

# SOIL matters

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Welcome to Soil Matters, a bi-monthly newsletter providing updates and information on soil, weather and industry developments to support on-farm decision making within the SA Murray-Darling Basin. This newsletter will draw together a number of resources including:

- Bureau of Meteorology seasonal outlook
- SA Murray-Darling Basin weather station network
- SA Murray-Darling Basin soil moisture probe network
- Upcoming grants, programs and projects relevant to your region

This is a newly developed newsletter, we would appreciate any feedback on content and are happy to assist with any inquiries with regards to the featured tools and projects. Please contact Eliza Rieger, Regional Landcare Facilitator on [eliza.rieger@sa.gov.au](mailto:eliza.rieger@sa.gov.au) or 0408 416 684 for more information.

Alternatively you can subscribe to a hard copy of the newsletter by emailing [eliza.rieger@sa.gov.au](mailto:eliza.rieger@sa.gov.au)



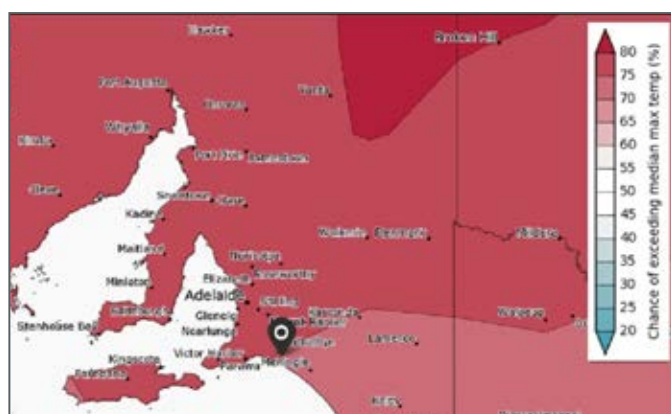
### Photo of the month

More than 55 farmers converge on Nomad Farms for day two of the Scratching the Surface; Soil Biology in Agriculture forum. The group relaxes as world renowned Joel Salatin provides comment on the value of pasture cropping for soil health and pasture growth.



# BOM Weather Forecast

The following information has been sourced from the Bureau of Meteorology 'Climate Outlook-monthly and seasonal' issued on 20 March 2017.



## The chance of above median maximum temperature for February to April 2017

- There is a 70-75 per cent chance of exceeding median maximum temperatures in the Eastern Mount Lofty Ranges over the April-June 2017 period; recorded median maximum temperature in Macclesfield during this period is 17.5°C. Past accuracy for the district is high.
- There is a 70-75 per cent chance of exceeding median maximum temperatures in the Riverland districts over the April-June 2017 period; recorded median maximum temperature in Renmark during this period is 20.3°C. Past accuracy for the district is high.
- There is a 65-70 per cent chance of exceeding median maximum temperatures in the Southern Murray Mallee districts and a 70-75 per cent chance of exceeding median maximum temperatures in the Northern Murray Mallee districts over the over the April-June 2017 period. Recorded median maximum temperature for Lameroo during this period is 19.2°C. Past accuracy for the district is high. Recorded median maximum temperature for Maggea during this period is 20.1°C. Past accuracy for the district is high.

## Chance of exceeding median rainfall (%) February to April

- There is a 25-30 per cent chance of exceeding median rainfall in the Eastern Mount Lofty Ranges over the February-April 2017 period; recorded median rainfall in Rockleigh is 43 mm over this period. Past accuracy for this district is high.
- There is a less than 20 per cent chance of median rainfall for the Riverland districts over the February-April 2017 period; recorded median rainfall at Waikerie is 45 mm. Past accuracy for this district is high.
- There is less than 20 per cent chance of median rainfall for the Mallee districts over the February-April 2017 period; recorded median rainfall at Lameroo is 60 mm. Past accuracy for this district is moderate.
- There is less than 20 per cent chance of median rainfall for the Mallee districts over the February-April 2017 period; recorded median rainfall at Lameroo is 60 mm. Past accuracy for this district is moderate.

# SAMDB weather station network



The following climatic observations have been compiled from records spanning from 20 March - 20 April 2017. Despite a dry March and April, the thunderstorm which crossed the region on 20 April led to high rainfall recorded in some districts. As a result soil moisture probes are recording significant increases in available soil moisture. High available soil moisture, warm soil temperatures and high degree days combine to form great conditions for plant growth and development. Recent rainfall has increased soil moisture in many districts, retention of this moisture will aid in seeding and germination for the coming cropping season.

