

Milang Snipe Sanctuary

Restoration Site Action Plan

Milang Restoration Project

Property Name: Snipe Sanctuary
PlanID:

Location: Milang

Plan submitted: September 2016
Planting Season: 2017

DRAFT



Australian Government



Government
of South Australia



gwlap



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Cover Photo Milang Snipe Sanctuary

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Document versioning

Date	Author	Version Name	Changes Made
12/09/16	LH	V1	Original draft

1 PROJECT BACKGROUND

This site action plan has been developed by the Goolwa to Wellington Local Action Planning Association. The Vegetation Program is a seven year adaptive management response plan from 2009 to 2016 to rehabilitate Lakes Alexandrina, Lake Albert and the Coorong Ramsar wetland site. This Project is funded by the Australian Government and the South Australian Government's *Murray Futures* Program.

This action plan provides documentation for restoration works at the Milang Snipe Sanctuary, within the Milang Region and is part of the Community Revegetation Program. This plan suggests activities that are planned for the 2017 Planting Season. Any future on-ground works will be detailed in separate plans.

1.1 REVEGETATION OBJECTIVES

Restoration works are aligned with the CLLMM community endorsed Long Term Plan objectives, outcomes and goals. The goal for the site is *'To secure a future for the CLLMM site as a healthy, productive and resilient wetland system that maintains its international importance. Achieving this will directly support the local economy and all its communities.* Table 1 outlines vegetation program actions to CLLMM Long Term Plan outcomes and ecological objectives.

Table 1: Vegetation Program actions to CLLMM Long Term Plan outcomes and ecological objectives

CLLMM Long Term Plan Outcome	CLLMM Ecological Objective	Vegetation program action
The site maintains historical salinity gradients, species abundance, variable lake levels and an open Murray mouth	Self sustaining populations, Hydraulic connectivity, Persistent salinity gradient, Flow and water level variability	Provide habitat to facilitate species abundance, Ensure waterways do not become choked with undesirable vegetation
Biological and ecological features that give the site its international significance are maintained	Self sustaining populations, Population connectivity, Habitat complexity and diversity	Protect and improve habitat for significant species and assemblages, Provide landscape corridors and stepping stones
The ecosystem is more resilient and can adapt to and respond to a drier climate	Population connectivity, Hydraulic connectivity, Habitat complexity and diversity, Aquatic terrestrial connectivity, Redundancy and ecological function	Provide refugia, Provide diversity of vegetation types and habitats, Provide landscape corridors and stepping stones across aquatic terrestrial gradients, Improve diversity and functional species, Mitigate erosion and acidification risk
The culture of the traditional owners, the Ngarrindjeri is preserved through partnerships and flows of suitable quality		Partner with Ngarrindjeri on planning , Engage Ngarrindjeri in training and on ground works
The regional economy and local communities that depend on the health of the site are sustained		Improve knowledge for sustainable land management., Use vegetation to improve land condition, Engage local people in on ground works to improve economies
The capacity, knowledge and science based responsiveness are increased within the community and those working for the region		Engage local communities in training and on ground works

