



On Track

Delivering natural resource management
in the SA Arid Lands 2013-14

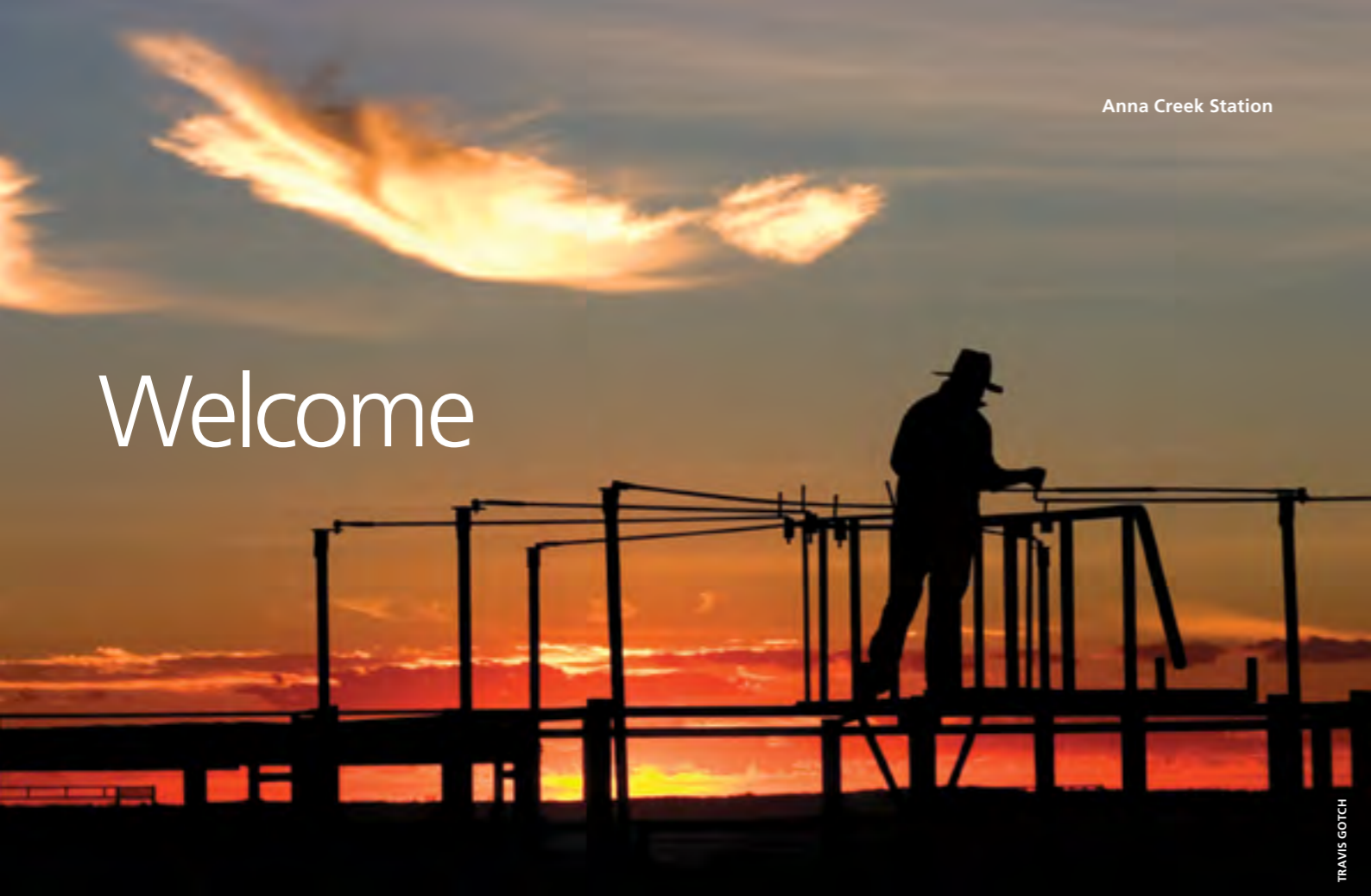
Protecting our land, plants
and animals

Understanding and securing
our water resources

Supporting our industries
and communities



Welcome



TRAVIS GOTCH

Welcome to the fourth edition of *On Track*.

On Track is a report to our community on the progress made in 2013-14 on delivering the *SA Arid Lands Regional NRM Plan*.

As readers will see we have made terrific progress against the region's management action targets since the initial Plan was adopted in 2010 with many of our short-term targets now met or on track.

In previous editions of *On Track* we paid tribute to the wide variety of organisations and individuals who are contributing to natural resources management in the SA Arid Lands region.

We showcased a broad inventory of on-ground activity in the region in the areas of pest animal and plant control, threatened species management, sustainable water management and community engagement.

In this edition we are taking a different approach.

Firstly, we want to strengthen our community's understanding of the role of the Board in championing the sustainable use of our region's natural resources – in providing for the needs of our industries without compromising our community values.



We outline the key achievements of the Board in 2013-14, detail where the Board directs its funds (including its NRM levy), and profile five projects which showcase natural resources management in the region.

These diverse projects – in coal seam gas, wild dog control, GAB springs management, surface water management and property planning – were selected by the Board as best representing its efforts to work with community and industry to undertake

sustainable land and water management which balances the region's economic, social, cultural and ecological needs – or in other words, People, Profit and Planet.

Secondly, we want to start to introduce the *landscape resilience approach* to natural resources management and planning.

At different scales, the five case studies showcased in *On Track* recognise that our people, land, water, industries, climate and biodiversity all interact as part of complex systems; they identify

the threats and pressures to those systems and they combine community values with good science in developing management actions.

This landscape approach – also embodied in the rich picture regional map in the centre of the publication – is foundational to the new *Regional NRM Plan* that is currently under development.

I commend this edition of *On Track* to you. While we've dedicated this edition to the Board's activities, we continue to recognise our industry and government partners and the many community groups who are delivering on the *Regional NRM Plan*.

We encourage everyone with a stake in the SA Arid Lands region to take advantage of the many opportunities that will be on offer to make our new *Regional NRM Plan* truly community-owned.

Enjoy the read!

Janet Brook

Presiding Member, SA Arid Lands Natural Resources Management Board

Contents

WELCOME	ii
THE BOARD	2
OUR REGION	3
CASE STUDY 1 UNDERSTANDING COAL SEAM GAS IMPACTS	4
CASE STUDY 2 UNDERSTANDING OUR SURFACE WATER CATCHMENTS	6
CASE STUDY 3 MANAGING OUR GREAT ARTESIAN BASIN SPRINGS	8
OUR PLAN FOR THE REGION	10
OUR PERFORMANCE – LONG TERM RESOURCE CONDITION TARGET STATUS	11
OUR PERFORMANCE – ACTIVITIES 2013-14	13
OUR PERFORMANCE – SHORT TERM MANAGEMENT ACTION TARGETS STATUS 2013-14	14
OUR PARTNERS	15
CASE STUDY 4 WILD DOG MANAGEMENT	16
CASE STUDY 5 PROPERTY PLANNING WITH EMU™	18
NRM GROUP ACTIVITIES	20
OUR FINANCES	22
PUBLICATIONS 2013-14	23

Image: Sturt's Desert Pea
Cover image: Outback wildflowers

The Board



- Neil Power
Department of Environment, Water and Natural Resources
- John Virtue
Primary Industries and Regions SA
- Pauline McKenzie
- Murray Tyler
- Michael Malavazos
Department for Manufacturing, Innovation, Trade, Resources and Energy
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Regional Manager, Natural Resources SA Arid Lands
- Janet Brook
Presiding Member
- Leonard Nutt
- Catherine Hollingsworth
- Rick Barratt
- Daryl Bell
- Mark Sutton
- Ross Sawers
(Absent)

GEOGRAPHIC EXTENT: 520,000 square kilometres, over 50 per cent of South Australia

RAINFALL: Irregular and unpredictable creating a 'boom' and 'bust' environment

Our region

POPULATION: Geographically dispersed, less than two per cent of South Australia

CLIMATE: Arid and semi-arid

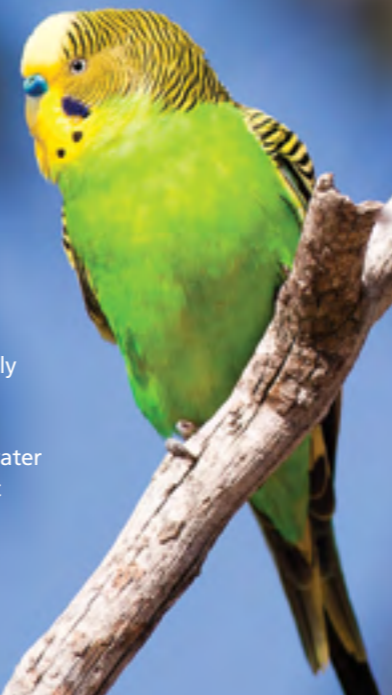
TOWNS: About 20 towns with the largest, Coober Pedy and Roxby Downs, both associated with mining and less than 5000 people