## **Burra March/April conditions:**

Despite a dry finish to March and early April Burra received 48.8 mm on 20 April, boosting the 32 day rainfall to 49 mm. This value is significantly higher than the 7.6 mm value recorded over the same period in 2016. The average maximum temperature for Burra was 22.7°C, 1°C lower than 2016 records. Average maximum soil temperature decreased 12°C over the 32 day monitoring period with temperatures falling from 34.4°C to 22.6°C. Warm soil temperatures combined with relatively low diurnal fluctuations (7.5°C) provides a favourable environment for soil microbiota, low summer rainfall may have impacted the capacity for these soils to mineralise over summer. Current soil moisture should aid mineralisation.

## **Currency Creek December/January conditions:**

Currency Creek received 17 mm of rain on 20 April boosting the 32 day rainfall to 34.4 mm, significantly higher than values recorded at the same time last year (9.2 mm). The average maximum temperature for Currency Creek was 24.7°C, slightly higher than 2016 records. Relative humidity has been high in the district averaging 74.4 per cent, this may increase pest and disease pressures in some crops and pastures. High degree day values (6.94) combined with warmer soil temperatures (24.7°C) and recent rainfall should create good conditions for root growth and development.

## **Taylorville December/January conditions:**

The average maximum temperature at Taylorville was 26.6°C, higher than March/April 2016 records (23.5°C). Average maximum soil temperatures sit slightly higher than atmospheric temperatures ranging from 37.9°C-22.8°C throughout the month. Diurnal soil temperature fluctuations remain high at the Taylorville site with an average temperature fluctuation of 11.72°C, significantly higher than other districts. High soil temperature fluctuations may impact microbial communities and resulting mineralisation activities, high temperature fluctuations

may be a result of low levels of ground cover. Wind speeds of up to 46.9 km/hour were recorded, high wind gusts may have impacted bare soil surfaces causing some wind erosion. High degree day value of 8.7 provides a good base value for plant growth and development; however the low levels of rainfall (0.4 mm) prior to 19 April will have impacted temperatures and daylight hours often associated with high plant growth rates. Recent rainfall (27.2 mm on 20 April) will provide a good opportunity for soil mineralisation and root development.

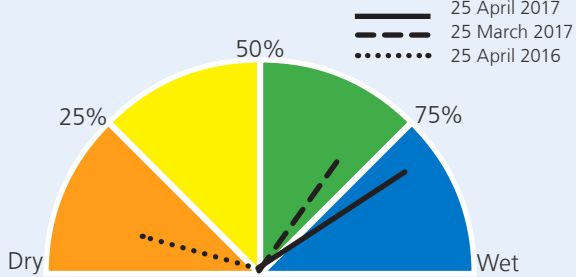
## **Sherlock December/January conditions:**

Higher average maximum temperatures were recorded during the 2017 March/April period when compared to records from the same period last year (25.7°C and 23.3°C respectively). This trend is repeated in the average maximum soil temperatures (22.7°C). Significantly more rainfall was recorded in 2017 months with 22.4 mm compared with 4.4 mm recorded last year. High rainfall combined with warm soil temperatures and the consistently warm soil temperature (3.62°C day-night fluctuation) will provide a good opportunity for soil mineralisation and root development. Average wind speeds were slightly higher than 2016 values at 8.57 km/hour with 6 days recording gusts above 40 km/hour. Wind speeds of up to 69 km/hour were recorded, high wind gusts may have impacted on bare soil surfaces causing some wind erosion.

## SA Murray-Darling Basin Soil Moisture Probe Network:

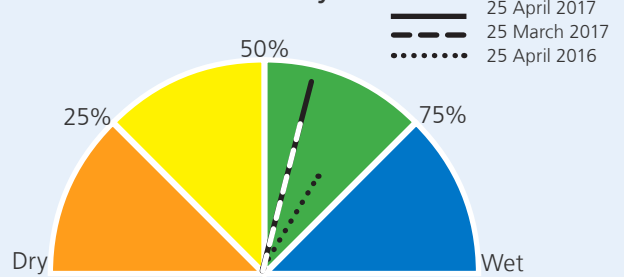
The below information is a dial representation (dry-wet) of plant available soil moisture recorded at eight sites from the Natural Resources SA Murray-Darling Basin soil moisture probe network. The below information is based on data recorded on 25 April 2017, 25 March 2017 and 25 April 2016. The dials below are provided with support from Agriculture Victoria Soil Moisture Monitoring calculations.

