

Final Project Report

Submitted to:



"Restoration and Rehabilitation of Bonna Point, Kurnell"

Grant: 2008/RR/0039

Sutherland Shire Council

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1. PROJECT SUMMARY

The "Restoration and Rehabilitation of Bonna Point, Kurnell" is a continuation of an ongoing project. Located along the foreshores of Botany Bay, the proposed restoration works will aim to consolidate previous bushland restoration and protect remnants of the endangered ecological community, Kurnell Dune Forest.

To minimise the further degradation of the endangered community, this project will address the issue of weed invasion through the removal of aggressive environmental weeds species and reducing the weed source. Measures will also be made to increase public awareness of the plant community and will aim to minimise any further damage by vandalism.

Bush regeneration contractors were engaged to control and remove weeds over the duration of the project with the support of the Sutherland Shire Council Bushland Unit and the active Bushcare group

The New South Wales Government through its Environmental Trust has greatly assisted with this project.

2. BACKGROUND AND OBJECTIVES OF THE PROJECT

Location

Bonna Point covers an area of 5.35 ha located on the foreshore of Botany Bay. UBD Map Ref 315 Q8. (Refer Appendix 1).

Ownership of the Land

Bonna Point is Community Land owned by Sutherland Shire Council.

Vegetation

Bonna Point primarily contains remnants of the vegetative community of Kurnell Dune Forest and Coastal Saltmarsh which are both listed as endangered ecological community under Part 3 of Schedule 1 of the Threatened Species Conservation Act 1995.

A species list and endangered ecological communities Map for Bonna Point is included in Appendix 2 and 3.

Problems

The main identifiable threats to the communities within Bonna Point are weed invasion, clearing and disturbance via contractual mowing.

Weed species, primarily asparagus fern and Lantana, threaten the vegetation community by out-competing the native species. This has resulted in the creation of large monocultures of above mentioned weed species creating unfavourable conditions for natural regeneration.

Unrestricted access to the reserve by SSC contractual parks maintenance crews have resulted encroachment into remnant vegetative areas of the reserve. This has resulted in the further proliferation of exotic turf grass species, the loss of naturally regenerating native seedlings as well as the fragmentation of significant areas of native vegetation.

Community Involvement

Silver Beach Dune Care Group has been working in the reserve since 1993 and has helped with the management and maintenance of the bushland reserves under the supervision of Sutherland Shire Council's Bushcare Unit. The group has had scheduled work days attended by one of Council's Bushcare Officers.

Objectives

The objectives of the project were:

- To protect the endangered community through bush regeneration activities and encouraging natural regeneration.
- To reduce the weed density of aggressive weed species from within the project area.
- To minimise further encraocment of noxious and environmentalw eed species into areas previously worked.
- To provide the opportunity to motivate local residences to join our Dunecare Group.

3. PEOPLE INVOLVED IN THE PROJECT

Christine Guthrie

SSC Bushland Coordinator - contract administration and management and funds management.

Paul Price

Pest Species Officer - contract administration and management and funds management.

Dayna Mellor

Bushcare Officer with Sutherland Shire Council - supervision of the corresponding DuneCare Groups on their monthly work days and administrative and practical support with supply of materials such as gloves and tools.

Dorothy Exon

Volunteer of Silver Beach/ Bonna Point DuneCare Group and liaison with Bushland Coordinator and Bushcare Officer.

Total Earth Care

Bush regeneration contractors, a SSC preferred supplier, employed for weed removal and bushland restoration.

SSC Parks Operations Unit

Bush regeneration, delivery of mulch, green waste pick up, supply of plants, and planting.

4. PROJECT DESCRIPTION

Bush regeneration contractors, Total Earth Care, were chosen from Council's preferred supplier list for Bush Regeneration. Specifications were written for the project (see Appendix 4).

Methodology/Approach

The implementation of recognised bush regeneration techniques including Primary and secondary weeding has ensured the best possible weed control and conditions for natural regeneration to occur. Total Earth Care, one of council's preferred suppliers for bush regeneration and a recognised bush regeneration contractor, has been employed to do the work.