SIGNIFICANT FEATURES: Huge sheep and cattle stations; sparse population; largest percentage of intact ecosystems and biodiversity in South Australia; outback wildlife; environmentally significant conservation reserves and national parks; the great inland water system of Kati Thanda-Lake Eyre; Olympic Dam copper uranium, silver and gold mine; Moomba gas-fields; the Great Artesian Basin; rich Aboriginal and European heritage; Birdsville, Strzelecki and Oodnadatta Tracks; flood and drought events

MAIN INDUSTRIES: Pastoralism (sheep and cattle); mining, gas and petroleum; tourism

LAND TENURE: Pastoral leases; mineral and petroleum exploration and development; conservation through public and private management; variety of Aboriginal managed lands

WATER: Mainly sourced from Great Artesian Basin groundwater and infrequent rainfall events



Budgies in Witjira National Park

Our framework

SAAL NRM BOARD

Drives the regional planning process, engages and consults with all stakeholders, and identifies Business Plan (Volume B) priorities

NRM GROUPS

Six district-based NRM Groups provide essential links between community and Board, identifying issues and delivering projects

REGIONAL NRM PLAN (VOL A)

10-year strategic plan identifies all relevant, regional NRM issues and strategic priorities to be addressed by all stakeholders

REGIONAL NRM PLAN (VOL B)

1-3 year Business Plan identifies Board-funded investment priorities (delivered by Natural Resources SA Arid Lands – a DEWNR division – on behalf of the Board)

DISTRICT ACTION PLANS

District-scale plans identify key actions for on-ground delivery



Bearded Dragons

Our delivery

In 2013-14 Board funding was directed to running projects and activities across a diversity of areas:

Community engagement

- raising awareness of NRM issues and management
- support for community events
- support for NRM Groups and volunteers
- Aboriginal skills and capacity development
- sharing local and traditional Aboriginal ecological knowledge
- training and participation in surveillance and monitoring
- community participation in NRM planning processes

Pastoral property management

- best practise grazing management strategies
- property planning (Ecosystem Management Understanding (EMU)TM) [CASE STUDY P. 18]
- decision-making tools
- managing pasture in a variable climate
- enterprise diversification training
- Property Information Packs
- Property Action Plans

Water management

- water allocation planning [YOUR NRM LEVY AT WORK]
- water affecting activity permits [YOUR NRM LEVY AT WORK]
- managing GAB springs [CASE STUDY P. 8]
- managing Diamantina-Channel Country catchment [CASE STUDY P. 6]
- managing Coongie Lakes
- understanding coal seam gas impacts [CASE STUDY P. 4]

Plant and animal management

- rabbit, goat, fox, pig, donkey control
- wild dog control [CASE STUDY P. 16] [YOUR NRM LEVY AT WORK]
- Date Palm, Noogoora Burr, Opuntia, Mimosa Bush and African Boxthorn control
- demonstration site field days
- District Weed Strategies
- plant, animal and ecosystem monitoring (aerial surveys, radio collars, in-situ cameras, on-ground quadrats)

Board funding is derived from a number of sources; see p. 22.

SUPPORTED BY NATURAL RESOURCES SA ARID LANDS
Natural Resources SA Arid Lands is a dedicated team of around 70 people working with community to deliver a diverse range of programs and projects on behalf of the SAAL NRM Board, Pastoral Board and Department of Environment, Water and Natural Resources.



Legend

- Waterways and Lakes
- National Parks and Reserves
- Dog Fence

PEOPLE
PROFIT
PLANET

Understanding coal seam gas impacts

The coal seam gas industry – the extraction of natural gas from coal deposits – has taken off in Australia in the past 10 years in areas of high coal concentration. At the same time, there has been growing community concern about the impact of coal seam gas and large coal mining developments on the country's water resources.

While there are currently no coal seam gas developments in the SA Arid Lands region, work is underway through the Bioregional Assessment Program to strengthen the science underpinning future decisions about coal seam gas and coal mining activities and their impacts on the region's groundwater and surface water systems. Importantly this will provide an objective basis for scientists, and non-scientists alike, to consider when evaluating potential coal seam gas and coal mining developments.

The SA Arid Lands region – and specifically the Lake Eyre Basin – presents unique challenges to assessing and managing the risks that may arise from coal seam gas and coal mining developments.

The region is home to two major coal basins which underlie the surface water drainage basin of Kati Thanda-Lake Eyre and the Great Artesian Basin – the 10,000,000 hectare Arckaringa Basin which lies solely in South Australia with its centre near Coober Pedy, and the 6,000,000 hectare Pedirka Basin to the north-east which straddles the South Australian and Northern Territory border.

In order to better understand the potential impact of any future coal seam gas extraction or large coal mining developments on our region's water supplies, work is underway to investigate the two coal bearing basins and how they interact with our major groundwater and surface water systems.

How and why does groundwater move from one location to another? How is spring flow maintained? What connectivity exists between underground aquifers? What connectivity exists between underground aquifers, springs and other groundwater discharge on the surface? What impact will coal mining and coal seam gas extraction have on these interactions? And what is the potential impact of large coal mining development infrastructure (eg drilling pads, buildings etc.) and processes (eg waste water discharge) on our surface water flow, salinity, and aquatic ecosystems.

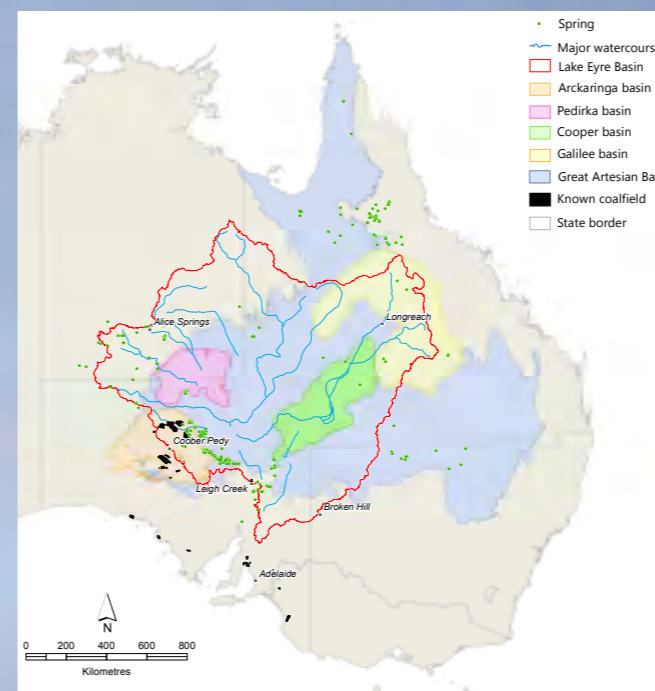
Three projects funded under the Bioregional Assessment Program are working on these questions.

UNDERSTANDING GROUNDWATER AND COAL BASIN INTERACTIONS

The first project is working on groundwater in the Arckaringa and Pedirka Basins.

These investigations are providing greater definition of the hydrogeological features of the two basins, including their geometry and extent, and the depth from the surface to different geological strata.

Part of this project is exploring the groundwater discharge at Dalhousie Springs, a culturally and ecologically significant group of springs in Witjira National Park.



With current evidence suggesting that Dalhousie Springs discharges water not just from the Great Artesian Basin but also the Pedirka Basin, any water extracted from the Pedirka Basin could have implications for the health of these springs.

A targeted drilling program has installed monitoring wells in the Arckaringa Basin near Arckaringa Creek, and in the Pedirka Basin near to the Finke River. These will be used to understand recharge processes and connectivity between aquifers and to monitor the impacts of any future development.

UNDERSTANDING GROUNDWATER AND SPRING INTERACTIONS

The second project – a groundwater ecosystems assessment – is focussing on priority groundwater-driven aquatic ecosystems in the Arckaringa Basin including Dalhousie Springs and mound springs on Nilipina, Anna Creek, Allandale and The Peake Stations.

Building on spring survey and mapping work undertaken previously through the SAAL NRM Board-coordinated "GAB project", the principal objective is to contribute to the development of a data system that will allow for consistent assessment of springs in South Australia, Queensland and New South Wales. Measures include spring location and elevation,

Major water assets, geological basins and known coalfields within the study area

presence and absence of endemic species, water quality, water chemistry, extent of diffuse discharge around springs, and species inventory.

In 2013-14 this project was largely confined to planning and preparation for field surveys to address knowledge gaps that need to be filled so the national database can be used to make assessments on the impacts of coal mining developments.

The fieldwork will identify the springs' source aquifer to investigate how they are linked and how the springs would be affected by changes in groundwater pressure, flow and/or quality.

This information will be used to produce a series of conceptual models showing spring function that can be used by decision makers to understand potential impacts.

UNDERSTANDING SURFACE WATER INTERACTION

Meanwhile, with the northern half of the SA Arid Lands region dominated by large surface drainage networks which terminate at Lake Eyre, a third project is looking at how our major surface water resources – our catchments, wetlands, rivers and floodplains – might be impacted by coal mining development in both the Pedirka and Arckaringa Basins.