### Coomandook - loam over calcrete rubble



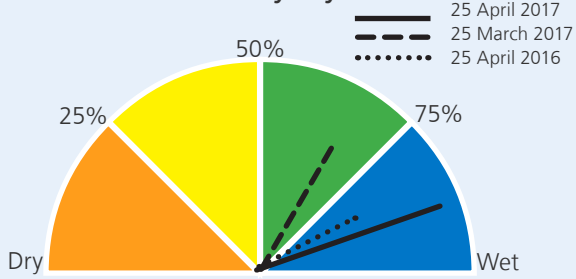
Recent rains have increase the loam over calcrete rubble soil moisture by approximately 20%. Current levels are sitting near 80%, a significant increase from 2016 records of approximately 10%

### Coomandook - loam sand over clayed sand



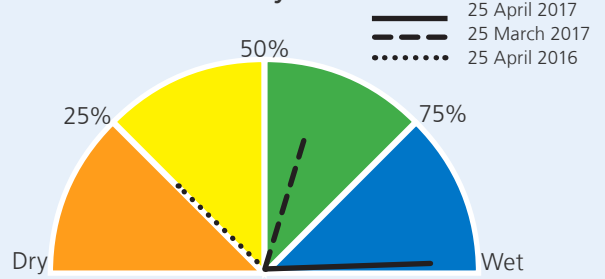
Soil moisture has no recorded changes from 25 March - 25 April 2017, records remain at approximately 60% capacity. April 2017 values are slightly less than April 2016 soil moisture records.

### Lamaroo Flat - loam over heavy clay



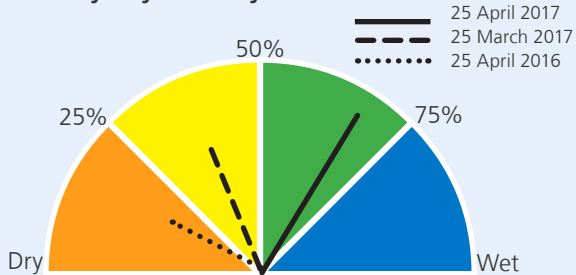
Recent rains have topped up the soil moisture profile with current levels sitting near 85%. 25 April 2016 records show the soil profile was slightly lower at approximately 80%..

### Lamaroo Flat - sand over sandy loam



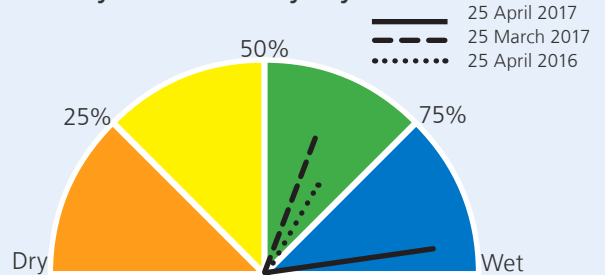
Soil moisture levels have increased significantly from 60% to over 95% between 25 March and 25 April 2017. Current levels are nearly 75% greater than 25 April 2016 records.

### Pinnaroo sandy clay over clay



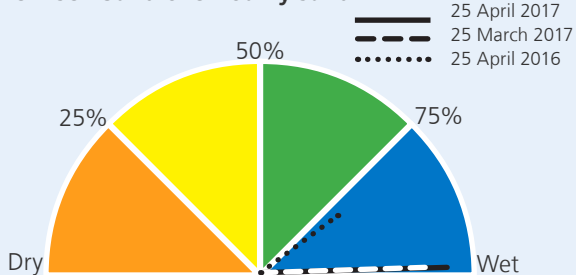
Soil moisture has increased by approximately 25% between 25 March and 25 April 2017. Both 2017 values are significantly higher than the 25 April 2016 soil moisture record (approx. 20% full).

### Pinnaroo loamy sand over sandy clay



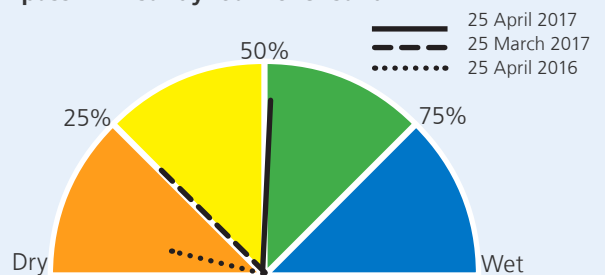
Soil moisture is currently sitting near 95% capacity, records from 25 April 2016 are significantly lower at approximately 70%. Soil moisture has increased from 60%-95% over the past month.

