Learnings from the project titled “WildEyre Conservation Alliance: Implementing NatureLinks across Eyre Peninsula”.

Prepared by Andrew Freeman (DEWNR) on behalf of the WildEyre Working Group.

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Introduction

WildEyre is a landscape scale, collaborative conservation program involving 5 key conservation organisations working together to restore and conserve the unique and diverse ecosystems across the western area of Eyre Peninsula. The WildEyre partners are Eyre Peninsula Natural Resources Management Board (EPNRMB), Department for Environment, Water and Natural Resources (DEWNR), Nature Conservation Society of SA (NCSSA), The Wilderness Society South Australia (TWSSA) and Greening Australia (GA). The WildEyre partners are referred to as the WildEyre Working Group (WEWG) in the document.

WildEyre was formed in 2007. The WildEyre project area is over 1.2 million hectares and includes the coastal townships of Sheringa and Elliston in the south to Streaky Bay in the north and extends inland to the large Wilderness Protection Areas of Hincks and Hambidge. This area is shown on the map below. Whilst being important agriculturally, the area contains some of the largest, intact and contiguous areas of bushland in the state’s agricultural districts, and supports numerous nationally, state and regionally threatened plant and animal species. This mosaic of agricultural land combined with significant areas of native habitat makes it an ideal focus for landscape scale conservation work. These factors have led to the area being recognised as of state and national significance for biodiversity conservation.

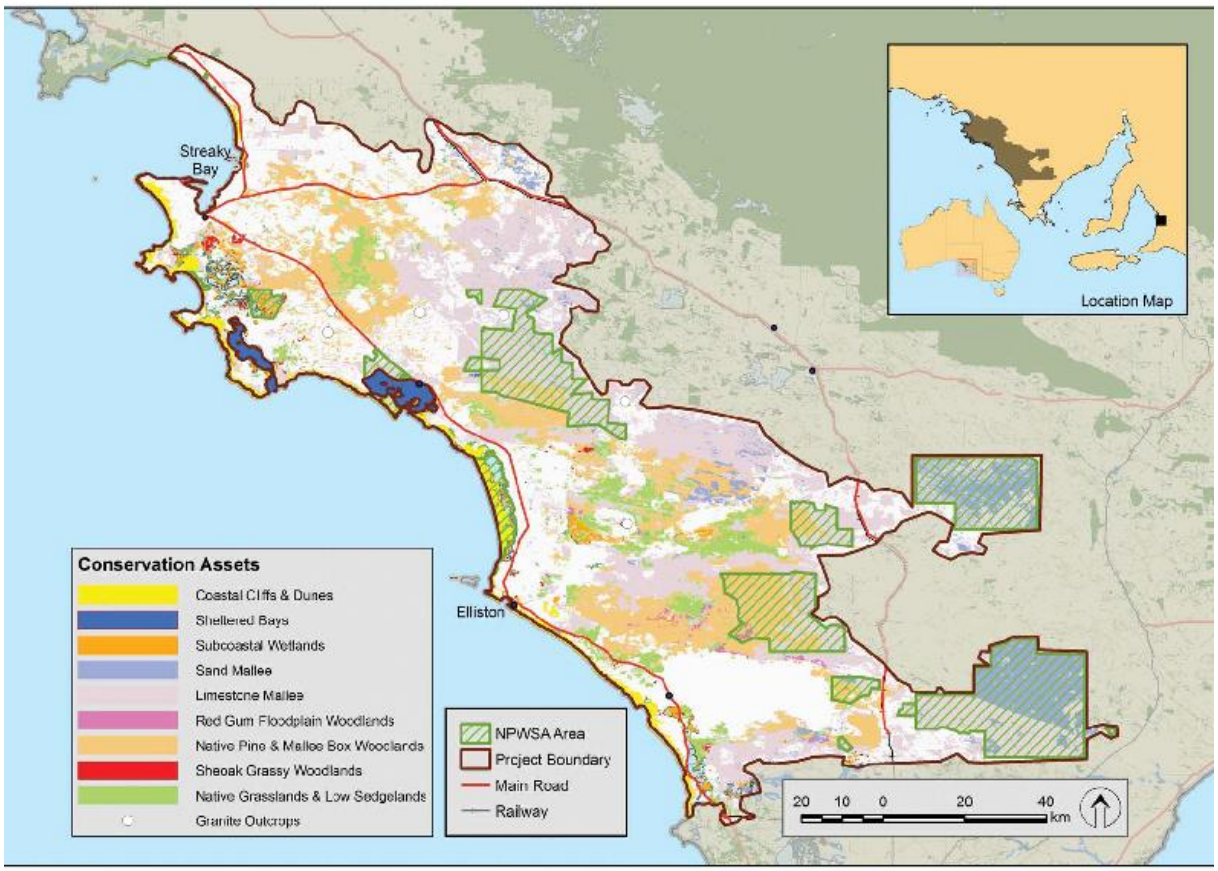

Figure 1: Shows the WildEyre area on Eyre Peninsula in South Australia

Using the Conservation Action Planning (CAP) process, the WEWG has identified its strategic priorities which aim to maintain, protect and enhance priority ecological assets (Sheoak Grassy Woodlands, Red Gum Woodlands, Coastal areas and Mallee Box/Native Pine Woodlands) through strategic restoration and threat abatement activities.
In April 2013 the EPNRM Board (on behalf of the WEWG) agreed to $4,719,900 of funding from the Australian Government. This project has then been delivered by the WEWG between May 2013 and June 2017.

Learnings

The WEWG has had many learnings from this project which are outlined below. Learnings have been outlined under each long term outcome identified at the start of the project in the funding submission.

1. **Building capacity across organisations involved in the WildEyre area to protect and enhance native vegetation across tenures (improved knowledge and understanding to manage existing and emerging threats) at landscape scale.**

The CAP process that the WEWG undertakes quarterly allows this capacity and knowledge building to occur. Having eight group members who work for five different organisations working together in a communal space (the group usually stays together in a house and improves the WildEyre CAP but also spends time during breaks and in the evening getting to know each other on a personal basis) allows trust to form and as a result more meaningful discussion and therefore outcomes. This ongoing commitment by the five organisations has resulted in the effectiveness of the group staying at high levels even with a high turnover in group membership over the 4 year period.

Photo 1: The WEWG spending time together in the evening with group members looking at the sunset near Venus Bay.

The MOU between the 5 organisations has also been essential to make this project work. The WildEyre MOU set an effective structure that allowed all organisations to build capacity. It has also been important for the WEWG to have both excellent local knowledge within some members of the group plus skilled scientific knowledge in other members. It has also been highly beneficial for the WEWG to have a dedicated project officer to keep this particular project on track for the 4 year time span. The project officer also has a long term relationship with local landholders and an in-depth knowledge of local environmental issues which has been important in the successful delivery of this project. There have been a number of organisations that are not part of the MOU but the WEWG has worked closely with to achieve specific outcomes. These include the District Council of Elliston, District Council of Streaky Bay, Friends of Streaky Bay Parks, Friends of Sceale Bay, Wirangu No. 2 Association, Far West Coast Traditional Lands Assoc. and Ceduna Aboriginal Corporation (CAC). All of these organisations have built knowledge and capacity relating to protecting and enhancing native vegetation at the landscape scale as well as provided critical information for the WildEyre CAP. It must be noted that a project with this degree of funding support over a reasonable time length (4 years) has allowed for outcomes to be achieved beyond the scale of any normal 1-2 year project. This extra timespan also allowed the WEWG to better implement the project as it allows for timing of works to be better planned and bought forward if weather permits and delayed if required (ie in low rainfall areas such as WildEyre it is best to undertake direct seeding in years of early breaks to the rainfall season with predicted above average winter/spring rains). These long term projects should be supported more often by organisations such as the Australian Government. This project was also always going to succeed as the WEWG already had a well thought out Conservation Action Plan prior to writing the funding submission so all the activities were a priority and had long term thinking behind them which took into account most of the expected challenges.