After collating existing information to establish the extent of our knowledge of our surface water systems, work has been occurring in the field to plug the gaps, documenting hydrological, geomorphological and ecological processes. This information is being used to model significant ecosystem features.

Previous work funded by the Board to understand the function and pressures on the Cooper Creek and Neales-Peake catchments is providing valuable information, along with the Board's latest project which looks at the functions, threats, and pressures to the Diamantina catchment (see separate *On Track* case study, p. 6).

Together, these three projects are contributing important knowledge to a bioregional assessment for the Lake Eyre Basin, one of six regions in Australia that have been identified as priority areas.

This will inform the decision-making of the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development, as well as South Australian and Australian Government regulators.

WHAT IS COAL SEAM GAS?

Coal seam gas (CSG) is the name given to naturally occurring gas trapped in underground coal seams by water and ground pressure.

Coal seams store both gas and water. The water is under pressure from the weight of overlying rock material, holding the gas in place, and when the water pressure is reduced the gas is released. The extraction process (production)

involves the drilling of a well into a coal seam and the water being gradually pumped out of the seam, which reduces the pressure and allows the gas to flow through the well to the surface.

There are vast CSG resources spread across Australia's many coal basins, particularly in Queensland and New South Wales.

Department of Environment, Water and Natural Resources, SAAL NRM Board, Office of Water Science, Australian Government and numerous South Australian and interstate government departments, research bodies and private consultants

Image: Witjira National Park

BETTER BOARD DECISION MAKING

The Bioregional Assessment Program will strengthen the ability of the SAAL NRM Board to manage its water resources and in fulfilling its planning role in the region.

This includes its forthcoming review of the *Far North Prescribed Wells Area Water Allocation Plan*, a statutory document that sets out the rules for managing, taking and using prescribed water from the Great Artesian Basin and other

groundwater aquifers in the SA Arid Lands region.

This work has demonstrated that in many parts of the Great Artesian Basin previous assumptions need to be reconsidered to determine any impacts and guide how water is allocated in the future.

It will also help refine the criteria the Board uses to issue Water Affecting Activities permits and ensure they are based on the best available science.

Water Affecting Activities permits are required for any work undertaken by an individual or organisation that may adversely affect the health of natural watercourses, springs, waterholes, floodplains and dependent ecosystems in the SA Arid Lands region; this includes the construction of a bridge or road, modifying a natural watercourse or constructing a dam or water crossing point.

PEOPLE ✓
 PROFIT ✓
 PLANET ✓

Understanding our surface water catchments

THE CHANNEL COUNTRY PROJECT

For the past seven years, the SAAL NRM Board has been investigating how the major surface water catchments in the Lake Eyre Basin function. North of the Dog Fence the region is dominated by four major catchments – the Neales-Peake, Cooper Creek, Georgina-Diamantina, and Macumba – large surface draining networks which terminate at Kati Thanda-Lake Eyre.

In the SA Arid Lands region, ‘boom’ periods are triggered when floodwaters from Queensland and the Northern Territory, and/or major regional rainfall events, enter the catchments and recharge the region’s waterholes, wetlands, lakes and dams.

Plants regenerate and waterbirds and fish use the opportunity to breed in large numbers, attracting thousands of visitors.

During frequent and prolonged dry or ‘bust’ periods, waterbodies with permanent fresh water – such as Algebuckina Waterhole in the Neales River catchment, Cullyamurra Waterhole in the Cooper Creek catchment, and Andrewilla Waterhole in the Diamantina River catchment – provide critical refuge for plants and animals.

Yet, despite their importance, these systems have been relatively poorly understood. Having previously supported work in the Neales-Peake and Cooper Creek catchments, the Board supported a new, four-year project to better understand the unique features, pressures and influences of the Georgina-Diamantina catchment.

The ‘Diamantina-Channel Country project’ is focusing on the natural features of key refuge waterholes and wetlands along the Diamantina River,

Warburton River and Kallakoopah Creek as well as the human influences on these systems.

Spread over a 158,000 square kilometre area to the east of the Simpson Desert in the Marree-Innaminka district, the project is working in conjunction with land managers on four large cattle stations – Clifton Hills, Cowarie, Pandie Pandie, Alton Downs – and Kalamurina, a property managed for conservation by Australian Wildlife Conservancy.

The Diamantina River in South Australia runs 80 kilometres south to Goyder Lagoon, an extensive wetland area covering over 1300 square kilometres which drains to Kati Thanda-Lake Eyre via the Warburton Creek.

These waters reach Kati Thanda-Lake Eyre, on average, every two years and contribute the majority of water to the lake.

Several key wetland sites are being studied, including Goyder Lagoon – a vast wetland system that supports large numbers of waterbirds – and Andrewilla and Yammakira Waterholes, two of the system’s deepest waterholes and important refuges for various animals, including waterbirds and fish.

The project pulls together a broad range of scientific expertise – including hydrology, geomorphology, botany,

ornithology, aquatic ecology and soils – to understand how ecosystems function in the area, including flow paths and flooding extent, bird and fish species presence, vegetation responses to flooding, and the extent of Coolibah recruitment. The key influences on these systems – including total grazing pressure and tourism impacts – as well as threats from pest plant and animal species (eg Mimosa Bush, camels, rabbits, and Mosquito Fish) are also being investigated.

The project is also working with the Wangkangurru/Yarluyandi Native Title group to improve understanding of the cultural significance and protection of important cultural sites.

The outcome will be the development of management strategies that maintain the catchment’s natural processes and cultural heritage.

COLLECTING LAND MANAGER PERSPECTIVES...

Land managers hold enormous knowledge about how their country responds to the ‘boom’ and ‘bust’ periods and a significant part of the Channel Country project is to gather this information.

Keen to share the objectives of the project and to gather this local knowledge, ecologists Henry Mancini and Julian Reid travelled up the Birdsville Track in February 2014 to visit with the five land managers.

Gathered around property maps, the land managers generously shared their perspectives on the management of their properties.

They talked about how they adapt their grazing strategies to ‘fit’ the country and its land systems, shifting cattle according to the conditions and the seasons.

The land managers also shared information about the permanent waterholes on their properties including some that are not located on maps.

This provided valuable local insight for getting a comprehensive representative sample of waterholes throughout the project area and planning the field trips.

This input has identified some remote waterholes that are in good condition and provide a reference against which to assess other waterholes in the area.

Concerns were also shared about pest plants and animals including Mimosa Bush – which can invade large areas around drainage lines and alter the grazing potential of paddocks – and camels, highlighting in particular the need for a more rapid response to controlling them at times of increased activity.

Land managers were also asked about their knowledge of Coolibah regeneration.

An iconic desert tree, Coolibahs are a key part of the Diamantina catchment, providing habitat and soil stability around river systems, and are one of the largest stores of carbon in the Channel Country.

Little is known about how Coolibahs survive in an area where flooding events are so sporadic and salinity can be extremely high and the project is seeking to understand its ecology, threats and impacts to ensure that the tree’s health in the catchment is maintained.

The conversations are currently being transcribed and land managers will receive a report with the main findings, comments and key issues.

“From an ecological point of view altered flow regimes are a concern and not just the fish invasions but invasive species as a whole”

Sharon Oldfield, Pastoralist Cowarie Station, 4 April 2014

...SCIENTIFIC DATA...

In April 2014 a team of nine scientists and volunteers took their first field trip to the area to assess a total of 15 aquatic sites, including Koonchera, Andrewilla and Yammakira Waterholes, and Goyder Lagoon.

Waterhole depth studies revealed that Andrewilla Waterhole had the greatest maximum depth at 7.3 metres while Yammakira Waterhole was 5.8 metres, and Koonchera 1.7 metres.

The team also carried out vegetation condition assessments, soil sampling, fish counts, plant and bird identification and assessed flow paths and flooding extent, as well as starting the investigation of water use by mature Coolibahs.

Each of the five properties received a report showing visited sites and summarising preliminary findings.

...AND CULTURAL KNOWLEDGE

Interviews were also conducted with senior Aboriginal representatives to gain an understanding of the issues relating to cultural sites, traditional knowledge and involvement in project activities.

Preparation was also underway for a field trip in September 2014 with the Wangkangurru/Yarluyandi Traditional Owners and with respected linguist Luise Hercus and historian Dick Kimber to visit cultural sites, exchange knowledge and consider management options.

In 2016, the input from Traditional Owners and pastoralists will be combined with the science to form a comprehensive understanding of the function, threats and pressures to the Diamantina catchment and recommended actions for maintaining the system’s health.

SAAL NRM Board, Natural Resources SA Arid Lands, Australian Government

Image: Kati Thanda-Lake Eyre





Managing our Great Artesian Basin springs

THE DESERT JEWELS PROJECT

Groundwater, particularly from the Great Artesian Basin, is critical to the health of ecological communities and the viability of the pastoral, mining and tourism industries in the SA Arid Lands region. In recent years the SAAL NRM Board and its partners have been gathering important ecological and hydrological data to improve our understanding of the resource and to help balance user requirements and the needs of the environment. In 2013-14 the Board supported a new four-year project to further investigate and manage some of the key environmental issues threatening the Dalhousie and Kati Thanda-Lake Eyre springs super-groups.