Sutherland Shire Council has been issued with a section 132 (C) Certificate from NPWS (DEC) allowing selective weed removal in Endangered Ecological Communities in Sutherland Shire under supervision.

Most weeds were manually removed with woody weeds being removed using either, 'the cut and paint' or 'scrape and paint' methods using 100% Glysophate 360g/l based herbicide.

The project involved three components - weed control, revegetation and public awareness.

A. Weed Control

Proposed bushland restoration works aimed at a continuation of a 3 Staged project with scope to complement existing contractual and volunteer bush regeneration activities. Works aimed to link past grant funded bushland restoration, making provision for further eradication of aggressive environmental weed species that threatened the endangered ecological community.

All of the bush regeneration was completed through the use of one of Sutherland Shire Council's preferred contractors, Total Earth Care.

B Revegetation

As part of the rehabilitation of the Littoral Rainforest community, 400 locally sourced tubestock were to be installed. Such activities were to promote a more structurally diverse vegetative community in areas of low regeneration potential.

C. Public Awareness

An on site sign was erected at the project site advising of the contribution of the Environmental Trust. The project was advertised in Sutherland Shire's community paper 'The Leader' as well as a press release by the Minister for the Environment

5. Difficulties and Delays

Delayed Start to the Project

There were no difficulties or delays within the project period.

Reporting

N/A

6 Modifications to the Project to Deal with Problems

To effectively protect the remnant vegetative communities, Kurnell Dune Forest and Coastal Saltmarsh, additional mulching and fencing was required to direct the SSC contractual mowing gang away from the ever increasing edge effect it was creating. Such methods were found to be very successful over the duration of the project. Please refer to the photo documentation.

7 Evaluation of Actual Project Compared with Proposal

The proposed project aimed to address the following issues:

- To protect the endangered community through bush regeneration activities and encouraging natural regeneration.
- To reduce the weed density of aggressive weed species from within the project area.
- To minimise further encraocment of noxious and environmental eed species into areas previously worked.
- To provide the opportunity to motivate local residences to join the Dunecare Group.

All completed bush regeneration works achieved highly successful results within the projected areas, showing low weed densities post contractual works with increasing numbers of resilient native regeneration occurring within the project area.

The project was advertised so more of the local residents would be aware of the importance of the reserve. An on site sign was installed advising of the contribution of the Environmental Trust to the project.

8. Evaluation of Compliance with the Timetable

There were some changes to the timetable of the project. The changes are outlined in the following table:

Outputs – Milestones achieved, compared with those planned

Activity	Proposed Start Date	Actual Start Date	Proposed Finish Date	Actual Finish Date
Advertise the project	01/03	07/09	01/09	07/09
Conduct site inventory	03/09	02/09	03/09	02/09
Establish photo points	03/09	02/09	03/09	02/09
Specifications written for	03/09	02/09	03/09	02/09
bush regeneration				
component of the project				
Weed removal and survey	02/10	03/10	03/10	03/10
taken				

After photos and surveys taken	02/10	03/10	03/10	03/10	
Final report to Trust	04/10	03/10	04/10	06/10	

Compliance with the timetable was difficult because of staffing shortages and time constraints at Council.

9 Evaluation of the Project and Its Achievements: Outcomes

Health of endangered community improving and native seedling regenerating

Council staff prior to the commencement of the project established one 1 x 1 metre quadrat to monitor the changes of weed density and the resilience of native seed banks. The quadrat was set in the eastern portion of the project area (see Quadrat Map in Attachment 6). The quadrat was surveyed in February 2009 and again in April 2010 following the completion of the project.

Works within quadrat 1 showed a considerable decline in the presence of noxious and environmental weed species with cover abundance decreasing generally from common to rare. Natural regeneration has been slow with very few native specimens being present within the quadrat.

To assist in the regeneration and protection of the adjacent Coastal Saltmarsh, protective fencing was erected with scope to eliminate further encroachment by SSC contract mowing gangs. This was extremely successful with once areas of mown lawn produced a range of Saltmarsh species. To assist in the creation of a diverse community, the transplanting of a selection of native species occurred using such species as *Carpobrotus glaucescens*.