Particular outcomes from this funding that have helped achieve improved knowledge and understanding of how to protect and enhance native vegetation include the:

- improvement of the WildEyre Conservation Action Plan
- development of a WildEyre Landscape Linkages Plan
- continuation of Baseline Resource Condition Assessments (Bushland Condition and Bird Monitoring) and the repeat monitoring of sites
- completion of an African Boxthorn Management Plan.

The reports that describe these outcomes can be looked at in detail on the WildEyre website.

2. Improved understanding of native vegetation carbon storage capacity

This target was prioritised as a direct result of many land managers asking for information from the WEWG around the question, “What does the carbon market mean for me if I do revegetation on my property?” In May 2013 this was a hard question to answer as the information was just not available in a local context with any certainty. This question has now be answered. This has been achieved via a number of studies intertwining that has resulted in an analysis of potential carbon sequestration rates from revegetation in the WildEyre area. We can now provide landholders with information about what carbon sequestration rates are likely to be on their

property and they can then make informed management and financial decisions about whether undertaking revegetation on their property to sequester carbon is a viable option. This information has been made available to the community via information in the local papers, a factsheet and information on the WildEyre website. This information can be seen in detail on the WildEyre website.

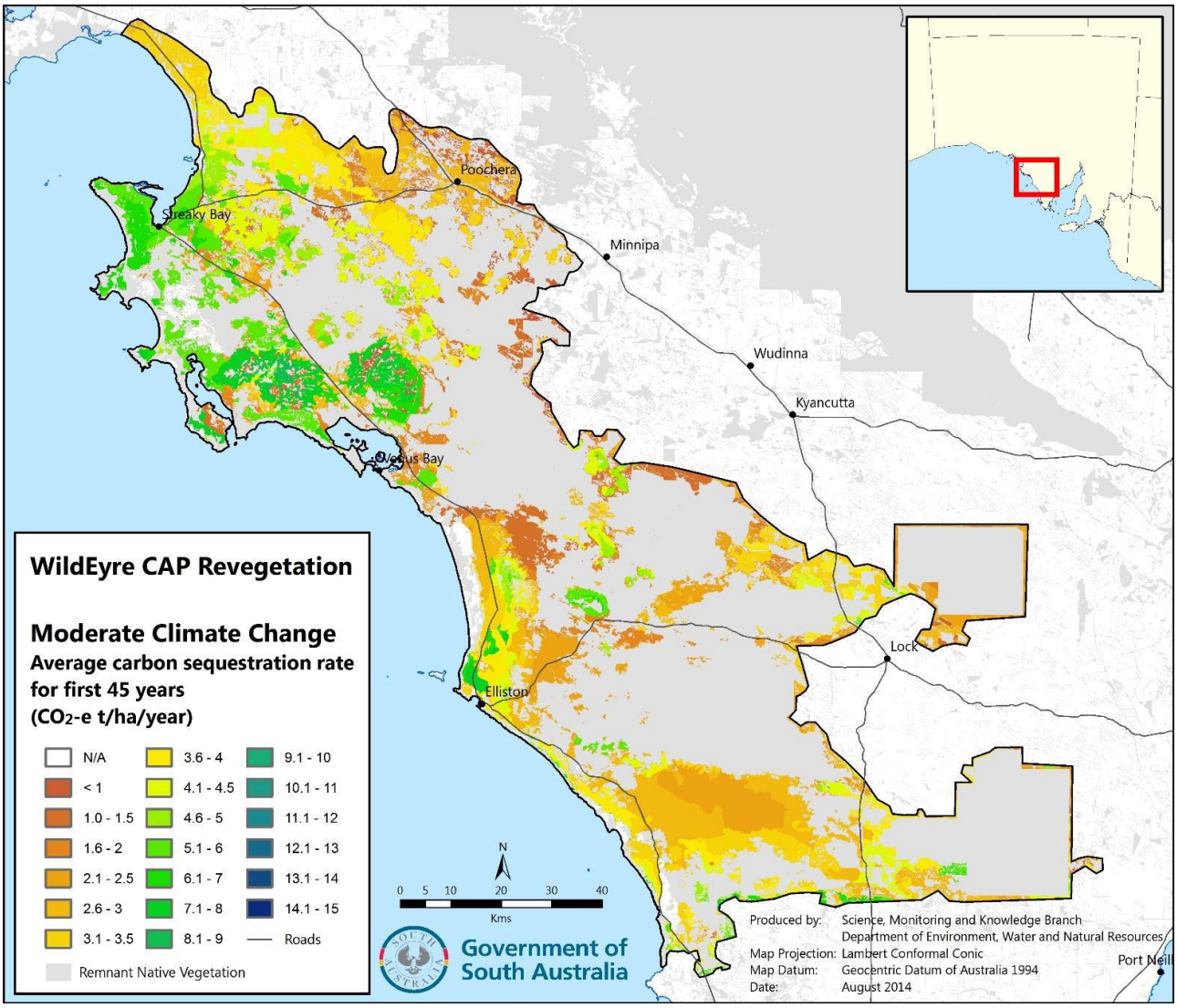

Figure 2: Shows average carbon sequestration rates in the WildEyre area

3. Develop landscape linkages plan to identify priority areas for revegetation and habitat restoration

This was an important outcome of this project as too often restoration and revegetation works are done purely because particular land is available instead of trying to work with other landholders who own land that has been identified as a priority to either revegetate or rehabilitate. The linkages plan was developed by using information from a number of studies and can be looked at in detail on the WildEyre website. It was essential when producing priority

areas that we had access to relevant GIS spatial information and local expert knowledge. Since producing this document WildEyre has worked with a number of different land managers who owned land in priority areas to achieve better outcomes at the landscape scale.

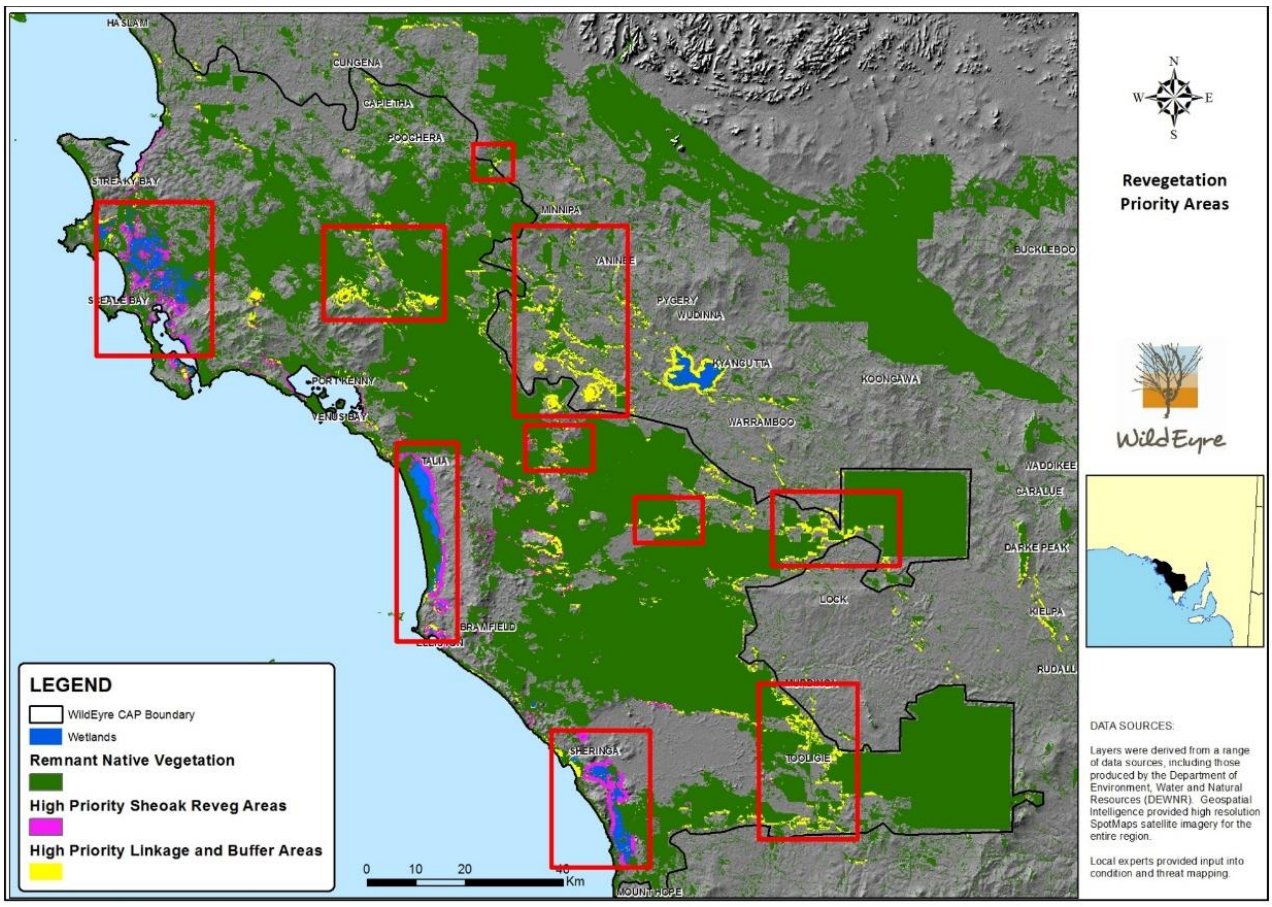

Figure 3: Shows high priority areas for revegetation to be undertaken in the future