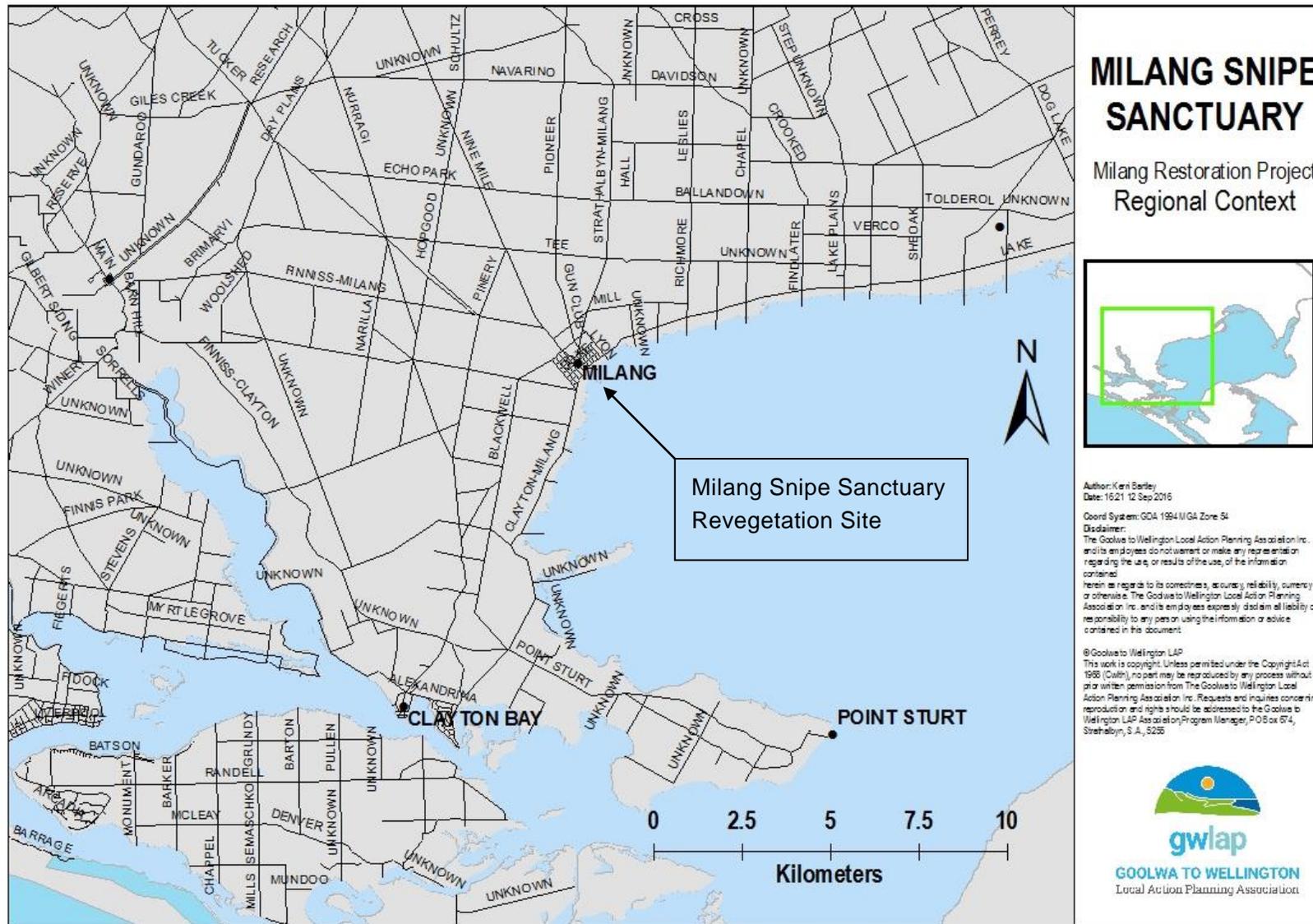
1.2 SITE HISTORY AND DISCUSSION

Site Name:	Milang Snipe Sanctuary
Size:	0.66 ha
Site Location:	Milang
Parcel Details	D60618 A4 H150100 S182
Landholder(s):	Crown Alexandrina Council
Landholders Contact Details	C/O Alexandrina Council
Lease arrangements / Management	Managed by Alexandrina Council
Infill	No
Fencing required	No