Distribution and severity of weed invasion reduced within core and new areas

Contractors from Total Earth Care were instructed to conduct a variety of primary and secondary bush regeneration activities through the designated work zone with scope to eliminate aggressive environmental weed species. See attachment 4 for Work Specifications. This has proved largely successful with large sections of Asparagus fern being eliminated from the project area. Noxious weeds such as African Olive, lantana and Bitou Bush were also targeted over the duration of the project with great success.

To assist in the project and to provide more exposure to the project, CLM TAFE student were busy on two occasions targeting isolated infestations of African Olive. See attachment 5 for Weed Density Maps before and after Stage 1 work. These maps show a 90% reduction in the extent of weeds species within the designated work areas.

Herbaceous weed populations being generally restricted to the immediate edges and the surface water drainage lines were dealt with accordingly over the period.

Enhanced habitat values for both flora and fauna.

Programmed works allowed for the continued removal of large monocultures of Asparagus fern where it smothered ground and shrub layer species. The quadrat survey results showed that all weeds species generally decreased from very common to rare/absent. Removal of

smothering scramblers and other weed species will create conditions favourable for the regeneration of a structurally diverse vegetative community indicative of Kurnell Dune Forest. With ongoing work and continued maintenance the recovering bushland will provide connectivity for local fauna.

The capacity of the DuneCare volunteers increased and new volunteers encouraged to join the group

To increase the awareness of the Endangered Ecological Community and provide and increased support of the Bushcare Group, Sutherland Shire Council provided additional signage around the reserve advertising the grant assisted funding as well as programmed workdays. To compliment such activities, an several open day were held to promote the remnant bushland reserve and its importance within the local area.

Key Performance Indicators:

Generic

- 1. Three major outcomes of project:
 - a) Primary and secondary weeding by contractors and Bushcare volunteers covering 1,000 square metres.
 - b) Vegetation inventory surveys and baseline data established.
 - c) Project advertised.
- 2. Number of people participating:

3. Number of types of resources:

N/A

4. Number of events conducted:

6 events conducted

91

5. Formal partnership: Partnership between Sutherland Shire Council and Silver Beach/Bonna Bushcare Group.

6. Number of volunteer hours:

125

7. Resources produced:

N/A

8. Number of people attending work days:

Number of media items: Three. Article SSC magazine "Our Shire" August 2009, Bushcare newsletter April 2009 and article in AABR newsletter, April 2010

- 9. Program Specific
- 1. Total area rehabilitated: 1 hectare
- 2. Riverbank treated for willow removal: N/A

3. Number of species for which habitats have been enhanced: (birds, animals and invertebrates not monitored)

34 plant species

4. Number of kilometres of fence erected: N/A

5. Number of threatened communities protected: Two – Kurnell Dune Forest and Coastal Saltmarsh, endangered ecological communities under Threatened Species Conservation Act 1995.

6. Number of structures/weirs removed: N/A

7. Area of land cleaned up N/A

8. Area under weed control and regeneration: 1 hectare

9. Number of weed species targeted: 10

10. Number of people trained in bush regeneration techniques: 91

11. Number of plants planted: 482

12. Number of kilometres of riparian zone rehabilitated: N/A

13. Number of Management Structures in waterways: N/A

14. Number of culturally significant sites protected: N/A

15. Public awareness/community involvement:

SSC volunteers contributed 125 hours of on ground bush regeneration activities within the reserve.