4. Strategic biodiverse revegetation in priority areas to improve physical, ecological connectivity and structural diversity (direct seeding, 625ha)

Revegetation has occurred on Eyre Peninsula for many years. When trying to revegetate large areas direct seeding is a much more effective and cost efficient technique than tubestock planting. So direct seeding has been used to complete all of the 625ha required. This was done on land owned by 13 separate landowners. Collecting enough seed is challenging because for biodiverse plantings a seed mixture of at least 20 species is usually required. It is challenging as all plant species have different seed producing patterns, some randomly with rainfall, and some bi-annually and others for a very short period of time each year. Many of the Acacia species only have seed ready for collecting on the plant for a week every year which makes it logistically hard to collect. Due to these factors a real effort was made early on in the project to get as much seed as possible so that by the time most of the revegetation was to be undertaken there was a bank of seed that was appropriate for the particular sites being revegetated.

Photo 2: Andrew Freeman (WildEyre Project Manager) looking at 2 year old revegetation in Venus Bay Conservation Park

Revegetation was undertaken in priority areas (when possible) identified in the Landscape Linkages Plan on public and private land. Private landholders would have to agree to terms in a funding agreement for this to happen. Through the four years that this project has been undertaking revegetation there have been a number of key learnings that include:

- Due to the effects of climate change and yearly climatic variability it has been essential to undertake direct seeding as soon as possible after the break of season as spring rains seem to be becoming more unreliable. The more chance seedlings have had to get their roots down as deep as possible before spring rains finish the greater seedling survival we have seen.

- Increased site visitation allows for more timely identification of threats to the site. In the past revegetation sites were visited 1-2 times per year to assess success and look at management actions needed. Throughout this project sites were visited bi-monthly for the two years after planting which allowed the assessor to identify increased threats to the site such as an increase in rabbit and/or kangaroo grazing as well as snail damage. These threats were identified early enough to enact management actions prior to the revegetation being excessively damaged and not being able to recover.

- Western Grey kangaroos in the project area are having a much larger impact on revegetation success than ever imagined. For the ten years prior to this project beginning in 2013 direct seeding had been reasonably successful and directly correlated to rainfall and effective management of introduced species such as stock, rabbits and snails. It was quickly discovered in 2013 and 2014 that Western Grey Kangaroo populations needed to be

managed in the local areas around revegetation sites. Left un-controlled they would completely graze out seedlings under 2 years of age. Kangaroo control had not been necessary in the ten years prior. Seedlings seem to be eaten in a small period of time starting in January when the wild oats fall to the ground and feed started to become scarce and finishing once there was new grass growth after the opening rains in May. This added kangaroo management was an adaptive management process that was not foreseen when writing the project but had to be taken into account when delivering on ground outcomes to obtain effective outcomes. In the last 2 years of this project sites were not chosen for revegetation if it was unlikely we could get kangaroo numbers under control in that area.

Overall the revegetation has been very successful but obviously all sites are different in their success for different reasons including land use history, site position, climatic conditions at the time of planting (and for the first few years afterwards) and in particular the success of threat management actions undertaken. The table below shows some average stems/ha at most of the different revegetation sites. An average of all these is 1862 stems/ha (this is taking into account the size of each site). This is a higher stems/ha average than we would want for a healthy Sheoak Grassy Woodland but we expect these densities to decrease over time due to grazing and climatic impacts.

Site name	Size of site (hectares)	Average plants/ha from monitoring results	Total amount of plants
VBCP - red soil inland	100	2,389	238,900
VBCP - coastal	85	1,111	94,435
VBCP – inside fence	45	2,528	113,760
Sires	19	3,334	63,346
Dakalanta	40	1,740	69,600
Nosworthy	105	542	56,910
Haslam – x cropping	30	1,445	43,350
Haslam - rock	70	3,528	246,960
DC Elliston	13	7,001	91,013
Kelsh	8	1,445	11,560
Hoffman	18	0	0
Moseby	20	0	0
Totals	**553**		**1,029,834**

Table 1: shows total amount of plants at 12 different direct seeding sites

5. Improve direct seeding technology/equipment

Revegetation is always challenging due to the fact you are always trying to get the timing of seeding right around rainfall and enact enough management of all the threats to ensure the long term survival of the revegetation. This is accentuated in the WildEyre area when you are trying to seed into sheet limestone areas (with pockets of soil) where Sheoak, Red Gum and Mallee Box Woodlands once occurred. For at least 20 years direct seeding machinery has been used that was based on the design concepts used for broad acre cereal cropping in sand, loam and clay soils. While this machinery worked reasonably well considering it had not been specifically designed for this task it was prone to breakage of moving parts. The WEWG decided that surely better equipment could be designed so they got together a panel of experts and in conjunction with a fabrication business (with experience in designing and building agricultural equipment) designed and built a new direct seeding machine that works reliably well in sheet limestone areas. The key to this outcome being achieved was having the input from the 6 individuals who all had excellent experience in either designing, using or building direct seeding machinery as well as having a fabricator who loved the design part of his business and could bring new technologies and thinking developed in agricultural machinery. This machine has now been used since May 2014 in all revegetation on sheet limestone areas with amazing results and minimal breakage of moving parts on the machine. The WEWG is also seeing that these limestone areas often have better native seed germination results compared to other soil types which it is hypothesized have increased changes to soil characteristics (due to the use of chemicals on these soil types) which inhibit seed germination. A great deal of innovation has been used to create this machine which could be used in other areas of sheet limestone around the world.

Photo 3: The new direct seeding machine designed and built in 2014

Photo 4: 1.5m high native seedlings that are 3 years old were planted as seed by the new machine in a sheet limestone area.

6. Enhance the WildEyre seedbank to ensure adequate seed supplies for large scale revegetation projects

Prior to this project beginning the WEWG had developed a 200kg seed bank from which seed could be borrowed each year by people who agreed to replace the seed ASAP afterwards. This has been essential to allow many revegetation projects in the WildEyre area to be undertaken. At the end of this project the WildEyre seedbank now contains 354kg of seed with 1,023kg being collected for seeding but only 868kg being used. This 354kg will be available for people to continue to borrow and replace into the future. A seed bank management database is essential to making this concept work. This amount of seed in store will also allow a quick turnaround on revegetation projects in the future and maximise the chances of having as diverse as possible seed mix. In the short term there are no large direct seeding activities planned so in the last year of the project the WEWG tried to make sure that as much of the seed left in the seedbank was of a type that lasted well in storage (ie 20 years). As this report is being written Landcare Australia are swapping seed so they can obtain a better seed mix for a large revegetation project at Dakalanta (an Australian Wildlife Conservancy owned property) funded by the Australian Government through the 20 million trees program. This again proves the worth of having this local seedbank.