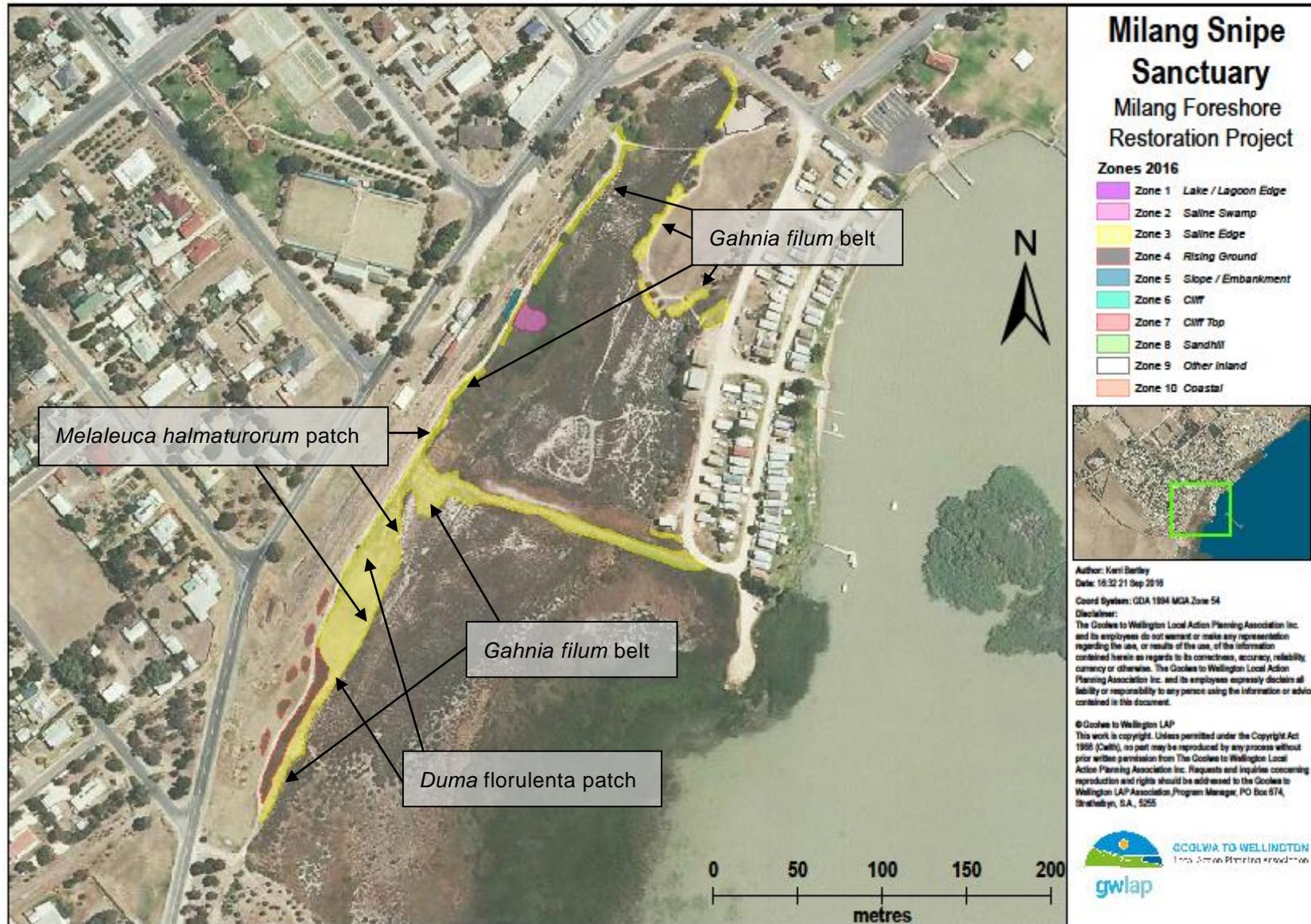
1.3 SITE DESCRIPTION AND HISTORY

Milang Snipe Sanctuary is a wetland complex on the foreshore of Milang and is an extremely important site for waterbirds. It contains a diverse range of vegetation communities, most notably *Tecticornia pergranulata* (samphire) shrubland, but also sedgelands and *Duma florulenta* (tangled lignum) shrubland. The area being revegetated surrounds the northern most lagoon and a section of the southern lagoon, and ranges from the saline edges of the water body to rising ground of terrestrial vegetation. The Milang Snipe Sanctuary is recognised for its significance, both ecologically and culturally, to Ngarrindjeri peoples and local Milang residents. The site is also internationally recognised as a Ramsar site. The site is adjacent to Pobbybonk point which was revegetated through the CLLMM Community Revegetation Project. The Milang Snipe Sanctuary Restoration Site Action Plan is part of the CLLMM Milang Habitat Restoration Project which encompasses a larger area and includes infrastructure designs.