Scattered around the margin of the Great Artesian Basin are clusters of ancient natural springs, points of natural discharge of water from underground aquifers with evidence of some spring discharge dating back to over one million years.

Isolation and considerable changes to climate during this time have given rise to a unique flora and fauna including relic sedges (Gahnia, Juncus, Baumea, Fimbristylis), Salt Pipewort, and numerous endemic crustaceans and molluscs.

With spring health totally dependent on permanent natural discharge from the Great Artesian Basin, they have been classified as endangered ecological communities under the *Environment Protection and Biodiversity Conservation Act 1999*.

The 'Desert Jewels project' is principally concerned with the protection of the Dalhousie and Kati Thanda-Lake Eyre springs super-groups – a collection of approximately 4000 springs extending from the Northern Territory border to just south-east of Marree – located on pastoral land, Witjira and Wabma Kadarbu National Parks and on Aboriginal managed land.

The springs are threatened by loss of groundwater pressure through water extraction activities, over-grazing and excess nutrients, pest plants and animals, and tourism impacts.

To manage these pressures work is being undertaken to combine scientific knowledge with the knowledge of pastoralists and Traditional Owners (see box), to help restore and maintain the habitat critical for survival of these springs.

RESTORING OPEN WATER HABITAT...

Common Reed has existed at the springs for many thousands of years but it has become out of balance in some areas due largely to the suppression of traditional Aboriginal management practices and the introduction of cattle and sheep grazing.

In areas where grazing has been removed and competition is limited, the Common Reed is found to proliferate in high nutrient loads which can result in springs drying out; the impact of this on fish populations is being measured at Dalhousie Springs (see box).

In 2013-14, in partnership with Friends of Mound Springs volunteers, work commenced to set up grazing trials on pastoral properties where springs are actively grazed; the trials will assess these practices in real world conditions.

The project will also be working on controlling another recently discovered introduced weed, Annual Beard Grass, which is spreading rapidly and choking shallow open water habitat of numerous springs in both super-groups where it is excluding other sedges and replacing habitat for endemic fish and macro-invertebrates.

This weed is proving particularly effective in colonising areas disturbed by grazing animals.

... AND RETURNING ENVIRONMENTAL FLOWS

Within the Witjira National Park at Dalhousie Springs, work also continued this year to manage Date Palm – a weed with a voracious appetite for water – to return further environmental flows and allow the recolonisation of springs by sensitive wetland plants and animals.

Date Palm removal has been occurring at Dalhousie Springs since 2006 and is conservatively estimated to have returned between 360-470 megalitres per year in environmental flows to this system; with significant infestations removed previously, efforts in recent years have concentrated on treating regrowth and new seedlings.

Remote sensing work is also underway at Dalhousie Springs to map the density and abundance of Date Palm, Polypogon and Phragmites infestations so that these can be monitored during the grazing and fire trials.

Meanwhile, project manager Travis Gotch met with various Roxby Downs High School classes to talk about the GAB springs and their ecological importance. An outdoor education workshop also taught students how to use a GPS and basic field survey techniques and bush skills with several of the students selected to undertake a field trip in September 2014.

SAAL NRM Board, Natural Resources SA Arid Lands, Friends of Mound Springs, Witjira National Park Co-management Board, Arabana Native Title Prescribed Body Corporate, Arabana Parks Co-management Advisory Committee, Australian Government

Image: Dalhousie Springs

INCORPORATING TRADITIONAL ABORIGINAL KNOWLEDGE

The Dalhousie and Kati Thanda-Lake Eyre springs are of enormous significance to local Aboriginal communities. Traditional travel routes, they are often central to their songs and stories, and important sites for refuge, drinking water, bush foods and medicine, and hunting grounds.

The long association of Aboriginal people with springs has provided a unique understanding of how the springs function and interact with the seasons and the associated plants and animals.

They have also developed techniques for using and managing them.

Aboriginal stakeholders are therefore key partners in this work as the project seeks to integrate western practices for managing the springs with traditional methods.

In 2013-14 work commenced to investigate what role Aboriginal traditional ecological knowledge, particularly fire management practices, could play in managing the increased density of Common Reed at many spring sites.

In partnership with Traditional Owners fire trials will take place at targeted springs to see how Common Reed responds to burning and to identify a fire regime that

would help maximise species biodiversity and help protect endemic species that are dependent on open water habitats.

Traditional owners at Witjira National Park have also been undertaking protection works at culturally sensitive sites associated with springs – this includes fencing to reduce tourism impacts at Dalhousie Springs.

The Witjira National Park Co-management Board, the Arabana Native Title Prescribed Body Corporate and Arabana Parks Co-management Advisory Committee are playing key roles in identifying Traditional Owners for gathering traditional ecological knowledge and developing strategies for collecting the information while still protecting cultural sensitivities and intellectual property.

The Arabana Prescribed Body Corporate also developed a job specification and accessed funding to employ a full-time Arabana Springs Cultural Officer to commence in late 2014; this role will coordinate the collection of cultural knowledge about the management of Kati Thanda-Lake Eyre super-group springs and undertake on-ground spring conservation works and surveys with the project team.

FISH SURVEYS

Surveys of fish populations at Dalhousie Springs in Witjira National Park are investigating how fish communities have responded to reduced open water habitat in the absence of traditional burning practices and since cattle grazing was removed when the Park was formed in 1985.

Over 10 days, a team of seven scientists pushed their way through several kilometres of thick, five metre high Common Reed.

Once they had reached each of the 180 sample sites they then burrowed up to three metres beneath dense leaf litter to get to the water and set the fish traps.

At each spot, fish were identified and counted, and water condition, vegetation cover and leaf litter thickness assessed.

This is the third time fish surveys have been undertaken at Dalhousie Springs with previous surveys occurring in 2006 and 1994 sampling

from roughly the same spots; the 2006 survey showed significant changes in fish distribution and a decline in fish numbers across many sites.

The current survey is also utilising historic aerial and satellite imagery of Dalhousie Springs to see if there is a correlation between changes to fish distribution and open water habitat over the past 30 years.

Data from the current survey is being analysed.

Our Plan for the region

The SA Arid Lands Regional NRM Plan is pivotal to achieving better management of the region's natural assets as it outlines priorities and provides direction for all partners who invest in the region. Collaboration is the key to its effective development and delivery, so the SAAL NRM Board works closely with community groups, industry, government agencies and individuals.

The current SA Arid Lands Regional NRM Plan, adopted in August 2010, outlines a range of programs and associated targets to achieve better protection of ground and surface water; ensure sustainable industries; achieve best practise management of pastoral lands; conserve natural ecosystems and biodiversity; and encourage community participation.

This 2013-14 edition of *On Track* showcases the fourth year of delivery of the Regional NRM Plan.

The Board undertook a review of the Plan in August 2013 and made the decision to prepare a new plan using a *landscape resilience approach* which recognises that our people, land, water, industries, climate and biodiversity all interact as part of complex systems. The new Plan due in 2016 will identify the threats and pressures to those systems and combine community values with good science in developing management actions. Keen for the Plan to be truly community-owned, the Board will again partner with community, industry and government to develop and deliver agreed priorities.