7. Protection and enhancement of existing native vegetation (eg. weed control and fencing)

Protection and enhancement of existing native vegetation is very important because replacing vegetation using any revegetation technique is a long term benefit and high cost activity. Through the WildEyre project 4,988 ha of remnant vegetation has been protected from the negative effects of stock grazing by the erection of 52.4km of fencing. This has been undertaken on 9 separately owned private properties. Works have been done on remnant Sheoak Grassy Woodlands, Red Gum Woodlands, Mallee Box Woodlands and coastal areas (mainly wetlands). All these vegetation types/areas are usually high quality stock grazing areas so have traditionally been heavily grazed by stock. Baseline monitoring has been set up at most of these sites to measure long term change as a result of stock exclusion. Erecting stock proof fencing is an easy although expensive undertaking. In this project an agreement was made between the WEWG and the landholder to pay for a certain incentive per kilometre of fencing and then it was up to the landholder to compete the fencing (either by erecting it themselves or getting a contractor) in the time agreed upon. This type of incentive is good for long term management of the fence by the landholder as they see it as their fence as they have organized for it to be built. A report can be seen on the WildEyre website discussing the monitoring results in detail, however to summarise, the monitoring is indicating that we are getting an overall improvement in plant diversity as well as increased plant regeneration at our work sites compared to control sites. Longer term monitoring will be required in the future as significant change will take a long time to occur.

Photo 5: WEWG members sitting in a recovering Sheoak Grassy Woodland vegetation community

All of these sites have also had weed control works undertaken, mainly focused around African Boxthorn which is a weed of national significance. Methods of African Boxthorn control are outlined in the long term outcome number eight below. At most of these sites African Boxthorn is the only major environmental weed with some annual weed grasses also present such as wild oats. This lack of weeds increases the chances of the remnant vegetation stands staying healthy in the long term. Most sites had small amounts of bridal creeper which already showed signs of the rust fungus (a biological control) and if sites didn't already have rust fungus it was introduced to limit bridal creeper survival into the future. There was also one infestation of bridal veil found as a result of these works which was a real outlier population from other known infestations on Eyre Peninsula. This infestation has now had initial control undertaken and will be followed up in the future by Natural Resources EP staff to control any new seedlings.

At one of the properties a landholder has been assisted to further improve his rotational grazing practices which are already seeing vast improvements to the condition of his Sheoak/Red Gum/Mallee Box Grassy Woodlands. This area has not been included in the 4,988 ha protected as the land is still grazed periodically when it will not damage these systems in the long term. The WEWG sees the move away from set stocking to rotational grazing practices in these Grassy Woodlands as essential for improvement in the health of systems which will still be used into the future for productive purposes. This is the reason why this particular landholder has been assisted as a monitoring program has now been set up to capture the environmental and productivity changes that occur as a result. This can then be used to help encourage other landholders to change from a set stocking practice to a rotational grazing practice. This particular landholder also puts a great deal of effort into kangaroo and rabbit control which allows him to successfully manage the total grazing pressure on his property. So far only baseline grass monitoring and the first year of economic returns have been recorded but after nine years of managing this property the landholder is already seeing obvious improvements in the recruitment of trees and shrubs, the number and health of native grasses, the amount of groundcover and the economic returns by moving to a rotational grazing regime. The WEWG looks forward to continuing to work with this landholder into the future to jointly gather the evidence that can then be communicated to other landholders.

Photo 6. Native grasses under a rotational stock grazing regime.

8. Invasive species management (Vertebrate pests/weeds) across tenures to reduce the impact of invasive species within priority ecological assets for habitat restoration purposes (5000ha)

This long term outcome has been where WildEyre has had some major successes in relation to the control of African Boxthorn, a weed of national significance. African Boxthorn is considered a major problem because it invades native vegetation and alters habitat for wildlife as well as providing shelter and food for feral animals such as foxes, rabbits, starlings and sparrows. At the end of the project 35,852 ha of this weed has been controlled in the WildEyre coastal zone which is a length of 400km. In some areas its density was only 1 plant per hectare but in other areas it was up to 800 plants per hectare. 90% of this area has also been re-treated 2 years after the initial treatment to get the 5-10% of plants that are always missed during initial weed control actions.

In the initial project application it was only proposed we could treat 5,000ha. Including follow-up we have actually covered 65,000 ha which has been made possible by trialling a new innovative technique which has made this task far cheaper per hectare than ever imagined. We have used a helicopter to undertake African Boxthorn control with the technique involving aerial application of a granulated herbicide (200g/kg Tebuthiuron) at the label rate. The herbicide is applied from directly above the boxthorn from a helicopter hovering approximately 1m above the plant into the centre of the canopy providing a precise even granule distribution into the drip zone.

Photo 7: Shows a person distributing the herbicide in the back seat of a helicopter.

The herbicide can be expected to be residual in the soil for up to 3 years. This residual nature is seen as an advantage in controlling new boxthorn seedling growth following defoliation of the parent plant. The aerial method is cost effective in inaccessible locations such as sand dunes, large areas of vegetation and on islands. Using the granular herbicide also leaves the boxthorns standing and roots in place minimising the potential for erosion. A demonstration was also undertaken just south of Elliston for a number of private landholders in the Elliston district so they could see how effective this control method is in inaccessible areas. This was very well received and resulted in a huge amount of community support for this activity. The adjoining 84 landholders to these control works in the coastal zone have been requested to control any African Boxthorn's within 500m of our control works. The landholders have all either done the control I was requesting of them already or committed to doing the requested control works over the next year. These works will need follow-up control on an ongoing basis but into the future we have greatly reduced the potential for this environmental weed to take over large areas of remnant vegetation.

Photo 8: Show the effect of granular herbicide application 2 years after treatment. The African Boxthorn is no longer alive.

Control works have also been undertaken on the environmental weed Italian Buckthorn (Rhamnus alaternus). Rhamnus is a large evergreen shrub that grows up to 5m high. When left, it can form dense thickets which become difficult to control. As it grows quickly and easily forming dense shade it can out compete and eventually suppress native plant life. In January 2015 the South Australian Government declared this plant under the Natural Resources Management Act 2004 throughout the whole of the State of South Australia, making it easier to work with landholders to try and eradicate local infestations. Two techniques have been found as the best way to control Rhamnus infestations that are large in size through this project. For larger plants Basal barking is the preferred method of control. It involves completely saturating the trunk and any branches protruding from the trunk with chemical to a height of at least 30 cm above ground level. The bark should be thoroughly sprayed and wet on all sides to the point of runoff. It must be noted that this technique works best in conditions where soil is dry but plants

are still actively growing. For smaller plants foliar spray can be used when plants are actively growing.

Photo 9: Shows a contractor looking at an Italian Buckthorn that was treated one week prior. The plant is already starting to die.

We have worked on 2 main infestations.

1. An infestation of Italian Buckthorn in the township of Mt Hope and on surrounding agricultural properties (10 landholders in total including crown land) mainly amongst Mallee Box Woodland vegetation. The area of infestation is about 200ha in size. The distribution (areas highlighted in red) of the Rhamnus infestation is shown on the map below. This shows the main infestation but there are also individual outliers that have been found up to 20km away that are presumably from this seed source. This main infestation and all known outliers have been controlled initially and follow-up undertaken once two years later. This seems to have controlled most plants but further follow-up will be required to control seeds that are continuing to germinate.

Figure 4: Shows the area (in red) around the township of Mount Hope that was infested with Italian Buckthorn prior to control works being undertaken.

2. An infestation of Italian Buckthorn at Sheringa Beach (on 3 landholders' properties in total including crown land) amongst sand dune vegetation. This area is about 422ha in size. The distribution (areas enclosed by blue lines) of the Rhamnus infestation is shown in the map below. This shows the main infestation but there are also individual outliers that have been found up to 10km away that are presumably from this seed source. This main infestation and the outliers have been controlled once and had one follow-up control completed as well. Further follow-up will be required to control seeds that are continuing to germinate.