### Waikerie Rise - Sand over loamy sand



Soil moisture has remained near capacity for the past month at the Waikerie site. 2017 values are significantly higher than 2016 values with sit at approximately 78% full on 25 April 2016.

### Mt Compass Hill - sandy loam over sand



Soil moisture currently sits at 50% capacity, increasing by 25% in the past month. April 25 2017 values are significantly higher than 25 April 2016 records of approximately 12% full.

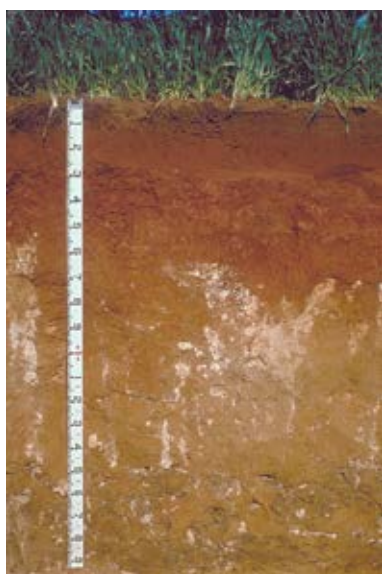


# Soil of the month: Sandy loam over red sandy clay

This soil profile information has been compiled drawing on information from 'The Soils of Southern South Australia Volume 1' (James Hall, David Maschmedt and Bruce Billing) and the Department of Environment, Water and Natural Resources, Soil and Land Program Soil Characterisation Site data sheet

## Production:

Sand over clay soils make up 8.9 per cent or 1,403,000 ha of Southern South Australia. These soil types are frequently found on gently undulating plains or dune fields. These soils possess good soil drainage and rarely remain saturated for more than a few days. These soils possess moderately high to high irrigation potential. These soil types commonly support livestock grazing or native vegetation with a moderate to moderately high dryland agriculture potential



Bureau of Meteorology, Root zone moisture: Root zone soil moisture, 25 April 2016



Right Bureau of Meteorology, Root zone moisture: Root zone soil moisture, 25 April 2017

Root Zone Soil Moisture is the sum of water in the AWRA-L Upper and Lower soil layers and represents the percentage of available water content in the top 1 m of the soil profile. The maximum storage within the soil layer is calculated from the depth of the soil and the relative soil water storage capacity. Comparison between the 2016 and 2017 Root Zone Moisture map highlights a general increase in root zone moisture for many districts within the SA Murray-Darling Basin.

[www.bom.gov.au/water/landscape/](http://www.bom.gov.au/water/landscape/)

## Nutrition:

Due to the low organic carbon content these soils have a poor capacity to retain nutrients required for good crop growth and development, as such the fertility is considered to be moderate in this soil type. Phosphorus, copper and zinc were deficient at the sampling site.

## Management:

No till farming systems can act to gradually increase soil organic carbon content. Improved organic matter status will increase the capacity for this soil type to retain nutrients. These soils have a low water erosion potential, and moderate to low wind erosion potential. Soil cover over the summer months with ensure these soils are protected throughout the year. These soils have highly variable pH which range from strongly alkaline, neutral to highly acidic. Sandy loam soils require their pH to be monitored and possibly managed with lime if acidic or increased organic matter is alkaline.

For more information:

<https://data.environment.sa.gov.au/Content/Soil-Characteristics/MM006.pdf>



# Collaborative farming

The two-part event *Scratching the Surface: Soil Biology in Agriculture* took a close look at the practical ways farmers can improve production outcomes through increasing soil biological health.



The crowd gathered around Nomad Farms Tom Bradman and Polyface farms Joel Salatin as they explored the role of multispecies plants and animals to increase productivity within the farming system

Day two of this event saw more than 55 farmers converge on Nomad Farms all ready to kick the dirt with world famous regenerative farmer Joel Salatin and Australia's very own heavy weights Dick Richardson and Walter Jehne from Healthy Soils Australia.

The crowd were provided plenty of food for thought as they visited pasture cropping, innovative grazing and farm share trials implemented by the 2015 State Landcare award winners Tom Bradman and Verity Slee. Discussion ranged from the impact of plant roots on soil microbial communities and soil rehydration through to the benefits of multi species manures on soil biological health.