Bonna Point/Silver Beach Bushcare Group Volunteer Hours 31/1//200 30/4/2010					09 -
Date	Bushcare Hours	Other Community Volunteers			
		Date	Event	No. people	Hours
2009	0	18.8.2009	Bushwackers Day	4	12
2009	0	30.5.2009	TAFE students day	11	33
2009	0	15.09.2009	Lend Lease Corp Day	30	4
2009	0	24.10.2009	Plants of Peninsula workshop	20	20
2010	0	27.3.2010	TAFE students day	10	40
2010	0	20.3.2010	Plants of Peninsula workshop	16	16
Total				91	125

_							
Category	Measure	Unit of Measure	Baseline	Progressive			
				measure			
Improved land	Area	Square meters	Area of project				
management	regenerated:		site targeted for				
			regeneration :				
	Area weeded:	Square meters	10,000	10,000			
	Area from which	Square meters	10,000	10,000			
	pest species are	1					
	removed						
	Target species		Number of species				
	for which habitat	Number	occurring:				
	has improved		34	34			
	Area revegetated	Square meters	Area of project				
			site revegetated:				
			3400	3400			
Additional	Weed/pest	Number	Number of weed				
Options	species removed		species existing on				
/Ale			project site at				

			project commencement
	Species diversity	Number	Number of species on site prior to works commencing:
	Plant survival	% of total plants planted surviving: 90%	Number of plants planted: 482
Improved community knowledge, participation and action taken to address environmental issues	Number of individuals engaged in the project:	Number of individuals engaged:	91
	Number of new individuals engaged	Number of new individuals engaged	87
	Number of staff engaged/hours contributed	Number of staff employed/hours contributed	7staff members Hours: 32hrs
	Number of volunteers involved/hours contributed	Number of volunteers involved/hours contributed	125

Issues, Changes, Opportunities

To incorporate a landscape approach to the project, SSC bushland/Bushcare units saw fit to include the restoration of the adjacent vegetative community of Coastal Saltmarsh. The works, mainly done by SSC volunteers and Conservation and Land Management TAFE students, provided the labour to erect protective fencing as well as selective target weeding of invasive salt tolerant species.

- Opportunities that have arisen and what will/could be done to harness them.

The increased presence of personnel on site has seen some small increase in public interest in the project.

- Lessons from the program long term opportunities and how benefits from the project could be spread more widely.

Greater promotion of the project may well see an increase in volunteer numbers.

- Any other issues that the trust as funding body should know about.

No Financial Report showing

- -actual income and expenditure of trust funds compared to approved budget
- -actual income and expenditure of other sources of funds
- -estimated value of in-kind contributions

Item	Proposed Total ex GST	Actual Total ex GST	Funds provided by
Labour Costs			
Bush Regeneration Contractors			ET
Bush Regeneration Contractors			SSC
Council's Bush Regeneration Staff			SSC
Bushcare Officer - supervision, training & support of Bushcare Group (in kind) 60 hrs @ \$35/hr			SSC
Contract & funds management by Bushland Coordinator (in kind)	and the second		SSC
Bushcare & community volunteers (in kind)			Bushcare & community volunteers
Direct Project Costs			
Supply and install sign			SSC
Supply 400 tubestock			SSC
Supply & delivery of mulch			SSC
Rubbish removal & tipping costs			SSC
Fencing	- A3632		SSC
Publicity Costs			
Ad in local paper			SSC
Total			

Documentation substantiating these figures is included in printouts from council's financial program (see Attachment 8).

10. Assessment of the Project's Value

The bush regeneration work has been successful with new species appearing as well as seedlings of existing species occurring. This will provide a catalyst in the process of restoring and protection the endangered ecological community of Kurnell Dune Forest and Coastal Saltmarsh in the project area and builds on successes with a similar process in previously completed Stages..

The project will however be maintained by the current Bushcare Groups, SSC Bushland staff.

Thanks must go to the New South Wales Government through its Environmental Trust for their support of this worthwhile project.

Attachments

Attachment 1 Project Area Map Attachment 2 Locality Map Attachment 3 Vegetation Map Attachment 4 **Contact Specifications** Attachment 5 Weed Density Mapping Quadrat & Photo Point Location Map Attachment 6 Attachment 7 Quadrat Survey Attachment 8 Native Plant Species List Attachment 9 Monthly Report Forms & Progress Reports Publicity Attachment 10 Attachment 11 Photo documentation Attachment 12 Financial documentation