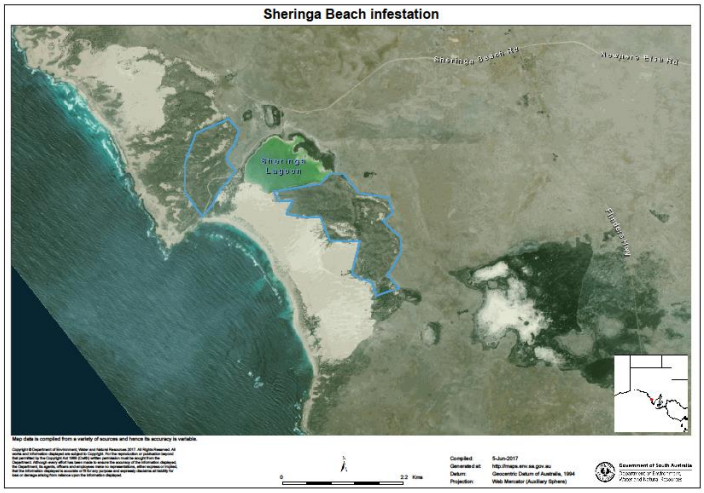

Figure 5: Shows the area (enclosed in blue lines) Behind Sheringa Beach that was infested with Italian Buckthorn prior to control works being undertaken.

All the landholders we have worked with have greatly appreciated the assistance we have provided. Into the future we have greatly reduced the potential for this environmental weed to take over large areas of remnant vegetation.

9. Measurable improvement in native vegetation condition across four ecological assets (red gum, sheoak, coastal mallee and box pine woodlands - 4000ha)

A number of monitoring methods have been used to measure improvements in native vegetation condition.

Bushland Condition Monitoring

Over the last 10 years 168 sites have been established for Bushland Condition Monitoring as part of the Wild Eyre Project across 12 vegetation groups corresponding to the assets identified in the CAP. 85 sites were established for the purpose of Resource Condition Monitoring, where sites are chosen at random to be representative of the vegetation group in the region, and where no additional conservation management is engaged in, apart from the existing practices of the land manager. As a group they may be considered to comprise a reference against which to gauge the performance of management actions at sites where additional conservation management actions are being undertaken, such as those funded through this project. 83 such Performance sites were established to begin to measure trends in the effectiveness of on-ground works. It was always going to be difficult to see a measurable improvement in native vegetation condition across the four ecological assets in a four year period as vegetation communities take a long time to recover once threats have been removed. The Performance sites were established between 2009 and 2014 and re-assessments were all done in 2016. The map below shows where the different BCM sites were established.

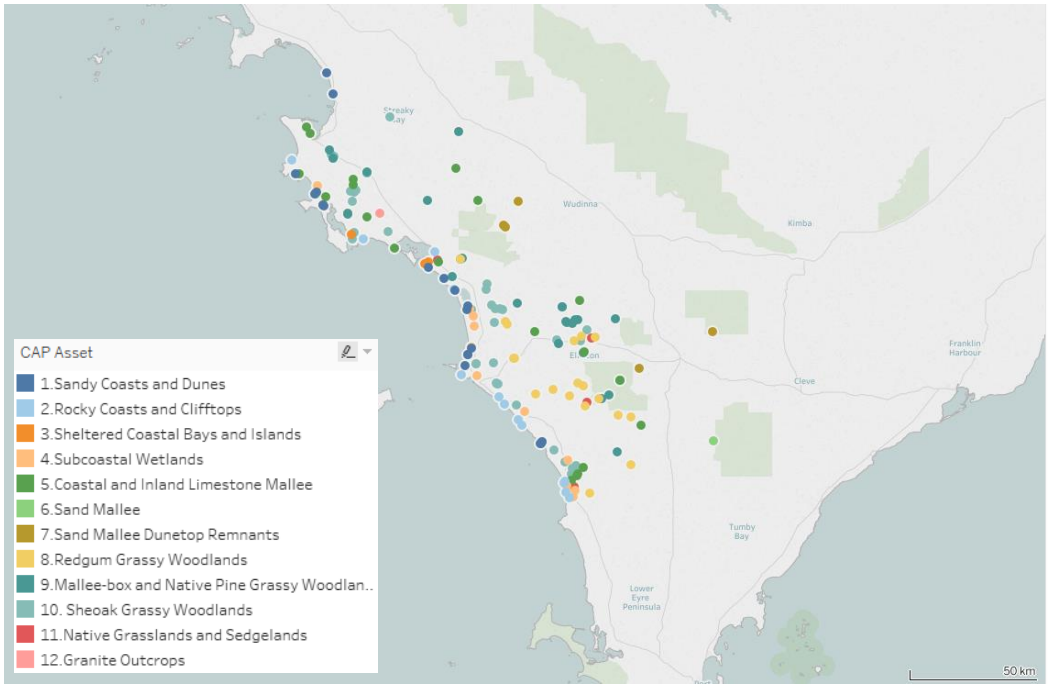

Figure 6: Shows Bushland Condition Monitoring sites in the WildEyre Project area

The percentage of 2016 revisited sites showing a significant improvement or decline is shown below for all sites irrespective of which CAP Asset they belong to.

	Resource Condition (R)		Performance / Management (P)	
	Improve (% of sites)	**Decline** (% of sites)	**Improve** (% of sites)	**Decline** (% of sites)
Core Attributes				
Native Species Diversity	17	13	40	8
Structural Diversity A (Ground Cover)	12	9	18	30
Structural Diversity B (Native Life Forms)	15	26	14	16
Regeneration (native trees and woody shrubs)	12	26	14	16
Key Threats				
Weed Abundance and Threat	12	26	14	16
Grazing Pressure	50	26	30	30
Feral Animal Abundance	35	15	31	26
Tree / Shrub Health				
Dieback	23	13	29	10
Lerp Damage	10	31	16	13
Mistletoe	0	0	0	0
Tree Habitat Features				
Tree Habitat Value	48	15	24	18
Hollows	27	21	34	11
Logs	35	17	19	22

Figure 7: Shows that only the native species diversity measure (green box) has shown a significant improvement. This is not surprising given the short monitoring interval.

Apart from Native Species Diversity, the results above do not show any clear trends in either improvement or decline. The interval between assessments is 2-3 years for most sites, which is too short to show meaningful ecological change. However a baseline of condition has now been established and ongoing monitoring at these sites will be very important in determining the long term success of the project.

A higher proportion of Performance sites showed improvement in Native Species Diversity compared with Resource condition sites (highlighted in green above). Native Species Diversity is an important lead indicator of vegetation health. Future monitoring over the next 10-50 years will be required to determine whether this is an episodic trend (perhaps due to rainfall) or a long term trend. 2016 was a significantly wetter Winter and Spring than average. Broadly speaking, almost all sites were revisited in 2016, while about 30% of sites were established during years of average or drier years (2011, 2012, 2014).

More detail relating to this monitoring information can be found on the WildEyre website.

Bushland Bird Monitoring

This report assessed bird communities in baseline and performance management sites, focussing on four identified assets, including Red Gum Woodland, Pine/Mallee Box Woodland, Sheoak Grassy Woodland and Coastal Dunes and Cliffs. Survey sites in remnants were selected using a stratified random sampling procedure and performance management sites consisted of those being actively managed/restored as part of the WildEyre project.

The report presents a comparison of results from sampling undertaken across the WildEyre region from 2012-2014 and Spring 2016 using a standard 2 hectare, 20 minute survey method of 69 sites. The resurvey was interrupted on two occasions by extreme weather events that reduced observability of birds.

In terms of this report only a simple comparison was made of both bird species richness and total abundance/number of observations of birds recorded either heard, seen in or flying over the sample area. Cumulative bird species richness and total abundance from the six 20 minute surveys at each site were used in the analyses and compared across vegetation communities. Mean totals for restoration and revegetation sites were compared with those of remnant sites. Due to the short interval between the two survey periods we would not expect to observe any significant change in both species present and abundance.

Preliminary analyses show that bird species richness and abundance varied between vegetation communities and that remnant sites had typically higher abundance and richness than revegetation or restoration sites. In most sites there is a considerable difference in species recorded and abundance of species in particular communities. There is no doubt that this can be attributed to the weather conditions prior and during the different survey periods.

More detail relating to this monitoring information can be found on the WildEyre website.