Tom explained, "Knowledge, experience and inspiration combined with positivity about future possibilities created the best field day we've been a part of. It was equal parts community and education and I think everyone was left with a huge sense of potential. We certainly were. It was also great to share the day with Falkai Farm, who Joel rightly showered with praise, and who we're so lucky to be sharing some land with."

Nobody was more excited for Joel's visit than Falkai Farm duo Katherine Snoswell and Luke Falkai who have recently set up their own mobile pastured egg business at the Finnis property. Since working at a farm Joel visited in 2015, Falkai Farm have established their own farm share operation based on Joel's principles.

Luke said, "The visit has been really humbling, a lot of things about this movement started with Joel".

With Joel Salatin by their side the young farmers explained the role their converted caravan, now equipped to house 250 layer chickens, played within the greater farming system.

Katherine explained, "The minimal cost, ultra-portable infrastructure allows for a fast economic turnaround for our business. Meanwhile, by following the cattle our chickens will help incorporate manure into the soil. In turn this will encourage root growth and pasture development which will benefit the production outcomes for Nomad Farms".

With their first egg laid only two weeks prior to Joel's visit and Bernie the chicken's guard dog still a playful pup, Falkai Farm did a great job of highlighting alternative pathways for farmers to be self-employed without possessing land.

"We have found that gaining access to land is the biggest hurdle young farmer's face as they're trying to establish themselves. We are so fortunate to have the opportunity to collaborate with Nomad Farms, as it's enabled us to start farming right away."

To view presentations from the *Scratching the Surface Soil Biology in Agriculture* forum:

[www.youtube.com/watch?v=IXHrkPC5bok](https://www.youtube.com/watch?v=IXHrkPC5bok)



Falkai Farms regenerative farming model includes ultra-portable infrastructure

## Want to know more?

Eliza Rieger

T: 0408 416 684

E: [eliza.rieger@sa.gov.au](mailto:eliza.rieger@sa.gov.au)

## NRM Agricultural Knowledge Small Grants 2017/2018

The South Australian Murray-Darling Basin Natural Resources Management Board is pleased to announce the opening of the 2017/2018 NRM Agricultural Small Grants. The NRM Agricultural Knowledge Small Grants funding can be used to undertake the following activities including but not limited to:

- Access a key note or guest speaker/s to present to the group
- Organise a field day for the group
- Host a workshop or webinar
- Host a forum or information session
- In addition, projects must demonstrate the following:
- Projects must be driven from an agricultural or horticultural farming group perspective
- Projects must be conducted within the SAMDB NRM region
- Project outcomes must build agricultural training, knowledge or skill of the group.
- Projects must facilitate improved management of natural resources

Each project can apply for up to \$3,000 + GST. Applications can be submitted from 1 April 2017 with final submissions due by 5.00 pm 15 May 2017. Projects must be completed, all funding acquitted, and project reports completed and submitted on or before Friday 1 June 2018. There will be no opportunities for project extensions due to external project funding requirements. Further information can be found at Natural Resources SA Murray-Darling Basin's website at [www.naturalresources.sa.gov.au/samurraydarlingbasin/get-involved/funding-opportunities](http://www.naturalresources.sa.gov.au/samurraydarlingbasin/get-involved/funding-opportunities)

### For more information

Mark May, Sustainable Agriculture Officer

**T:** 08 8580 1800 or 0400 889 023.

**E:** [mark.may@sa.gov.au](mailto:mark.may@sa.gov.au)

## Working with the season to boost production

Opportunities and challenges presented by the current seasonal forecast WEBINAR: 17 May 2017, 8.00 – 8.40 pm

Looking at the current seasonal forecast, what opportunities there are for maximising your livestock production system to get the most out of it. In addition, what challenges may be coming our way and how can we best prepare to minimise the impact.

Register at: <https://attendee.gotowebinar.com/register/5651138305147087873>

Presented by nutrition and livestock specialist Hamish Dickson, and covering:

- Feed budgeting to make the most of the current climatic conditions
- Pasture options to boost production
- Setting achievable production targets for sheep and cattle.
- After registering, you will receive a confirmation email containing all the information you require about joining.



### Want to know more?

Georgie Keynes

**T:** 0409 287 261

**E:** [georgie.keynes@biggroup.org.au](mailto:georgie.keynes@biggroup.org.au)

This project is supported by Meat & Livestock Australia; and the South Australian Murray-Darling Basin Natural Resources Management Board through the NRM levies and funding from the Australian Government's National Landcare Programme

## Practical guide to rural land management course

Join Natural Resources SA Murray-Darling Basin for a six-week course delving into the magic world of soils, pastures and landscape management. We are offering land managers and interested family members the opportunity to take a closer look at how your property functions, helping you make better management decisions.