2 LOCATION MAP



3 REVEGETATION ZONES



DESCRIPTION OF REVEGETATION ZONES

Revegetation Zone	Description	Vegetation and Environmental Issues	Restoration Target
 <p>Zone 2, Saline Swamp Trial Site 0.02 ha</p>	<p>This area of the swamp is dominated by <i>Paspalum vaginatum</i> (Salt water couch). One of two storm water outlets is producing conditions to allow the couch to thrive. Controlling the whole area affected by the Saltwater couch would be difficult in 12 months and therefore a trial site has been identified to highlight a progressive approach to restoring this part of the swamp.</p>	<ul style="list-style-type: none"> ▪ Dominant / priority weeds: <ul style="list-style-type: none"> ○ Saltwater couch ▪ Existing remnant vegetation includes: <ul style="list-style-type: none"> ○ <i>Samphire sp.</i> 	<p>Samphire Shrubland with a belt of <i>Gahnia filum</i>.</p>
 <p>Zone 3, Saline edge 0.52 ha</p>	<p>Soil is black clay/loam and subject to moderate saline influences.</p> <p>Some existing remnant vegetation and revegetation exists within the zone but largely dominated by weed species.</p> <p>This zone includes a levy bank which is largely dominated by weed species.</p>	<ul style="list-style-type: none"> ▪ Dominant / priority weeds: <ul style="list-style-type: none"> ○ Kikuyu ○ Tree mallow ○ Mallow ○ <i>Gazania</i> ○ Bridal creeper ○ Century plant ▪ Existing remnant vegetation includes: <ul style="list-style-type: none"> ○ <i>Samphire sp.</i> ○ <i>Disphyma crassifolium</i> ○ <i>Cyperus gymnocaulos</i> ○ <i>Duma florulenta</i> 	<p>Patchy clumps of <i>Melaleuca halmaturorum</i> / <i>Duma florulenta</i> over dense understorey as well as belts of <i>Gahnia filum</i>.</p>
 <p>Zone 4, Rising ground 0.07 ha</p>	<p>Soil is sand/loam over clay (largely variable). Vegetation remains subject to mild saline influences.</p> <p>A small number of revegetation species exists within the zone.</p>	<ul style="list-style-type: none"> ▪ Dominant / priority weeds: <ul style="list-style-type: none"> ○ Kikuyu ○ Tree mallow ○ Mallow ▪ Existing revegetation includes: <ul style="list-style-type: none"> ○ <i>Rhagodia candolleana</i> ○ <i>Cyperus gymnocaulos</i> 	<p>Acacia / Myoporum open shrubland with a dense understorey</p>

Revegetation Zone	Description	Vegetation and Environmental Issues	Restoration Target
 <p>Zone 5, Slope Trial Site 0.01 ha</p>	<p>Soil is variable and a highly modified environment.</p> <p>Limited native vegetation within the zone.</p>	<ul style="list-style-type: none"> ▪ Dominant / priority weeds: <ul style="list-style-type: none"> ○ Kikuyu ○ Thistle sp. ▪ Existing remnant vegetation includes: <ul style="list-style-type: none"> ○ <i>Duma florulenta</i> 	<p>Acacia open shrubland with a dense understorey</p>
 <p>Zone 9, Other inland 0.04 ha</p>	<p>Soil is sandy loam with a small number of overstorey plantings (existing plants to be left).</p> <p>A small number of amenity plantings to increase overstorey species outside the swamp.</p>	<ul style="list-style-type: none"> ▪ Dominant / priority weeds: <ul style="list-style-type: none"> ○ Kikuyu ○ Cape weed 	<p>Amenity planting of Sheoaks.</p>

4 REVEGETATION SPECIFICATIONS

4.1 PEST ANIMALS

The landowner / site manager is to assist with the implementation of a fox, feral cat and hare/rabbit control program on the property. Seek assistance from the NRM Board. Evidence of these species was gathered during the site inspection, monitor and act as required.