Red Gum Grassy Woodland monitoring

Halfway through this project it was realised there was a knowledge gap around the major threats to Red Gum Grassy Woodland systems. It is still unknown if grazing pressure is a major threat and if so what type of grazing pressure. Therefore, in 2015, a vegetation monitoring project was established to investigate the impacts of different herbivore grazing pressures (macropod, sheep and rabbits) on Red Gum Grassy Woodland systems. Baseline monitoring data was collected at two sites (Mount Hope and Bascombe Well Conservation Park) in October 2015. Sites were re-surveyed in November 2016 using the same sampling methodology. There were three herbivore grazing access treatments monitored at each site.

As only two measurements have been recorded from the monitoring, a formal statistical analysis of the data was not yet appropriate. The raw data analyses across sites and between treatments showed that rabbits and kangaroos are having a grazing impact particularly at Bascombe Well Conservation Park. Of these two herbivores, kangaroos were having the

primary impact given the comparison between treatments. Future monitoring will be conducted at least every five years to ascertain more detailed results.

More detail relating to this monitoring information can be found on the WildEyre website.

Revegetation Performance Monitoring Framework - Assessing performance against Society for Ecological Restoration Australiasia (SERA) national restoration standards

A pilot study was undertaken to develop a series of key performance indicators for revegetation sites based on the national SERA restoration standards and then trial the indicators on a number of relatively advanced (8 - 15 years old) Sheoak Grassy Woodland revegetation sites in the WildEyre area. This monitoring technique will then be used in the future to gauge the success of revegetation as part of the Biodiversity Fund project.

The five Sheoak Grassy Woodland sites that were monitored achieved on average of a 3 out of 5 star rating, after 8-15 years post-planting.

Encouragingly, native grasses appeared to be increasing in cover over time (and exotic grasses decreasing), even at ex-cropping sites where nitrate and phosphorous levels were relatively high and probably artificially elevated through past land management practices.

However, native species diversity and grassland complexity was comparatively low when compared to reference (remnant vegetation) sites. Herbaceous life forms, small shrubs, sedges such as Gahnia lanigera and other graminoids such as Dianella brevicaulis generally occurred at very low cover levels (<1%) at revegetation sites and did not appear to be increasing in abundance.

The results of the soil tests (while preliminary due to small sample sizes and the absence of paired reference sites) showed some interesting trends. Within revegetation sites, phosphorous and nitrate levels were generally substantially lower beneath the canopy of planted trees and shrubs than in more open areas, suggesting that the trees and shrubs were actively using up the available phosphorous and nitrate in the soil within their root zone. Soil organic carbon showed the expected trend at revegetation sites, with consistently higher levels present under the tree and shrub canopies (where leaf litter levels were much higher) than in open areas between the rows. This is an important finding because it demonstrates that changes in soil organic carbon levels (at least in the top ten centimetres of soil) are likely to be detectable over decadal timeframes and hence are worthy of inclusion in performance monitoring programs for land management activities that substantially alter tree and shrub cover.

More detail relating to this monitoring information can be found on the WildEyre website.

10. Improved cooperative relationships with key landholders in the WildEyre project area

There have definitely been improved cooperative relationships formed with key landholders in the WildEyre project area. We worked intensively with 15 landholders over the period of this project to undertake remnant vegetation enhancement and/or revegetation on their properties. This means constant discussions with them about activities that need to occur at specific times of year to get best practice management.

We also worked with 40 landholders to undertake the Bushland Condition and Bird Monitoring initiatives. This involved communicating with them on a bi-annual basis to discuss the monitoring activities and the results.

Over the life of the project we were also in discussion with 89 landholders about undertaking African Boxthorn control in conjunction with them in hard to access areas along the coastal zone of the WildEyre area. In the last 2 years of the project we also spoke to these 89 landholders and an extra 41 other adjoining landholders to ask them to undertake a 500m wide area of control to buffer the works that had already been undertaken to limit the opportunity of seed dispersal back into these areas.

We also worked quite intensively with the 12 landholders who had Italian Buckthorn control on their properties over a 3 year period.

Many of the landholders mentioned above are people we have not worked with before so it has been great to open a dialogue about local environmental issues that we can continue into the future.

11. Improved Aboriginal participation and training in land management activities

The WildEyre project has delivered major outcomes relating to Aboriginal participation and training in land management activities. At least 20 Aboriginal people from Ceduna have received valuable training and employment undertaking land management activities. Employees have tended to move onto other employment once skills and confidence have been acquired through this employment. For example two of these persons now work for DEWNR undertaking land management roles. There has also been significant cultural, health and personal confidence outcomes for these individuals. These are really important outcomes for Aboriginal people living in Ceduna, a national hotspot for Aboriginal unemployment and disadvantage. Please see below a number of headings that explore why these achievements have been able to occur:

Getting started

On Eyre Peninsula in 2007 the EPNRM Board chose to employ a small core group of Aboriginal people who were well trained and experienced in natural resource management. The EPNRM Board has also chosen to assist established Aboriginal organisations such as Ceduna Aboriginal Corporation (CAC) to build the capacity of their labour hire workforce to undertake natural resource management activities. Small groups of Aboriginal persons had previously been employed under this labour hire arrangement with the EPNRM Board. They carried out

small and specific contracts such as weed control. The WEWG decided to follow the direction of this successful model and work with CAC to get their labour hire work force working in the WildEyre area assisting with activities such as seed collection and pest plant and animal control to achieve outcomes required by the Australian Government funding.

In some ways this funding came at a difficult time as CAC had recently lost their Community Development Employment Program where up to 120 persons were employed in a work for the dole type arrangement. This loss meant a significant downsizing of CAC, especially to their organizational and management capacities. The concept of labour hire to an external environmental program was therefore relatively new to the organization so CAC and WEWG members spent a lot of time initially to create an effective working relationship. One of the things identified early on was that it was important to be able to retain labour hire team members over long periods so we could grow their skills and maximize outcomes. For this to happen it was essential that the CAC received enough work to keep the work groups going on an annual basis. This was achieved via creating medium term work programs which meant 8 individuals could be employed on a weekly basis to complete works for a number of projects managed by the EPNRM Board, Chain of Bays project and the WildEyre project. To assist CAC and to provide continuity of work, standard form contracts were put in place with each of the projects. The schedule of works on the contracts was standardised, with similar types of outcomes to be achieved for each project.

As the WildEyre project was to continue over several years there was a necessity to build the skills and knowledge base of the work groups and upscale activities. Therefore there was a need to improve both the work skills and the accreditations necessary to work at an Industry level. These labour hire team members could then take on more complex tasks that did not require regular and ongoing supervision.

A skills audit was conducted jointly by the CAC staff and staff of the EPNRM Board to identify the core and key skills necessary to effectively carry out the tasks required. The audit identified a skills set of Industry level requirements. The skills set was further broken down into two key areas of training and delivery. It was important to have workers on the job who had some base level skills necessary across the whole of the industry and then develop some work specific skills which could be delivered on the job.

It was decided initially that before labour hire workers started working out in the field that some extra training would be provided. Work is conducted across a range of situations with consistent use of equipment, machinery and hazardous chemicals so the need to maintain high standards for Occupational, Health and Safety was essential. Training was designed specifically so at the end of the training the individuals would be skilled at undertaking the following on ground work activities:

- Seed collection and management leading to large scale revegetation
- Protection and enhancement of existing vegetation
- Pest plant and animal control / preventing the spread of invasive species.

For a person to be considered for employment via the WildEyre program the person needed to adequately complete a 10 week part time training program. The CAC provided the following short courses:

1. An introduction to GPS systems - The collection of electronic digitised data forms the basis of using the Global Positioning Systems. This course introduced the participants to using a hand held GPS to:

- establish a waypoint
- be able to use the “Go To” function to return to a point

2. Chain saw operation - Chainsaws were an essential element of the weed control program. Operators should be able to use safe working procedures on the work site, which includes cutting and felling techniques. Maintenance and sharpening of the equipment is essential. The following competency was undertaken: FPICOT2221A Trim and cross cut felled trees. This unit specifies the outcomes required to trim and cross cut felled trees with a chainsaw. This unit is intended for use in situations where the production of timber is not the primary focus of the activity.

Photo 10: CAC. land management team members undertaking initial chainsaw training.