Attachment 1: Maps of Project Location

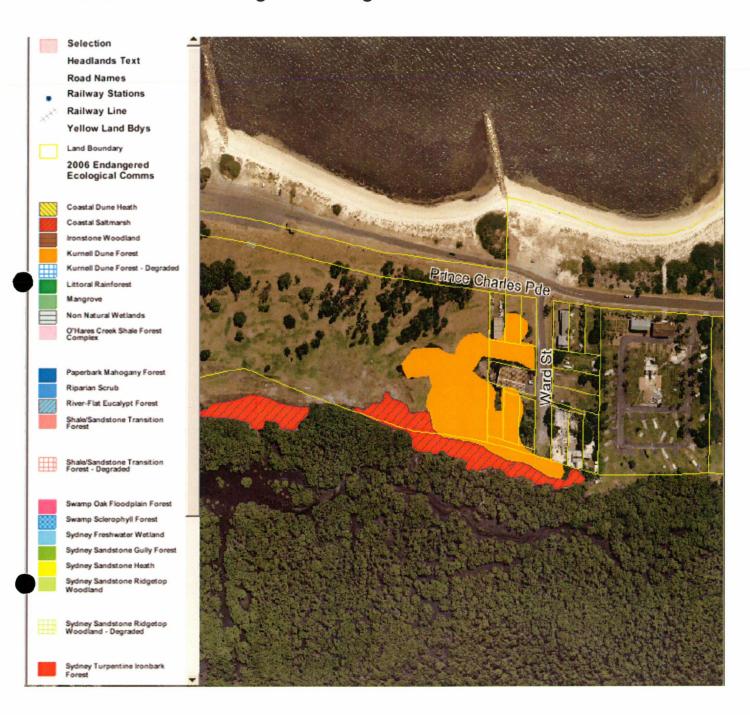


Attachment 2: Map of Project Area





Attachment 3: Endangered Ecological communities



Attachment 4: Contract Specifications

CONTRACT SPECIFICATIONS

Specifications for Bush Regeneration works at Bonna Point, Kurnell 2009

1. Introduction

The Environmental Trust has provided Bonna Point Bushcare Group with a \$7500 for bush regeneration works at Bonna Point. Sutherland Shire Council has contributed \$2500 bringing the total funds to \$10,000.

2. Terms of Reference

A map of the project site are attached, UBD reference 315 Q8.

3. The Objectives

- 3.1 To extend the area of saltmarsh community at Bonna Point.
- 3.2 To protect the saltmarsh from incremental loss due mowing and dumping of fill by fencing the area between the lawn and remnant saltmarsh species.

4. Scope of Works

- Hand weed and/or spray any emerging weeds particularly weedy grass species.
- Cut and paint Acacia saligna
- Maintain existing salt marsh area
- Implement bushland restoration works within designated areas by use of 'best practice' methods.
- All plant material is to be bagged and placed at the front of the reserve or removed from the site.
- All works to be completed by 30/3/2010
- Contactor to supply a final report upon completion of project. Report to include summary of completed works and progressive photos.

Site 1

The area to be reclaimed as saltmarsh is shown below. Please note that the planted areas have changed in shape and size since the aerial photograph shown below was taken. A site visit is required to confirm the work areas as the map below may be inaccurate.



Site 2

Maintenance weeding as required and time permits eg sweep for fleabane, bidens etc



Site 3:
Implement Bushland restoration as per supplied.