Zone	Comment	Action
All	Land manager/owner to continue to manage foxes at the property level to minimise impact to native wildlife	Autumn and early spring each year
All	Land manager/owner to continue to manage hares/rabbits at the property level to minimise impact to native vegetation, revegetation and natural regeneration efforts	Regular spotlight shooting or baiting where appropriate. All seedling plants to be guarded during establishment
All	Land manager/owner to continue to manage feral cats at the property level to minimise impact to native wildlife	Regular spotlight shooting, trapping or baiting where appropriate

For more information regarding weed and vermin control techniques and hygiene protocols contact the South Australian Murray - Darling Basin Natural Resources Management Board Authorised Officers. <http://www.samdbnrm.sa.gov.au/>. Further information on burning can be obtained from the South Australian Country Fire Service before conducting any fire related control (Ph: 1300 362 361). For information regarding native seed collection permits and hygiene protocols contact DEWNR. <http://www.environment.sa.gov.au>. For additional vegetation information refer to the Goolwa to Wellington & Coorong District LAP, 'Revegetation Guidelines for Lower Murray Lakes'.

4.2 WEED CONTROL

This section contains weeds recommended for control only, not all weeds on site. Other weeds requiring control may appear on site following chemical application, due to seasonal influences or invasion therefore the site requires ongoing monitoring.

Suggested control techniques have been provided below but may be subject to change based on site condition and seasonal influences. The proposed site preparation and weed removal technique should be discussed with ChemCert certified contractors undertaking works prior to start and chemicals shall be applied at the recommended label rate.

Weed species		Zones	Control
High Priority			
African boxthorn	<i>Lycium ferrocisimum</i>	Outside of planting areas	Cut and swab, spray or basal bark treatment.
Perennial veldt grass	<i>Ehrharta calycina</i>	3 and 4	Slash rank growth followed by spraying regrowth. Target while actively growing (early summer). Follow up works may be required prior to planting (late autumn).
Kikuyu	<i>Cenchrus clandestinus</i>	3, 4, 5 and 9	
Saltwater couch	<i>Paspalum vaginatum</i>	2 and 3	
Annual grasses	<i>Hordeum sp., Lolium sp., Avena sp.</i>	3, 4 and 5	Spot spray planting areas in spring, and again following opening season rains as site preparation.
False caper	<i>Euphorbia terracina</i>	3, 4 and 5	Spot spray isolated clumps while actively growing (early spring).
Bridal creeper	<i>Asparagus asparagoides</i>	3	Target spray during winter. Remove seeds from site.
Gazania	<i>Gazania linearis</i>	3	Target spray or hand pull
Mallow	<i>Malva sp.</i>	3 and 4	Target spray when actively growing
Tree mallow		3 and 4	
Golden wreath wattle	<i>Acacia saligna</i>	3 and outside planting areas	Cut and swab – need to be removed for aesthetics.
Iceplant	<i>Mesembryanthemum crystallinum</i>	3	Target spray prior to planting

Onion weed	<i>Asphodelus fistulosus</i>	3 and 4	Target spray Aug - Nov
Itchy pod tree	<i>Lagunaria patersonia</i>	3	Cut and swab – need to be removed for aesthetics.
Sow thistle	<i>Sonchus oleraceus</i>	3, 4 and 5	Target spray or hand pull
Century plant	<i>Agave americana</i>	3	Drill and fill
Cape weed	<i>Arctotheca calendula</i>	4 and 5	Target spray (June – October)

4.3 FENCING

No new fencing required at this site.

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4.4 PLANTING AND SITE PREPARATION LAYOUT

The exact number of clumps of vegetation and required spacing is dependent on available plants, which is likely to change post spraying. Therefore site preparation and planting layout details can be given as a guide only at the time of the site plan. The number of clumps for each species can be calculated prior to planting by dividing the total number of plants by the number of plants per clump.

During planting, the plants should be planted as described where possible, but site preparation and plant numbers will prevent an exact match of the proposed layout. Where plants do not fit within proposed layout, plant excess species throughout zones using available planting space and correct plant spacing.