3. Chemical Certification Accreditation - This course provides training in the safe use of chemicals under supervision, preparation and application as well as safe transport and handling. ChemCert Training is accredited by the Australian Skills Quality Authority (ASQA) to deliver nationally recognised units of competency at Australian Qualifications Framework Level Three (AQF III). The individuals achieved AHCCHM101A Follow basic chemical safety rules, AHCCHM201A Apply chemicals under supervision,

AHCCHM303A Prepare and apply chemicals, AHCCHM304A Transport, handle and store chemicals.

4. Work zone traffic management - This is a generic short course delivered to instruct persons who are consistently working on roadsides on conducting safe work operations.

5. OH& S white card - An introduction to occupational health and safety in the workplace and an introduction to workplace safe operating procedures. The following one day course was delivered: 'CPCCOHS1001A - "Work safely in the construction industry"

6. First Aid certificate - The standard first aid course of 15 hours was provided for all prospective employees.

7. Drivers Licensing - There are two required categories that were undertaken:
- All-terrain vehicle ATV.
- Four wheel drive operation

Once employment began it has also been important to undertake ongoing on the job workplace training. This has included further training in:

1. Florabank - This training was provided by Greening Australia and outlines a systematic approach to the collection of seeds from native plants across the region. The training comprised a series of one or two day workshops, with a theory component and a practical component. The practical component involved traveling to various sites for on-site seed collection. Key skills development revolves around plant identification at a taxonomic level, floristic provenances, seed collection, treatments and seed bank management. As an addition to the base training, two Aboriginal DEWNR staff worked with the trainer on developing further advanced skills in taxonomy and seed bank management.

Photo 11: CAC land management team members laying out seed pods in an igloo to dry.

2. Weed Control - For specific control of plants the Conservation and Land Management Industry has established a series of Best Practice models as standards for the control of these pest plants. Staff from DEWNR are recognised as operating at this level and had the skills, experience and delivery skills to be able to conduct training in the various

models. On the job skills transfer was conducted in control measures for African Boxthorn (Lycium ferocissum), Bridal Creeper (Asparagus asparagoides) and Boneseed (Chrysanthenum monolifera).

3. Reading a Chemical container label - Reading the label of a container and understanding the information is critical to safe and effective use of the chemical. This short workshop of two hours duration is a follow up of the Chemcert competency, with special reference to the common chemicals used in the field operations.

4. Vertebrate Pest Control – additional training was initially provided by DEWNR Authorised Officers and included the techniques of mapping rabbit warrens, determining densities and applying control measures. Control measures would include using fumigants, utilising warren ripping techniques, assisting with warren implosion and assisting with poisoning programs. In light of the fact that state legislation regarding the carrying out of pest control activities specifies the following: “Anyone carrying out pest control work for a fee or reward or running a pest control business must first apply for the appropriate license.” it became necessary for CAC to move toward obtaining a Pest Controllers License. Staff of the organization completed the academic and workplace requirements and were duly awarded a Pest Technician License. The WEWG provided support to CAC and more importantly provided tuition to the staff undertaking their training competencies.

Assisting Aboriginal supervisors to manage effectively

It is difficult for Aboriginal supervisors to lead teams as employment priorities and cultural priorities can sometimes become intertwined. Initially the CAC supervisors also had limited experience in first line management. These are the reasons that at the start of the project Aboriginal Authorised Officers from DEWNR undertook supervisory roles until it was decided CAC should employ their own supervisors to carry out this task. This became even more challenging when CAC’s experienced supervisors found other employment opportunities and some young team members of the labour hire team were made supervisors with mentor support. Therefore the provision of training to supervisors that will directly improve their management actions in the workplace is important. For this reason a ‘Supervisor Development Training Plan” was developed. The program used an action learning based approach to the delivery of the training of supervisors. Characteristics of that learning method are highlighted below:

- Using real life examples in each of the differing training competencies
- Use real life examples without directly relating to any individual that is employed by the organisation or in the workforce, but relate real examples as a trainer to establish a developing awareness in the trainee.
- Utilise a strategic based approach in the areas related to planning for future projects and making assumptions about future funding and operations.
- Emphasize a “future orientation” in planning and decision making situations

- Collaboration together as a group and participation are important in this training with the trainer acting as a facilitator providing initial leadership, help and guidance but gradually withdrawing as the group gains confidence and skills.
- Where possible utilise a diagrammatic approach to conveying information and a cyclical approach to the management action of planning, action, observation, reflection and evaluation.
- The success of the operational aspects of the program will depend on the formation of groups and the ability of the Aboriginal leaders to work cooperatively in these groups.
- An industry specialist can engage and deliver training that has a direct approach to skills development based on workplace learning in a workplace context.

Training subject skill areas included:

1. Introduction to Management and Supervision
    - Role of the manager
    - Role of the supervisor
2. Leadership
    - Models of leadership
    - Applied leadership
3. Technology
    - Taking a GPS point and developing a basic understanding of the application and use of that data.
4. Financial management
    - An understanding of the budget process and cycle.
    - Quotations –conduct a costing and prepare a quote.
    - Understanding an income/expenditure statement
5. Planning
    - The planning process
    - Elements of a plan
    - Understanding and applying planning
6. Management and supervision
    - Problem solving and decision making
    - Delegation
    - Internal communication
    - Staffing and building teams
    - Job training
7. Employee performance management
    - Setting goals
    - Supporting employee motivation
    - Observing and giving feedback
    - Addressing performance issues
8. Industrial relations
    - The CAC workplace
    - Labour Hire regulations and awards
    - Safety in the workplace.
    - Handling an incident.
9. Occupational health and safety
    - OHS Policy framework

- SOP sheets and the use of.

10. Record keeping.
    - Annual seed bank permit requirements.
    - Seed recording requirements
    - Time sheets
    - Field records

Photo 12: Natural Resources EP & CAC staff undertaking African Boxthorn control.

Overcoming possible confusion between Aboriginal employment programs, native title discussions and cultural heritage site management

Different aspects of project delivery need to work together. It is essential for Aboriginal labour hire workers to work closely with Native Title Claimants to form trust and allow information transfer. The majority of proposed on ground work activities was carried out within the bounds of the Wirangu No. 2 Native Title claim. The Chairpersons of the Wirangu2 Association and Far West Coast Traditional Lands Assoc. were both engaged in discussion before this WildEyre project began. The WEWG was in a position where they had substantial works occurring on Crown Lands, Parks and lease hold land. In this instance Native Title was relevant and a key component that needed to be considered before on ground works could be considered or

started. The Aboriginal work groups who carried out much of the work activities were mainly, but not solely affiliated with the Wirangu Aboriginal clan. There had not been Aboriginal people residing in the country for around two generations. Aboriginal people have moved back to work on their country where they had a strong cultural affiliation but they were not familiar with the land itself. Consequently the role of Aboriginal heritage through the claimants had to consider not only Aboriginal heritage and cultural sites preservation, but also where people who carried out the day to day work operations needed to learn more about their country from a cultural heritage perspective. In 2009 an initial field trip was conducted by The Chairperson of Wirangu2 and the Chairperson of Far West Coast Traditional Lands Association with the WEWG. Following general discussion a report on that visit was prepared and the process for engagement was outlined below. This process is now applied prior to site works commencing.

Outline of the engagement process with Native Title claimants (May 2009)

The following is an outline of the engagement process as discussed and confirmed with the Wild Eyre team and the claimants. The steps are:

1) Liaison with Native Title claimants regarding implications for Aboriginal heritage sites including a meeting of key staff and claimants to provide an overview of the WildEyre project and record any specific issues or concerns,
2) Completion of a search of the State Heritage Register for Aboriginal sites within the project area,
3) Site visits undertaken by Native Title claimants,
4) Production of a Report on any Aboriginal Heritage issues to be considered and implications for the project,
5) Identification of any further need for Aboriginal Heritage and cultural surveys.

Aboriginal people working back in areas visited very little by Aboriginal people for two generations

Having Aboriginal labour hire workers and supervisors working with private landholders was deemed a challenge prior to the project starting because Aboriginal people had generally not spent any time in these areas due to not feeling welcome for two generations. However work teams soon came to know farmers and residents because of their presence and on 99.9% of occasions interactions have been positive and have led to a great deal of information transfer, building of trust and reconciliation. Community and organisational links of the WEWG have been important to support the activities of the Aboriginal labour hire groups and to satisfy the general community curiosity with Aboriginal people visiting/working in these areas again.