Regional NRM Plan consultation in Oodnadatta

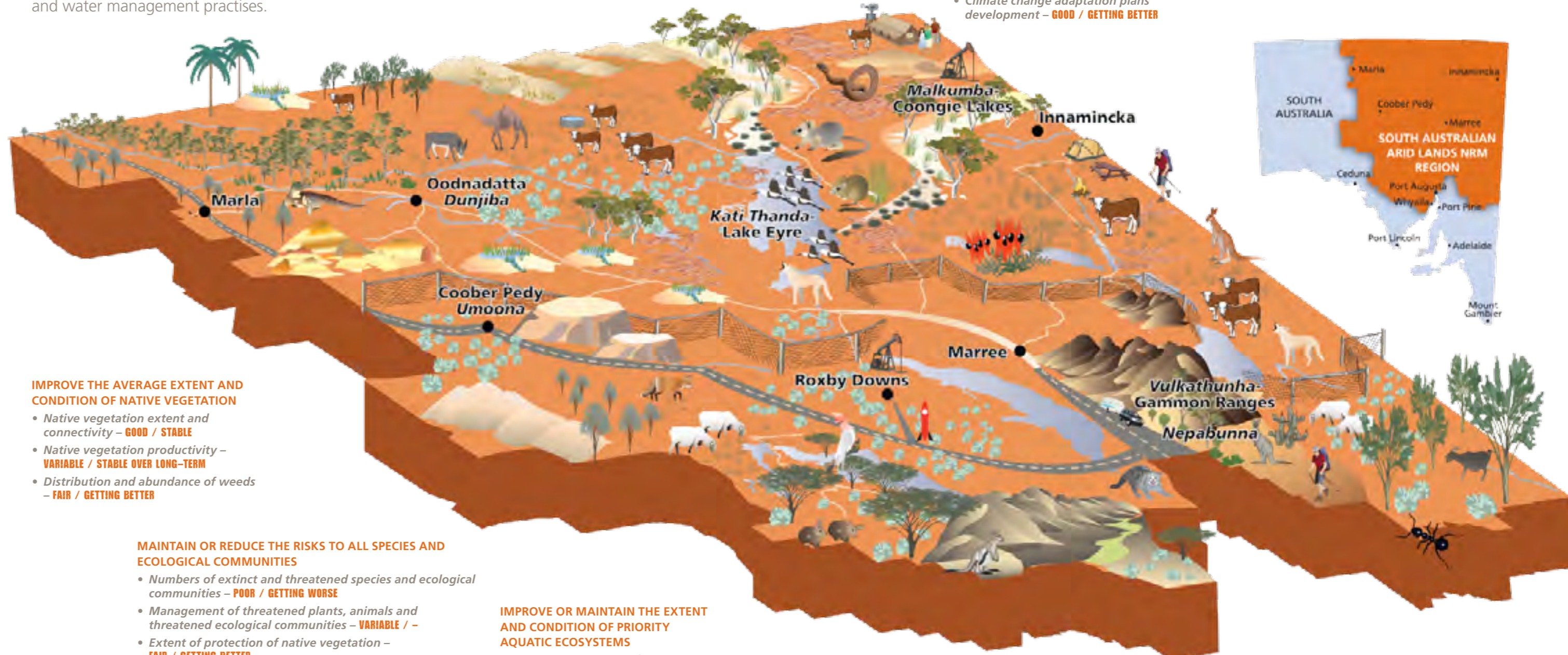
GET INVOLVED

Check out the *Across The Outback* newsletter or visit www.naturalresources.sa.gov.au for details on how you can get involved in the development of our new Regional NRM Plan.

Our performance

LONG TERM RESOURCE CONDITION TARGET STATUS*

This rich picture map characterises the diverse geography, plants and animals, communities and industries of the SA Arid Lands region. Information surrounding the rich picture map identifies how the region is tracking against the 10-year Resource Condition Targets (RCTs) in the SA Arid Lands Regional NRM Plan which describe the condition of different aspects of natural resources. Many stakeholders contribute towards achieving these targets through the adoption of sustainable land and water management practises.



IMPROVE THE AVERAGE EXTENT AND CONDITION OF NATIVE VEGETATION

- Native vegetation extent and connectivity – **GOOD / STABLE**
- Native vegetation productivity – **VARIABLE / STABLE OVER LONG-TERM**
- Distribution and abundance of weeds – **FAIR / GETTING BETTER**

MAINTAIN OR REDUCE THE RISKS TO ALL SPECIES AND ECOLOGICAL COMMUNITIES

- Numbers of extinct and threatened species and ecological communities – **POOR / GETTING WORSE**
- Management of threatened plants, animals and threatened ecological communities – **VARIABLE / -**
- Extent of protection of native vegetation – **FAIR / GETTING BETTER**
- Distribution and abundance of pest animals – **POOR / GETTING BETTER**
- Management of high priority pest animals and plants – **GOOD / GETTING BETTER**

IMPROVE OR MAINTAIN THE EXTENT AND CONDITION OF PRIORITY AQUATIC ECOSYSTEMS

- Ecological condition of aquatic ecosystems – **FAIR TO GOOD / -**

REDUCE HUMAN-INDUCED SOIL EROSION

- Soil exposure dynamics (2000-13) – **VARIABLE / STABLE OVER LONG-TERM**

EQUIP PEOPLE WITH THE INFORMATION, KNOWLEDGE AND SKILLS NEEDED FOR ACHIEVEMENT OF NRM PRIORITIES

- Improved practises being adopted – **VARIABLE / -**
- Engaging people to improve awareness – **GOOD / STABLE**
- Engaging people in NRM training activities – **FAIR / VARIABLE**

IMPROVE OR MAINTAIN THE AVERAGE QUALITY AND PRESSURE OF GROUNDWATER

- Groundwater use, levels and salinity – **STABLE / -**

IMPROVE OR MAINTAIN FLOW REGIMES AND WATER QUALITY IN SURFACE WATER SYSTEMS

- Management of surface water systems – **VARIABLE / -**

MAINTAIN OR IMPROVE THE SUSTAINABILITY OF NATURAL RESOURCE-BASED INDUSTRIES

- Productivity of primary industries – **GOOD / STABLE**
- Number of visitors to region (tourism overall) – **FAIR / STABLE**
- Number of visitors to parks – **FAIR / STABLE**
- Diseases threatening our livestock – **GOOD / STABLE**
- Scientific understanding of climate change consequences – **GOOD / GETTING BETTER**
- Climate change adaptation plans development – **GOOD / GETTING BETTER**

*Data sourced from Regional NRM Report Card series and other Natural Resources SA Arid Lands reports.

Status shows **CONDITION / TREND**



Our performance

ACTIVITIES 2013-14

These activities contributed towards achieving SA Arid Lands Regional NRM Plan targets during 2013-14, and reflect the efforts of many individuals, organisations and agencies.



Wild pigs

173 properties participated in **295** pest animal management activities across **2,616,046** hectares (wild dog, goat, donkey, fox, rabbit and pig)

30 enquiries into water affecting activity permits, followed-up with **2** applications, resulting in **2** permits issued

23 priority aquatic ecosystem sites monitored

24 properties participated in **33** weed management activities across **46,397** hectares (Opuntia, Mimosa Bush, African Boxthorn, Noogoora Burr, Date Palm, Buffel Grass)



Weed management

12 properties participated in integrated property planning activities covering **1,148,845** hectares

1 rehabilitation activity implemented in a priority aquatic ecosystem

3 bores decommissioned/rehabilitated, with estimated annual savings of **1,060,137** megalitres



Fish survey



Soil workshop

1,675 people, including community members, land managers and volunteers, participated in natural resources management activities

77 events, including field days, workshops, training courses, presentations, event stalls and field trips, attended by **910** people

The SAAL NRM Board extends its gratitude for all volunteer contributions to natural resources management in the region and acknowledges that only a tiny proportion of this work is highlighted in the pages of *On Track*.

167 volunteers contributed **13,703** hours (equivalent to \$315,169) to rubbish collection, monitoring and mapping, pest plant and animal control, park maintenance and trail maintenance



Kowari processing in Sturt's Stony Desert

Our performance

SHORT TERM MANAGEMENT ACTION TARGETS STATUS 2013-14

1-5 year Management Action Targets (MATs) bring about improvements in the way our natural resources are managed, by using the best approaches and involving the right people – see 'Our performance – Activities' (p. 13) and 'Our partners' (p. 15).

Our performance

- No progress
- Limited progress
- On track
- Complete

MANAGEMENT ACTION TARGET	STATUS	MANAGEMENT ACTION TARGET	STATUS
1. Develop register of priority significant sites, develop and implement policies for management and protection by 2016		26. Develop water extraction guidelines for surface water systems by 2014	
2. Review resourcing for the Pastoral Assessment Program by 2014		27. Ensure Water Affecting Activities administrative processes are in place and land managers are aware of their responsibilities by 2011	
3. Ensure all land managers have sufficient information to incorporate biodiversity stewardship into enterprise decision-making by 2014		28. Review Water Affecting Activities requirements to ensure that they are consistent with the objectives of maintaining natural flow regimes by 2014	
4. Revise methodology and format of land management plans for water point installation by 2013		29. Implement protection, management and/or rehabilitation measures in at least 10 priority ecosystems by 2016	
5. Sustainable best practice grazing management guidelines and extension programs developed by 2014		30. Develop a regional water resources research register, highlighting information gaps, priorities, responsibilities and potential funding sources by 2012	
6. At least 50% of pastoralists engaged in best practice management programs by 2014		31. Ensure that high research priorities are being addressed by 2014	
7. Pest distribution mapping, control priorities and data process completed by 2014		32. Work with Aboriginal people to establish engagement process for involvement in NRM by 2013	
8. Programs developed for reducing distribution and numbers of identified priority pests by 2014		33. Develop landscape assessment framework by 2014 and ensure all development and land management standards incorporate ESD principles by 2016	
9. New pest animals and plant incursion pathways identified and monitored regularly; and management framework in place by 2014		34. Review the extent and priority of impacts upon natural resources associated with features of cultural importance by 2016	
10. Risk assessment processes for climate change undertaken by 2015 to identify implications for natural resources management		35. Identify soil erosion priority areas and initiate on-ground management by 2014	
11. All relevant land managers are engaged and supported in pest control programs by 2014		36. Establish consultative arrangements for the assessment of soil conservation implications of proposed new infrastructure by 2012	
12. Develop cross boundary protocols and guidelines for pest control by 2014		37. Develop register of priority infrastructure sites with significant soil disturbance/erosion and initiate on-ground management by 2014	
13. Identify and implement priority research needs in support of MATs 7-12 by 2014		38. Ensure that 50% of pastoral and other broad-acre land managers are applying best practice measures for wild dog and fox control and management by 2014	
14. Survey and map regional ecosystems, including environmental water requirements, by 2016		39. Establish strategic response protocols regarding overabundant native species by 2014	
15. Develop programs to support the management and recovery of 50% of SAAL Biodiversity Strategy conservation priorities by 2016		40. Establish process for managing native vegetation clearance offsets by 2014	
16. Determine the status and vulnerability of 50% of non-priority species, ecological communities and ecological processes by 2016		41. Develop best practice NRM guidelines relating to tourism by 2014	
17. Commence research to improve knowledge regarding ecosystem function and services for priority ecosystems by 2014		42. Ensure 50% of tourism operators are accredited for Environmentally Aware Tourism by 2014	
18. Enhance the public, private and indigenous protected areas network within 80% of all IBRA subregions by 2017 to improve climate change adaptation capacity		43. Review feasibility and identify priority areas/issues for expanded partnerships with regional industry by 2014	
19. Identify priority GAB springs for protection from total grazing pressure by 2012 and protect 50% of those by 2018		44. Develop a predictive water demand model for the region by 2014	
20. Identify other priority aquatic ecosystems for protection from total grazing pressure by 2014 and protect 50% of those by 2018		45. Review policies and practices for management of wastewater by 2014	
21. Develop a regional action plan for pest animal and plant control in aquatic ecosystems by 2014		46. Ensure that programs are in place to provide up-to-date NRM information to all sectors of the community by 2014	
22. Far North Prescribed Wells Area Water Allocation Plan fully implemented by 2014		47. Develop a support program to increase the participation of Aboriginal people in projects that link with Aboriginal priorities by 2013	
23. Ensure a sustainable program for monitoring and repair of leaking artesian bores is in place by 2014		48. Establish dialogue with relevant educational bodies and ensure inclusion of relevant NRM issues in local school programs by 2014	
24. Complete a management/rehabilitation plan for currently flowing artesian bores by 2012 and implement by 2016		49. Review adequacy of current training and skills development programs in NRM for community by 2012	
25. Integrate the policies and actions to sustain the GAB within national policies and actions by 2014		50. Identify significant barriers to NRM associated with infrastructure by 2014	