**Venue:** Mount Barker Natural Resources Office  
Upper Level, Cnr Mann and Walker Streets  
Mount Barker SA 5251

**Date:** Tuesday evenings, commencing 9 May – 13 June 2017

**Time:** 7.30 pm to 9.30 pm

**Cost:** \$150 per property



### To RSVP or for further information please contact:

Eliza Rieger

Regional Landcare Facilitator

**T:** 0408 416 684

**E:** [eliza.rieger@sa.gov.au](mailto:eliza.rieger@sa.gov.au)



# Whats on in the region

## **Pests Cost Us All: Declared Weeds and Feral Animal Control: Minimal Chemical Use with Andy Cole – Murray Bridge**

**17 May 2017**

A free workshop on declared weeds and feral animal control will help farmers and landholders improve and update their knowledge on pests and stop their spread. The workshop will focus on current best practice management across South Australia and management techniques for dealing with pests.

**Date:** Wednesday 17 May 2017 **Time:** 7.00 pm – 9.30 pm

**Location:** Natural Resources Centre, 110A Mannum Road, Murray Bridge, SA

**RSVP essential: please contact Sophie Harrison – 8532 9122 / 0429 976 482 to secure your place**

## **Enviro Lounge: Sustaining our natural resources**

**17 May 2017**

Join us for afternoon tea and inspiring talks from three fantastic guest speakers about sustaining our natural resources. Participants will learn about the role that Natural Resources SAMDB plays in sustainability and the long term goals for the organisation; the importance of having healthy soils; and the different types of threatened species we have in the region.

**Date:** Wednesday 17 May **Time:** 4.15 pm -7.00 pm

**Location:** Wilabalangaloo Reserve, Old Sturt Highway, Berri

**Cost:** FREE

**Registration:** <https://sustaining-our-natural-resources.eventbrite.com.au> before 10 May.

**Please bring along a label-free jar (250g to 500g) half filled with soil from your garden.**

**For more information contact: Bec Stevens, phone: (08) 8580 1820/0418 822 734, email: [bec.stevens@sa.gov.au](mailto:bec.stevens@sa.gov.au).**

## **Horse SA – Renovate your paddock + Q and A**

**25 May 2017**

PLEASE NOTE VENUE HAS CHANGED

Free two hour workshop with Andy Cole, Land Management Advisor

Need to renovate or improve your horse paddock? Want to know more about preparing to sow pasture and weed control? Discuss horse management ideas to reduce impact on land with Julie Fiedler

Bring along paddock plants for ID, soil for pH testing, water for salinity testing

**Date:** Thursday 25 May **Time** 7.00 pm

**Location:** **VENUE HAS CHANGED** - will now be held at Strathalbyn Town Hall, High Street, Strathalbyn

**Cost:** FREE

**For more information please contact Julie Fiedler, email [horsesa@horsesa.asn.au](mailto:horsesa@horsesa.asn.au), phone 0402 488 306**

## **Gorse management field day: Groomer in action**

**01 June 2017**

A paddock walk with free finger food & refreshments will be hosted by Natural Resources SA Murray-Darling Basin. Learn about the technique of grooming, chemical controls and the recently released Gorse Soft Shoot Moth.

You can help to stop the spread of Gorse in the Mount Lofty Ranges!

**Date:** Thursday 1 June **Time:** 1.00 pm to 3.30pm

**Venue:** Flaxley Rd Flaxley (will be sign posted)

**RSVP: Dwayne Godfrey (08) 8391 7511 or 0419389750**

**Visit the Pests Cost Us All website for a variety of information on pests: [www.pir.sa.gov.au/pestscostusall](http://www.pir.sa.gov.au/pestscostusall)**

## **Contacts**

### **Natural Resources Centre**

#### **Murray Bridge**

110A Mannum Road Murray Bridge SA 5253

T. 8532 9100 | F. 8531 1843

### **Natural Resources Centre Berri**

2 Wade Street Berri SA 5343

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E. [samdbenquiries@sa.gov.au](mailto:samdbenquiries@sa.gov.au)

For more information on natural resources management in the region, the SAMDB NRM Board and its activities, please visit [www.naturalresources.sa.gov.au/samurraydarlingbasin](http://www.naturalresources.sa.gov.au/samurraydarlingbasin)



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Murray-Darling Basin



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