Zone	Plant Layout and Design	Site Preparation and Layout
2	Trial site: Scatter plants throughout the zone in open areas allowing room for existing plants to spread. Plant <i>Gahnia filum</i> densely (40 cm apart) in a belt fringing the saline edge zone.	Control a large patch of Salt water couch as identified in zone map to allow for natural regeneration and recruitment to occur. Supplement with additional plantings in open (bare) areas. No guarding of plants. Water sensitive control needed
3	Plant dense clumps of <i>Melaleuca halmaturorum</i> , <i>Duma florulenta</i> and <i>Gahnia filum</i> (Belts) as indicated on the zone map. Scatter remainder of species throughout in sprayed out patches.	Spray out patches as indicated on the Zone map avoiding any existing vegetation. Some dense areas of <i>Disphyma crassifolium</i> exist amongst Rye grass and will need careful treatment. Water sensitive control needed
4	Make sure 3 <i>Acacia pycnantha</i> and 2 <i>Myoporum insulare</i> are in each of the 6 patches above the track and scatter the rest of the species to fill in the patches. Scatter the rest of the plants in the area below the track making sure to keep the <i>Acacia pycnantha</i> on the higher side and the <i>Myoporum insulare</i> at the lower side. <i>Maireana oppositifolia</i> to be planted below the track only.	Blanket spray the zone (including patches above the track) avoiding existing plants.

Zone	Plant Layout and Design	Site Preparation and Layout
5	Trial site: Scatter plants throughout the zone according to spacing's in species table.	Blanket spray the zone
9	Single species plantings. Plant 5 meters apart around existing overstorey species.	Spot spray 5 spots at least 5 meters apart from each other and 5 meters away from existing plants.

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4.5 PLANNED PLANT SPECIES LIST AND NUMBERS

Species	Zone 2	Zone 3	Zone 4	Zone 5	Zone 9	Total	Comments
Zone size (ha)	0.02	0.52	0.07	0.01	0.04	0.66	
Overstorey							
<i>Allocasuarina verticillata</i>					5	5	5 meter spacing's
<i>Melaleuca halmaturorum</i>		40				40	3 – 4 meter spacing's in groups of 10 to 15.
Midstorey							
<i>Acacia pycnantha</i>			80	5		85	
<i>Atriplex paludosa</i>		880	440			1320	Dense plantings 0.5 meter spacing's
<i>Duma florulenta</i>		15				15	3 meter spacing's in groups of 5 - 10.
<i>Duma horrida</i>		110				110	Single species plantings 0.5 meter spacing's in groups of 10.
<i>Myoporum insulare</i>			80			80	3 – 4 meter spacing's
<i>Olearia ramulosa</i>			40			40	3 – 4 meter spacing's
<i>Rhagodia candolleana</i>		800	600	80		1480	Dense plantings 0.3 – 0.5 meter spacing's
Understorey							
<i>Atriplex semibaccata</i>		480	320	40		840	Dense plantings 0.3 meter spacing's
<i>Disphyma crassifolium</i>		400				400	
<i>Enchylaena tomentosa</i>		240	200	120		560	
<i>Gahnia filum</i>	100	3700				3800	Dense belts of 0.5 meter spacing's
<i>Lawrenzia squamata</i>		100				100	Scatter throughout 2 - 3meter spacing's
<i>Maireana oppositifolia</i>		320	80			400	
<i>Samolus repens</i>	100					100	Scatter throughout
<i>Selliera radicans</i>	50					50	
<i>Tecticornia arbuscula</i>	115					115	1 meter spacing's
<i>Tetragonia implexicoma</i>				50		50	0.5 – 1 meter spacing's
<i>Threlkeldia diffusa</i>		360				360	Scatter throughout
<i>Wilsonia humilis</i>	50					50	Scatter throughout
Totals	415	7445	1840	295	5	10000	

5 SUGGESTED PLANTINGS FOR FUTURE YEARS

Species	Zone 2	Zone 3	Zone 4	Zone 5	Zone 9	Total
Zone size	ha	ha	ha	ha	ha	ha
Over storey						
Mid storey						
Understorey						
Totals						