Our partners

Natural resources management is about working with people to ensure the sustainable use of our precious natural resources by striking a balance between economic, social and environmental values. Here we highlight how individuals, organisations and agencies contributed towards achieving the targets in the SAAL Regional NRM Plan.

INDUSTRY GROUPS AND PEAK BODIES

PASTORAL INDUSTRY – employ good land management practices (eg South Australian Farmers Federation, S Kidman and Co., Outback Lakes South Australia)

TOURISM INDUSTRY – ensure members are well-informed and avoid impact (eg Outback Tourism Working Party, Flinders Ranges Tourism Operators Association, Regional Development Australia Far North, South Australian Tourism Commission)

MINING INDUSTRY – minimise impacts and offset any damage that is caused (eg Santos, South Australian Chamber of Mines and Energy)

COMMUNITY GROUPS/NGOS

COMMUNITY GROUPS – support on-ground works in the region (eg Progress Associations, Blinman-Parachilna Pest Plant Control Group, 4WD South Australia)

NON-GOVERNMENT ORGANISATIONS – strengthen local communities and/or preserve natural resources (eg Conservation Council of South Australia, Arid Recovery, Bush Heritage Australia)

ABORIGINAL GROUPS AND PEAK BODIES – manage lands and represent the interests of Traditional Owners, native title holders (eg South Australian Native Title Services (SANTS), Aboriginal Lands Trust (ALT), Native Title groups and Co-management Boards)

EDUCATION BODIES

UNIVERSITIES – support research projects (eg Flinders University of South Australia, University of Adelaide, UniSA)

SCHOOLS – provide instruction on a range of subjects (eg Marree Aboriginal School, Port Augusta Campus School of the Air, Roxby Downs High School)

STATE GOVERNMENT AGENCIES AND STATUTORY AUTHORITIES

DEPARTMENT OF ENVIRONMENT, WATER AND NATURAL RESOURCES – support programs designed to achieve productive and balanced use of natural resources.

DEPARTMENT OF PRIMARY INDUSTRIES AND REGIONS – support programs designed to achieve sustainable use of natural resources

BIOSECURITY SA (part of Department of Primary Industries and Regions SA) – manage risks from pests and diseases, or misuse of agricultural and veterinary chemicals

ENVIRONMENT PROTECTION AUTHORITY – protect air and water quality, and control pollution, waste, noise and radiation

DEPARTMENT OF PLANNING, TRANSPORT AND INFRASTRUCTURE – support transport services and strategic project delivery which minimises unnecessary impacts

DEPARTMENT FOR STATE DEVELOPMENT – help capitalise on opportunities for economic growth

SOUTH AUSTRALIAN RESEARCH AND DEVELOPMENT INSTITUTE – develop robust scientific solutions for primary industries

DOG FENCE BOARD – support maintenance of the Dog Fence in South Australia

PASTORAL BOARD – administer and manage compliance with the pastoral lease system

OUTBACK COMMUNITIES AUTHORITY – manage service and facility improvements for outback communities



Simpson Desert

NATIONAL BODIES AND GOVERNMENT DEPARTMENTS

RANGELANDS NRM ALLIANCE – facilitate cross-regional collaboration on national rangelands issues

INVASIVE ANIMALS CRC – work on integrated pest management tools and strategies

LAKE EYRE BASIN COMMUNITY ADVISORY COMMITTEE – facilitate communication between community and the Lake Eyre Basin Ministerial Forum.

LAKE EYRE BASIN MINISTERIAL FORUM – implement a cooperative framework for addressing cross-border water management issues

GREAT ARTESIAN BASIN COORDINATING COMMITTEE – facilitate communication between community and Ministers on the management of the Great Artesian Basin

DID WE MISS YOU?

There are many individuals and organisations contributing to the sustainable use of our natural resources. If we have missed you, we thank you for your contribution to natural resources management in the region and invite you to contact Natural Resources SA Arid Lands by 30 August 2015 to tell us about your 2014-15 activities.

SAAridlands@sa.gov.au

Wild dog management

Wild dogs remain one of the most significant land management issues confronting the SA Arid Lands region and the viability of the sheep industry. Anecdotal evidence suggests that they are continuing to occur in large numbers inside (south of) the Dog Fence, while sightings in the Murraylands, Mid North and on the west coast indicate they are heading south. And with some pastoral leases not seeing significant rain for two years, the likelihood the region is moving into an extended dry period is raising concerns about dogs turning to livestock as alternative prey sources reduce.

Recognising that dogs also have an important ecological role and are culturally significant to Aboriginal people, the SAAL NRM Board has continued its key role in 2013-14 in leading the management response on both sides of the Dog Fence and in calling for a coordinated statewide approach to wild dog management. Wild dogs (dingoes, hybrids or unmanaged domestic dogs) have been the subject of considerable attention nationally as their numbers have risen and they threaten the country's livestock industries, particularly sheep. Conservative estimates are that they are costing the country up to \$60 million in production losses and management costs.

Regional communities are also seeing social impacts with services and employment opportunities reducing or shifting as land managers are faced with switching to alternative enterprises. Meanwhile, as top order predators, wild dogs are considered to reduce grazing pressure through preying on kangaroos and rabbits, while biodiversity outcomes may be seen when wild dogs prey on foxes and cats. The dingo has long been of great significance to Aboriginal people where it has become an integral part of camp life, diet, oral literature, beliefs and practices. In 2013-14 the Board continued its work to improve cattle and biodiversity outcomes outside (north of) the Dog Fence – where the wild dog is not declared – and to support control programs inside (south of) the Dog Fence where the wild dog is a declared pest, supporting major projects and partnerships with land managers, government and industry.

COORDINATING A STATEWIDE EFFORT...

A significant undertaking for the Board in 2013-14 was a campaign to ensure the issue of wild dogs was not just seen as an 'Arid Lands' issue but one which needs a coordinated statewide response. With support from Biosecurity SA, the Board convened a forum in October 2013 in response to mounting concerns about wild dog impacts in South Australia.

The forum brought together representatives from the Dog Fence Board, the sheep and cattle industry, NRM Groups and conservation groups, as well as natural resources management representatives in the Eyre Peninsula, Northern and Yorke and SA Murray Darling Basin regions.

An outcome was the formation of the SA Wild Dog Advisory Group (SAWDAG) whose role it is to provide advice to the Minister for Sustainability, Environment and Conservation on wild dog control in South Australia and to oversee the delivery of priority actions in the State and national plans.

PEOPLE ✓
PROFIT ✓
PLANET ✓

The SAAL NRM Board is represented on SAWDAG by two members in Janet Brook and Leonard Nutt.

The SAWDAG spent much of 2013-14 working on developing a series of recommendations to the Minister including consideration of future funding options and potential improvements to existing programs, and provided input into the development of a draft *Wild Dog Strategic Plan* for South Australia.

DRAFTING THE REGION'S PLAN...