The challenges of working away (managing the group for 24 hours)

As previously stated the members of the work groups were from different families and backgrounds. As a lot of the work was away from the home base of Ceduna it was essential for persons to spend 24 hours per day together. The selection of compatible people was paramount to building an effective team. The labour hire groups worked across a large area near Lock, Elliston, Venus Bay and Streaky Bay. Accommodation arrangements were put in place at Sceale Bay and Coodlie Park that were self-contained and away from the main townships. A

deliberate alcohol and drugs policy was put in place to make it quite clear what the expectation were relating to a person's behavior while away for work. We acknowledged that what you do in your own time is your own business, however there was an overall duty of care and an expectation that a person would present themselves for work in an alcohol and drug free manner. WildEyre staff worked closely with the labour hire provider (CAC) to develop and enforce this policy. CAC and WildEyre also took into account the fact that work teams would be away from home four days a week so it was planned for activities such as seed cleaning in Ceduna would happen at least once a month so that people were getting time with their families.

Changes to the work group

When labour hire arrangements were first put in place the supervision of the workers was provided by Aboriginal NRM Officers from DEWNR in the field. This involved managing a work group of 4 persons. However under the joint arrangements with other projects there was a need early on to expand to two work groups, with a third on some occasions. Supervisors were nominated from the original CAC workgroup and each managed an independent group. This also allowed the NRM Officers to play a specialist role across the work groups, in particular mentoring the new supervisors and providing technical skills transfer.

This move to labour hire supervisors also changed the dynamic with project managers who now dealt directly with CAC staff. This new relationship initiated a supervisor training program mentioned earlier. It was essential for the supervisors to be able to build their management skills across the whole program and be able to effectively communicate directly with all the project managers.

The workgroup development has consistently changed across the tenure of the WildEyre Biodiversity Fund project. At the commencement of the labour hire arrangements most of the workforce were in the 40-45 years of age bracket. As the project continued the age of the workforce tended to be of a younger age and by the end of this particular project most of the employees were in the 20-30 years of age bracket. This has provided different challenges and opportunities. WildEyre is excited to now be working with younger Aboriginal people as well and broaden an already obvious interest in environmental management this next generation have.

In summation this has been a very successful collaboration between the WEWG and CAC. The position of Aboriginal Team Leader at DEWNR has been essential to assist this partnership succeed.

Photo 13: Members of the CAC labour hire team, WEWG members and DEWNR NRM Officers at the end of project barbeque.

Other Milestones to discuss as part of the Australian Government MERIT reporting

Outcomes Evaluation and Learning - Final Report.

<u>OUTCOMES</u>

ENVIRONMENTAL OUTCOMES - Describe the environmental outcomes of your project:

The environmental outcomes are outlined above but to summarise the project has:

- Revegetated 625ha of land using direct seeding methods to return Grassy Woodland communities to these areas.
- Protected 4,988ha of remnant vegetation from the negative effects of stock grazing.
- Protected 36,474ha of remnant vegetation from the negative effects of the environmental weeds African Boxthorn and Italian Buckthorn.

SOCIAL OUTCOMES - Describe the social outcomes of your project:

There have been many social outcomes relating to this project.

Of particular reference is the increase in Aboriginal training, employment and well-being for individuals and their families involved. Twenty CAC employees undertook skill development and achieved long term employment. The social outcomes for Aboriginal people and the reconciliation movement in this area of Australia as a result of this project is hard to measure but are high and should not be underestimated. Skills acquired by over twenty Aboriginal people as part of this project will assist them as individuals and their wider families into the future.

A great deal of farming families have gained a new appreciation for the environment they live in as part of this project. Over 120 private landholders were contacted regarding undertaking African Boxthorn control on their land adjacent to where this project has been undertaking control. This led to the majority of these landholders increasing their knowledge and appreciation for this environmental issue. Over 20 landholders received ongoing support to deliver their revegetation and remnant vegetation protection projects. It is well-known that there are many personal wellbeing results from spending more time amongst nature.

This project also provided a platform for members of the general community to share and access knowledge and experience around environmental management which leaves the community more equipped in the future to make effective decisions relating to environmental management.

ECONOMIC OUTCOMES - Describe the economic outcomes of your project:

The farming families will see long term economic outcomes and the Aboriginal families of employees will have seen economic stability for four years. The employment of the Aboriginal work teams allowed 4 Aboriginal families to have incomes in an area of Australia (Ceduna) where employment opportunities are low.

The control of pest plants and animals will assist production in adjoining agricultural areas into the future. Economic outcomes include decrease in loss of production due to control of African Boxthorns and herbivores such as rabbits and kangaroos. Fencing of remnant vegetation has also led to better stock management which will have increased economic outcomes.

EVALUATION

EFFECTIVENESS - Describe the effectiveness of the project and whether it delivered what was intended:

The project has been very effective at delivering what it intended and also value adding where possible. The project has greatly exceeded many of its milestones and achieved many other outcomes as a result including a great deal of social change for the better around the topics of environmental management and reconciliation.

IMPACT - Describe the impact of the project:

This project has had many on-ground impacts across the WildEyre landscape as described above. It has also had a very visible presence in the local community and impacted societal change as mentioned above.

EFFICIENCY - Describe the efficiency of the delivery mechanism(s) for the project:

The project's delivery mechanisms were as efficient as possible. When running inclusive projects like WildEyre sometimes actions take a bit longer due to the time taken to consult. However the consultation always provides a better long term outcome. All members of the WEWG and any contractors used always delivered activities in an efficient way. This was made a priority by the project officer so that the project could get as many outcomes as possible for the money being spent.

METHODOLOGY - Describe the appropriateness of the methodology(s) used.

The methodologies used were very appropriate for all activities. Most on-ground activities had been done before but through the 4 years of this project we constantly tried to improve techniques to improve effectiveness and efficiencies of works. Scientific research was carried out using the best practitioners locally available and we also had input from local onground practitioners to make sure completed products would be relevant to the desired audience.

LESSONS LEARNED

ASSUMPTIONS - Did the project implementation happen as it was planned / envisaged?

The project was implemented as envisaged and achieved better results than were hoped due to the use of excellent planning (via CAP principles) and the use of innovation such as designing a new direct seeding machine and using the helicopter to undertake African Boxthorn control.

RISK MANAGEMENT - Discuss the effectiveness of your approach to managing project risks:

The WEWG's approach to delivering this project has been excellent. A risk during early implementation of this project was the fact that the Australian Government also funded a number of other projects in the area including the Chain of Bays project (proponent Friends of Sceale Bay), Targeted Area Grant project (proponent DEWNR) and Dakalanta 20 million trees revegetation project (proponent Landcare Australia). However the WEWG worked well with these other organisations to ensure all of these projects were delivered collaboratively. In hindsight this worked very well and this collaboration enhanced all projects which obtained better outcomes by working with the same Aboriginal labour hire teams from CAC and swapping seed for revegetation so that every project had the best mix of species for revegetation possible.

Managing grazing threats to revegetation was a huge risk to delivering the project successfully. The threat that is proving hard to manage is that from Western Grey kangaroo populations which seem to be growing. We have managed to implement measures mainly via destruction permits that have limited their impact on large areas of revegetation undertaken by this project.

The challenges and resulting project management adaptions relating to the direct seeding have been large. It is challenging enough getting local native seed but then we also rely on getting average rainfall during the growing season and managing threats to the emerging plants which is time consuming. We are continually adapting to get our seeding done earlier in autumn.

It must be noted that we completed most of the milestones within the first 3 years which has allowed us time to maximise the outcomes from this initial 3 year works by doing thorough follow-up weed control and management of all the other threats to revegetation and remnant vegetation.

LESSONS - What other lessons did you or your organisation learn while undertaking this project?

The large monitoring program undertaken was very challenging on a logistics front. To monitor so many sites in such a short time period is challenging. However this was achieved with a lot of hard work from all groups involved in the WildEyre project.

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