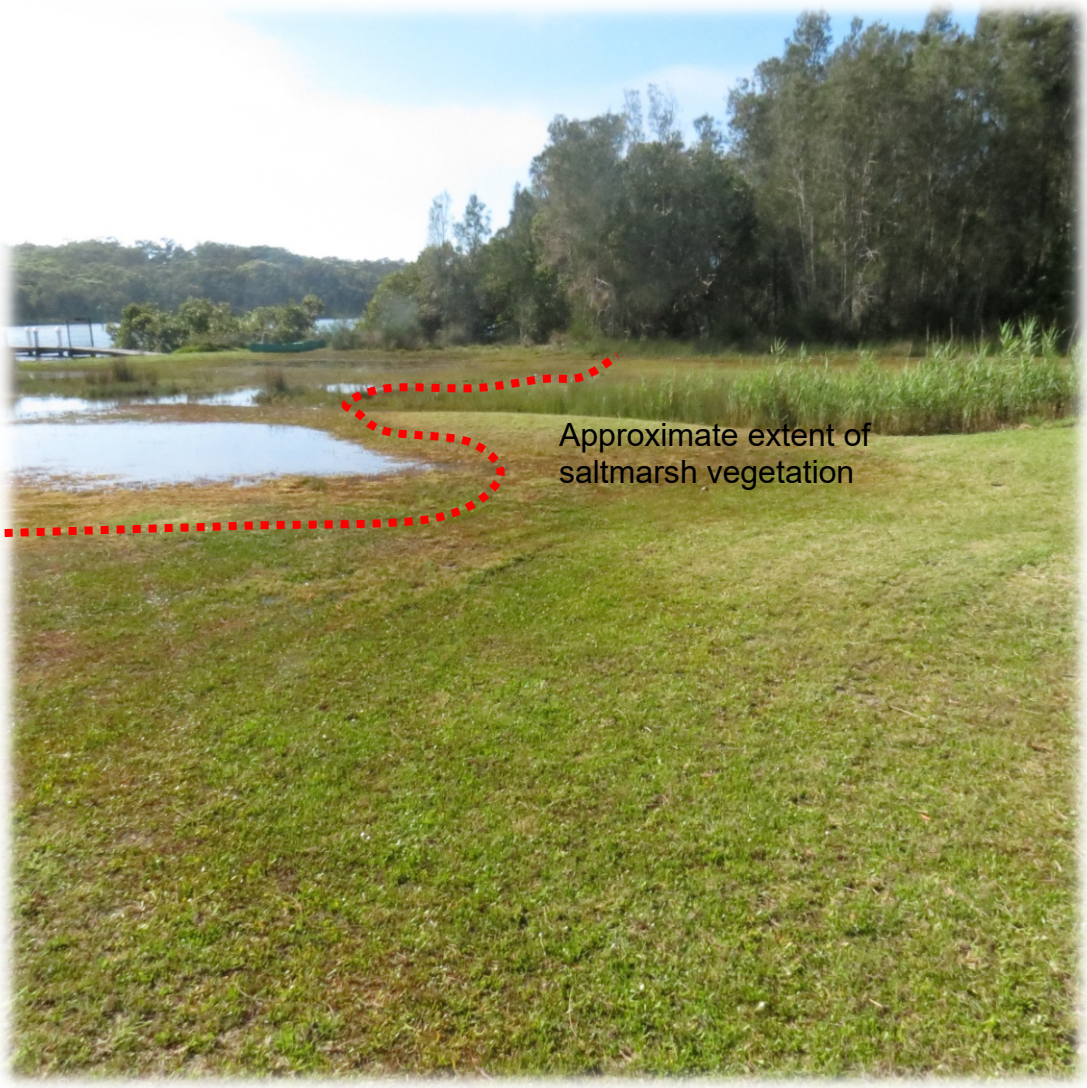
The following general precautions should be made when using herbicides:
- Read the label before opening the container and follow the instructions.
- Wear protective clothing as directed on the label.
- Wash hands after use and before eating or smoking.

considerations

- Cuts should be horizontal to prevent herbicide from running off the stump. Sharp angle cuts are hazardous.
- Herbicide must be applied immediately before the plant cells close and translocation of herbicide ceases.
- If plants resprout, cut and paint the shoots after sufficient regrowth has occurred.
- Stem scraping can be more effective on some woody weeds.

Appendix 3: Figure 1. Map showing location of saltmarsh currently been mown/slashed and proposed protection area with jetty access points.

Appendix 4 – Figure 2: Photos of mown/slashed saltmarsh vegetation and damage from vehicles


Approximate extent of
saltmarsh vegetation

Appendix 5 - Figure 3: Photos of William Mulligan Bushcare Site and vegetation types

Photo 1: Estuarine Mangroves and saltmarsh vegetation on the eastern side of William Mulligan Reserve, *which is listed as an Ecologically Endangered Community under the NSW Biodiversity Conservation Act 2016*

Photo 2: Swamp Oak Forest and Saltmarsh vegetation, which is listed as an Ecologically Endangered Community under the NSW Biodiversity Act 2016 at William Mulligan Reserve

Photo 3: Informal walking track running through the eastern end of the William Mulligan Reserve

Photo 4: Upper section of William Mulligan Reserve, which has been mapped as Bangalay Sand Forest Complex vegetation, which is listed as an Ecologically Endangered Community under the NSW Biodiversity Conservation Act 2016

Photo 5: Informal road crossing the northern end of the crown reserve where by adjacent property owners gain access to rear of their properties. The road transects the two vegetation communities, with Swamp Oak Forest occurring on the lower side of the road and Bangalay Sand Forest Complex vegetation on the upper side. Both these vegetation types are listed as an Ecologically Endangered Community under the NSW Biodiversity Conservation Act 2016

Photo 6: Buffalo Grass (Stenotaphrum secundatum) invading the understory vegetation of Swamp Oak (Casuarina glauca) Forest on the foreshore of Chris Creek.