In a year dominated by efforts Australia-wide to strengthen the wild dog planning framework, another important achievement for 2013-14 was the development of the draft *SA Arid Lands Wild Dog Management Plan*, an important document for the Board in guiding land managers and government staff to conduct wild dog management in the region to 2018.

Taking into account the state and national plans, the draft regional plan is operational and looks at the goals and control measures for three zones: inside the Dog Fence (Zone 1), a 35 kilometre buffer immediately outside the Dog Fence (Zone 2), and outside the Dog Fence (Zone 3).

It addresses control measures including ground baiting, aerial baiting, trapping and shooting, as well as issues of compliance, communication, monitoring and evaluation of control measures and public safety.

Preparation for the final steps in its development – community input through seven interactive regional workshops hosted by NRM Groups – were underway at the end of the 2013-14 year.

CONTRIBUTING TO A NATIONAL PLAN...

In May 2014 a *National Wild Dog Action Plan* was endorsed to help with reducing wild dog impacts nationally and to strengthen the work of local and regional groups.

The Board and its representatives made a significant contribution to the development of this Plan in 2013-14, with Presiding Member Janet Brook providing direct feedback at a meeting in Brisbane to ensure alignment of the regional plan with the national Plan.

TAKING ON-GROUND ACTION...

Meanwhile, on the ground, the Board continued to direct its regional (land-based) NRM levy to *Biteback*, the ground-baiting program for wild dog control that it has been operating inside the Dog Fence since 2009.

The program assists regional land managers to carry out best practice, landscape-scale control to reduce wild dog impacts.

Biteback provides land managers with a bi-annual 1080 bait-mixing services, year round access to manufactured

baits, access to a trap loan service and offers its local area planning groups advice on future management, upcoming technologies, and interstate developments.

During 2013-2014 113,050 baits were used inside the Fence by 102 properties. This ground-baiting was augmented in April 2015 by Biosecurity SA's third aerial baiting program where 50,000 dried baits were dropped onto 97 properties along a 10,000 kilometre flight path.

...AND A RESEARCH PROGRAM DRAWS TO A CLOSE

The Board's Wild Dog Research Project came to an end in 2013-14.

The six year project has been operating on four cattle stations outside the Dog Fence – Quinyambie, Cordillo, Todmorden and Innamincka – collecting information to better understand the role wild dogs play in the ecosystem and the relationship between wild dogs, 1080 baiting, stock loss and biodiversity. With the last of the data collected in June 2014, the information is now being analysed with results expected to be ready in 2015.

**Your
NRM Levy
at work**

SAAL NRM Board, Natural Resources SA Arid Lands, Biosecurity SA, SA Wild Dog Advisory Committee, SA Sheep Advisory Group, Sheep Industry Fund, Regional (land-based) NRM levy, Santos, Australian Wool Innovation

Image: The Dog Fence, Strzelecki Track



Property planning with EMU™

PEOPLE ✓
PROFIT ✓
PLANET ✓

Since 2009, the SAAL NRM Board has been supporting the roll out of Ecosystem Management Understanding (EMU)™, an approach to land management and property planning which combines local knowledge of country with scientific expertise. Starting in 2009 with four pilot properties – Bon Bon, Evelyn Downs, Moonaree and Todmorden Stations – in just five years, the number of participating properties has grown to 26 and has expanded to include Aboriginal managed land and conservation reserves. In 2013-14, seven properties signed up to the EMU™ process and all EMU™ land managers were assisted to plan and carry out on-ground works and to share their experiences with others through field days and other activities.

Many land managers in the SA Arid Lands region recognise that interrupting natural landscape function in order to improve their land's productive capacity compromises the long term health of the land for short term rewards.

This can lead to increased environmental problems – including changes in plant composition, salinity and soil erosion – which can impact the productivity (and therefore profits) that can be derived from the landscape for future generations.

Ecosystem Management Understanding (EMU)™ is an holistic approach to land management which incorporates land manager knowledge and experience with scientific expertise.

Through the process, land managers achieve a deeper understanding of how the landscapes that they manage function, identifying areas of high production value as well as those with significant biodiversity values.

By restoring the landscape's natural function – particularly water infiltration and positive soil moisture balances – land managers can sustainably manage their landscape with future generations mind, and within ecological limits for both productivity (profit) and conservation.

For pastoralists, EMU™ isn't about locking up land for conservation; it's about utilising their knowledge of their land – its processes, conditions and trends, and also what needs attention – to devise environmental management initiatives which will result in better triple-bottom lines and more efficient use of feed-on-offer.

The EMU™ process also recognises that many of the problems facing land managers cannot be addressed quickly and independently within property boundaries and encourages land managers to manage beyond the paddock and to work with their neighbours on a catchment scale.

NEW PROPERTIES SIGN UP

Seven new properties in the SA Arid Lands region – a combination of cattle and sheep pastoral stations – were welcomed to the EMU™ project this year – Billa Kalina and Millers Creek (Kingoonya district), Edeowie, Mt Little, and Yankannina (North Flinders district), and Teetulpa and Wininninie (North East Pastoral district).

In 2013-14, they completed the first steps of the EMU™ process including the mapping, aerial survey, site visits, and project planning and prioritisation.

A couple of stations also commenced on-ground works.

Mt Little, for example, identified a highly productive area of the property which needed protection from gully erosion.

Excessive, high energy water flows from the nearby Flinders Ranges needed to be slowed down and spread across the landscape to increase water infiltration and reduce soil erosion.

Old trees were carefully pushed into gullies and chicken wire was moulded and buried in strategic locations along smaller waterways to act as filters to slow and spread overland water flow.

The area was also revegetated using seeds collected from local plants and fenced to keep out stock to increase the recruitment of native palatable perennials.

A long, roughly contour-aligned enclosure is also being seeded and planted with a variety of key local plant species to act as a landscape filter and nursery for plants long removed by cropping and over-grazing.

Nearby, Edeowie Station tackled a similar problem, ripping strategic locations and installing soil conservation banks to protect a 5,000 hectare catchment. The interventions have been designed to slow down water flow and prevent further erosion and gullying.

If left to persist, the gullying would prevent water from reaching this highly productive country.

Still in the North Flinders district, Martin's Well continued to control a local infestation of Buffel Grass, spraying and burning an infestation of about 45 hectares, as well as stopping an aggressive gully head system threatening a vast productive floodplain covering 10,000 hectares.

EXISTING PROPERTIES TAKE ACTION

Meanwhile, 18 existing EMU™ properties continued to work through their property plans and priority on-ground works.

Todmorden Station, for example, has been taking a staged approach to restore natural flows being stolen by station tracks, investigating wildfire minimisation of key drought landscapes, and refining a landscape-smart approach to grazing management.

Moonaree Station installed reo filters to slow and spread overland water flow to assist water infiltration and protect the high production values of the surrounding country.

They are also erecting a fence to protect another site from grazing while it stabilises and is revegetated.

Monitoring also continued of a swamp that had previously been fenced to protect the plants and animals that it supports and prevent stock from becoming bogged.

To redirect and slow water flow in a productive area of their property, Broadview Station installed whoa boys – big traffic humps to the uninitiated! – along a 15 kilometre section of the property where a power line and maintenance road had been installed and was causing gullying and water starvation.

WIRREALPA AND WILLOW SPRINGS HOST A FIELD DAY...

Wirrealpa and Willow Springs Stations hosted a field day in May 2014 where the lessees – Warren and Barb Fargher and Brendan and Carmel Reynolds – shared their land management challenges and successes since introducing EMU™ to their properties.

Attracting 34 attendees to the North Flinders district stations, including 26 pastoralists, participants visited the 'Dead Rams' site at Wirrealpa to see how a series of soilbanks was being used to stabilise and rehydrate the Little Balcoracana Creek catchment ecosystem.

At this site, two gullies threatened to link and create a far more aggressive gully system. Without the intervention works, this would have left a large area of productive country 'high and dry'.

At Willow Springs Station, the Reynolds shared their experience with EMU™ and their Red Plain Restoration project. Heavily gullied through erosion and unproductive, soil intervention works have restored the natural water flows across the landscape and again allowed the Reynolds' to make the most of the area's highly productive soils.

Both the Willow Springs and Wirrealpa sites are excellent examples of how careful and planned interventions are restoring peaceful flows across the floodplains, spreading water across the ground and rehydrating the soil.

...AND MAKE A VIDEO

Warren Fargher and Michelle Reynolds were also the subject of two new videos in 2013-14 that showcase EMU™ in the SA Arid Lands region. Visit www.naturalresources.sa.gov.au to hear Warren and Michelle share their views on EMU™ and how it's changing the way they look at how they manage their properties.

HAMILTON STATION GETS IN ON THE ACT

In the far north of the State, in the Marla-Oodnadatta district, Hamilton Station also undertook some major on-ground works this year, restoring landscape function to a significant area of country being sucked dry by the nearby road.

Over the years, repeated track realignment had aggravated the drying of the landscape by increasing erosion: surface water was becoming stuck in the eroded tracks and could no longer spread out over the landscape.