Attachment 5: Weed Density maps

Prior to works



At Completion of project



Attachment 6: Quadrat Map



Attachment 7: Quadrat survey

Gt. B. B.	0	_	uadrat 5m x			
Site: Bonna Point	Quadrat 1 5m To document the change in species composition over time before and after weed					
Purpose:	To document the change removal	in species c	omposition o	ver time befo	ore and after weed	
Vegetation Community	Kurnell Dune Forest					
Botanical Name	Common Name					
Dotaincai Name	Common Name	Status	Date:	Date:	lance Kating	
			27/2/2009	5/4/2010		
Maclura cochinchinensis	Cockspur Thorn	I	VC	VC		
Ipomea indica	Blue Morning Glory	E	С	A		
Isolepsis nodosa	Club Rush	I	0	0		
Banksia integrifolia	Coastal Banksia	I	С	С		
Hydtrocotle bonariensis	Pennywort	E	0	R		
Protasparagus						
aethtiopicus	Asparagus Fern	E	С	A		
Commelina cyanea	Scurvy Weed	I	О	C		
Tradescantia fluminensis	Happy Wanderer	E	VC	R		
Olea europaea var						
cusipidata	African Olive	E	С	R		
Bidens pilosa	Cobblers Pegs	E	О	A		
Cynodon dactlyon	Common Couch	E	O	A		
Geitonoplesium cymosum	Scrambling Lilly	I	O	O		
Stenotaphrum						
secundatum	Buffalo Grass	E	0	A		
Pittosporum undulatum	Sweet Pittosporum	I	R	R		
Ehrharta erecta	Panic Veldt Grass	E	R	R		
Lantana camara	Lantana	N	R	A		
No. Native Species						
No Environmental Weeds						
No. Noxious Weeds						
% Native Species						
% Environmental Weeds						
% Noxious Weeds						

Cover	Cover Abundance
Abundance	
Rating	
A	Absent
R	Rare - <5%
0	Occasional 5-25%
С	Common 25 -50%
VC	Very Common 50-75%

KEY to quadrats	
Status	Symbol
Indigenous	I
Planted	P
Environmental Weed	Е
Noxious Weeds	N

Cover Abundance Rating	Cover Abundance
A	Absent
R	Rare - <5%
0	Occasional 5-25%
С	Common 25 -50%
VC	Very Common 50-75%

Attachment 8: Bonna Point Indigenous Plant Species List

Compiled Febrauary 2010 by D. Mellor (SSC Bushcare Officer)

LOMANDRACEAE

Lomandra longifolia

AIZOACAEA		
Carpobrotus glaucescens salt	Pig Face	* S (natural in
Tetragonia tetragonoides	Native spinach, Warrigal gree	marsh) ens
AVICENNIACEAE Avicennia marina var. australasica	Grey Mangrove	S
CASSYTHACEAE Cassytha pubescens	Common Devils' Twine	
CASUARINACEAE Casuaruina cunninghamiana Casuarina glauca	Swamp She-oak	* S
CHENOPODACEAE Rhagodia candolleana ssp. candolleana Sarcocornia quinqueflora ssp. quinqueflora Sueada australis	Seaberry Saltbush	S
COMMELINACEAE Commelina cyanea	Scurvy Weed	
CONVOLVULACEAE Dichondra repens	Kidney weed	
CYPERACEAE Isolepis nodosus	Common sedge	* S (and natural)
DILLENIACEAE Hibbertia scandens	Snake Vine	*
FABACEAE Acacia longifolia var. sophorae	Sydney Golden Wattle	*
GERANIACEAE Geranium homeanum		
LAMIACEAE Westringia fruticosa	Coastal Rosemary	*

Spiny Mat-rush

MORACEAE

Maclura cochinchinensis Cockspur thorn

MYRTACEAE

Eucalyptus robusta Swamp Mahogany *

Kunzea ambigua Tick bush *

Leptosermum laevigatum * and possibly

natural

Melaleuca nodosa Ball Honey Myrtle *

PHILESIACEAE

Geitonoplesium cymosum Scrambling Lily

PHORMIACEAE

Dianella caerulea var. caerulea Blue Flax Lily *

PITTOSPORACEAE

Pittosporum revolutum Hairy Pittosporum *
Pittosporum undulatum Sweet Pittosporum

POACEAE

Dichelachne crinita Plume grass *

Imperata cylindrica Blady Grass * (Possibly natural near

catamaran club)
Spinifex sericeus
S1

Spinifex sericeusSpinifexThemeda australisKangaroo Grass*Zoysia macranthaCoast couchS

PROTEACEAE

Banksia integrifolia Coastal banksia unknown

RUTACEAE

* White Correa

SAPINDINACEAE

Cupaniopsis anacardioides Tuckeroo * and natural

VITACEAE

Cayratia clematidea Slender Grape

* = known to be planted

S = species found in saltmarsh area