So, with assistance from soil conservation consultant Col Stanton, station owners Tim Williams and Kristy Place installed a number of whoa boys in strategic locations to slow and spread the water flow, and filled in old drains.

This was to ensure overland water flow had the opportunity to sink into the soil and rehydrate thirsty vegetation/stock feed.

PROPERTIES

Allandale	Todmorden	Umoona	Edeowie
Broadview	Willow Springs	Hamilton	Yankannina
Evelyn Downs	Wintinna	Billa Kalina	Moola
Martin's Well	Bon Bon	Miller's Creek	Cooyerdoo
Secret Rocks	Coondambo	Teetulpa	Mundowdna
Shirrocoe	Moonaree	Wininninie	
The Peake	Wirrealpa	Mt Little Station	

SAAL NRM Board, Natural Resources SA Arid Lands, Australian Government

Image: Flinders Ranges

SO HOW DOES EMU™ WORK?

An initial property visit identifies baseline property features and areas of concern which are plotted on clear plastic overlays to develop a property map.

Landscape processes and key areas of the property are further investigated with a fly over and site visit and a

visual record is developed of air and ground photos.

These activities provide a way of tracking change and making timely, strategic and relatively simple management interventions in specific areas or sites that can have far-reaching positive consequences.

Developed by landscape ecologists Ken Tinley and Hugh Pringle, EMU™ has been adopted by pastoralists in Namibia (southern Africa), the Gascoyne-Murchison catchments of Western Australia, the southern parts of the Northern Territory and more recently in the SA Arid Lands region.

NRM Group activities

The SAAL NRM Board is supported in its role by six active NRM Groups at the district level which each provide a vital two-way link in relaying community issues to the Board and a local perspective on implementing on-ground projects.

GAWLER RANGES

The Gawler Ranges NRM Group have been active in the promotion of *Biteback* in the district with Group members leading two Local Area Planning groups and suggesting an additional option for pastoralists to report wild dog activity in the region. With the Cultana Defence training site expanding to incorporate five surrounding pastoral leases, the Group also worked with the Department of Defence to ensure pest plant and animal control continues to be undertaken on these properties and that land damage from training activities is reduced. The Group are focusing on promoting safe and environmentally aware travel in the region and are developing signage to endorse this.

Members also provided advice on how to consult with the wider district on the draft *SA Arid Lands Wild Dog Management Plan*, commenced review of their *District Weeds Strategy* and discussion around prioritising their land management actions, and provided advice on the development of a new *Regional NRM Plan*.

CHAIR: Sandy Morris
MEETINGS: 4

MARREE-INNAMINCKA

The Marree-Innamincka NRM Group continued to work through engineering issues with the Department of Planning, Transport and Infrastructure and Santos and their ongoing plan to develop a "fish ladder" at the Innamincka Causeway site. The Group also further developed the *Legendary Tracks* brochure into an electronic resource and smartphone 'app' and renewed visitor information centre supplies. And they have called for a new, safer structure to be installed at the Innamincka Causeway and waste management facilities along the Strzelecki Track.

Members also provided advice on how to consult with the wider district on the draft *SA Arid Lands Wild Dog Management Plan*, commenced review of their *District Weeds Strategy* and discussion around prioritising their land management actions, and provided advice on the development of a new *Regional NRM Plan*.

CHAIR: Raylene Ogilvy
MEETINGS: 5

KINGOONYA

The Kingoonya NRM Group was involved in the delivery of a Weed Workshop at Bon Bon Station in May. Attended by 18 people, the workshop focussed on Buffel Grass, cactus and woody weeds. The Group has continued to manage the district's spray unit which has been used to deliver Buffel Grass control at Bon Bon Station and at Umoona, near Coober Pedy. The Group participated in a planning workshop to prioritise their land management actions, commenced review of their *District Weeds Strategy* and initial discussion on the development of a new *Regional NRM Plan*, and had presentations on Thick-Billed Grasswren research and Arid Recovery. Members also provided advice on how to consult with the wider district on the draft *SA Arid Lands Wild Dog Management Plan*.

CHAIR: Graeme Noll
MEETINGS: 4

NORTH EAST PASTORAL

The North East Pastoral NRM Group was initiated in July 2013 and now have representation from the pastoral and mining industries, the conservation sector and from the Aboriginal community.

The Group led the development of their five-year *District Weed Strategy*, talking to local land managers to prioritise significant district weeds. The Group is focussing on weed control and mapping occurrences of different weed species. The Group have funded earthworks to prevent soil erosion as well as undertaking more than 2000 hectares of African Boxthorn control. The Group have worked with the local Olary Weed Management Group and natural resources staff to combine projects to get the best outcome for addressing catchment issues within the district.

CHAIR: Glen Norris
MEETINGS: 4

NORTH FLINDERS

The North Flinders NRM Group have been focused on the district's biosecurity with particular emphasis on invasive animals and weeds. Wild dogs remain a focus and the Group provided advice on how to consult with the wider district on the draft *SA Arid Lands Wild Dog Management Plan* and, with the Marree Innamincka NRM Group, continued its investigations into a wild dog incentive program. The Group have provided a link between the local community and the Dog Fence Board as well as the Pastoral Board, particularly in relation to exotic sheep breeds. The Group also contributed to the Flinders Ranges National Park Management Plan, to initial discussions around the *Regional NRM Plan* development, commenced review of their *District Weeds Strategy* and discussion around prioritising their land management actions.

CHAIR: Keith Slade
MEETINGS: 6

GET INVOLVED

Do you live or have an interest in the SA Arid Lands region? Are you interested in providing a local perspective to the Board on key natural resources management issues in your district or driving natural resources management projects? Then perhaps you'd like to be a Group member.

To register your interest contact Natural Resources SA Arid Lands 8648 5300

MARLA OODNADATTA NRM GROUP

The Marla Oodnadatta NRM Group have continued with supporting and promoting the control of Mimosa Bush (*Acacia farnesiana*) in the district through posters and display at the Oodnadatta Races and sourcing funding to continue with control activities. The Group have also provided comment on the *Regional NRM Plan* review, the draft *SA Arid Lands Wild Dog Management Plan*, and management plans for Kati Thanda-Lake Eyre National Park and Wamba Kadarbu Mound Springs Conservation Park. They also commenced development of a *District Weed Strategy*, provided advice on the development of a management toolkit for small mammal refuges in the region, and commenced discussion around prioritising their land management actions.

CHAIR: Mark Fennel
MEETING: 4



Sunrise at Mungerannie



Our finances

Poached Egg Daisies, Simpson Desert

Through the activities of the SAAL NRM Board your community is supported in a coordinated and integrated approach to sustainably managing the natural resources in the SA Arid Lands over the long-term. You and your community benefit from:

- Improved care of sites and areas of environmental and cultural significance
- Programs to help protect water supplies; support the development and maintenance of sustainable industries; improve land management; conserve natural aquatic and terrestrial ecosystems and biodiversity
- Improved partnerships and integration with community, including individuals and organisations at regional, state and federal scales
- Monitoring and control of pest animals and plants both for industry and for biodiversity

These benefits require an investment of funds and the SAAL NRM Board derives its income from the following sources:

- Regional (land-based) NRM Levy ratepayers – paid by all landholders in the region.
- NRM Water Levy – paid on water allocated to license holders in the Far North Wells Prescribed Wells Area
- Industry – funding for specific activities contributed by industry (eg Sheep Industry Fund, Santos, Australian Wool Innovation)
- State Government allocation – funding for costs associated with running an NRM Board and NRM Groups
- State Government grants – funding for specific activities (eg Native Vegetation Council Significant Environmental Benefits Grants)
- Australian Government – funding supporting delivery of *Regional NRM Plan* priorities (eg National Landcare Program, Targeted Area Grants, Biodiversity Fund)

2013-14 INCOME

Carry-over funds	\$1,718,000
NRM levies	\$1,060,000
Regional (land-based) NRM Levy (inside council)	\$175,000
Regional (land-based) NRM Levy (outside council)	\$68,000
NRM Water Levy	\$817,000
State Funding	
State recurrent allocation	\$970,000
State other	\$139,000
Australian Government	
Caring for Our Country – base funding	\$1,659,000
Caring for Our Country – competitive	\$634,000
Other Australian Government funding	\$1,334,000
Industry partnerships program	\$129,000
Other sources	\$61,000
Interest	\$58,000
TOTAL INCOME	\$7,762,000
Carryover to 2014/15	\$1,696,000

2013-14 EXPENDITURE

EXPENDITURE AREA	
Active Communities	\$1,211,000
Functioning Ecosystems	\$674,000
Sustainable use – water	\$1,463,000
Sustainable use – land	\$1,681,000
Support to groups	\$157,000
Board governance, monitoring, communications & administration	\$880,000
TOTAL EXPENDITURE	\$6,066,000

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8648 5300



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GRAPHIC DESIGN

elevenacross.com.au

PREPARED BY

Jenny Barker (Senior Communications Officer)
Jackie Watts (Monitoring & Evaluation Officer)

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