

South Australian Murray-Darling Basin

Guide to carbon planting in South Australia

Summary maps



Government of South Australia

Department of Environment,
Water and Natural Resources



Introduction

The Guide to Carbon Planting in SA contains a range of spatial data layers, a report and these maps based on natural resources management regions.

The aim is to provide background information that may help guide decisions by landholders, industry groups, non-government organisations, and others involved with Carbon Farming (also known as Carbon Credits or Carbon off-setting schemes).

These information products provide context to landscape-scale planning and are not intended for use at the local or property-scale.

The information presented is summary in nature to illustrate geographic variation in issues and some basic scenarios relating to carbon plantings.

This set of summary maps enables readers to view the issues in a region without GIS software. The table below shows which maps are presented for the Adelaide and Mt Lofty Ranges Natural Resources region.

The report along with spatial data layers and scenarios for the rest of SA are available via data.sa.gov.au

The maps are derived from biophysical data only. There are a number of factors that will influence the appropriateness of a carbon planting see **report** for more information.

Did you know?

'Carbon dioxide equivalent' or 'CO₂-e' is a term for describing different greenhouse gases in a common unit. For any quantity and type of greenhouse gas (e.g methane, nitrous oxide) CO₂-e signifies the amount of CO₂ which would have the equivalent global warming impact. The Australian Government Clean Energy Regulator defines 1 tonne of CO₂-e as a standard unit of measure for carbon trading. Each Australian Carbon Credit Unit (ACCU) is issued by the regulator for accredited and registered projects that sequester carbon dioxide or avoid the release of greenhouse gases.

Carbon planting spatial data layers

Theme	Layer	Layer/scenario			
Carbon sequestration		Climate scenario			
		Historic average	Historic average	4° warmer, 25% drier	
		Baseline to 2030	Baseline to 2070	Severe to 2070	
		Biodiverse planting (50% trees)	Map 1	GIS layers	GIS layers
		Mixed planting (88% trees)	Map 2	GIS layers	GIS layers
	Carbon forestry (100%)	Map 3	GIS layers	GIS layers	
Soil stabilisation	Soil erosion susceptibility (Southern SA)	Map 4			
Surface water	Surface water interception likelihood	Map 5			
Groundwater	Groundwater interception likelihood	Map 6			

Map 1

Carbon Sequestration Biodiverse planting

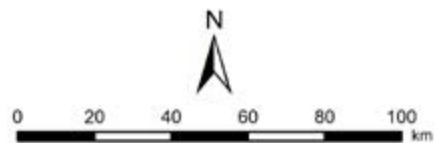
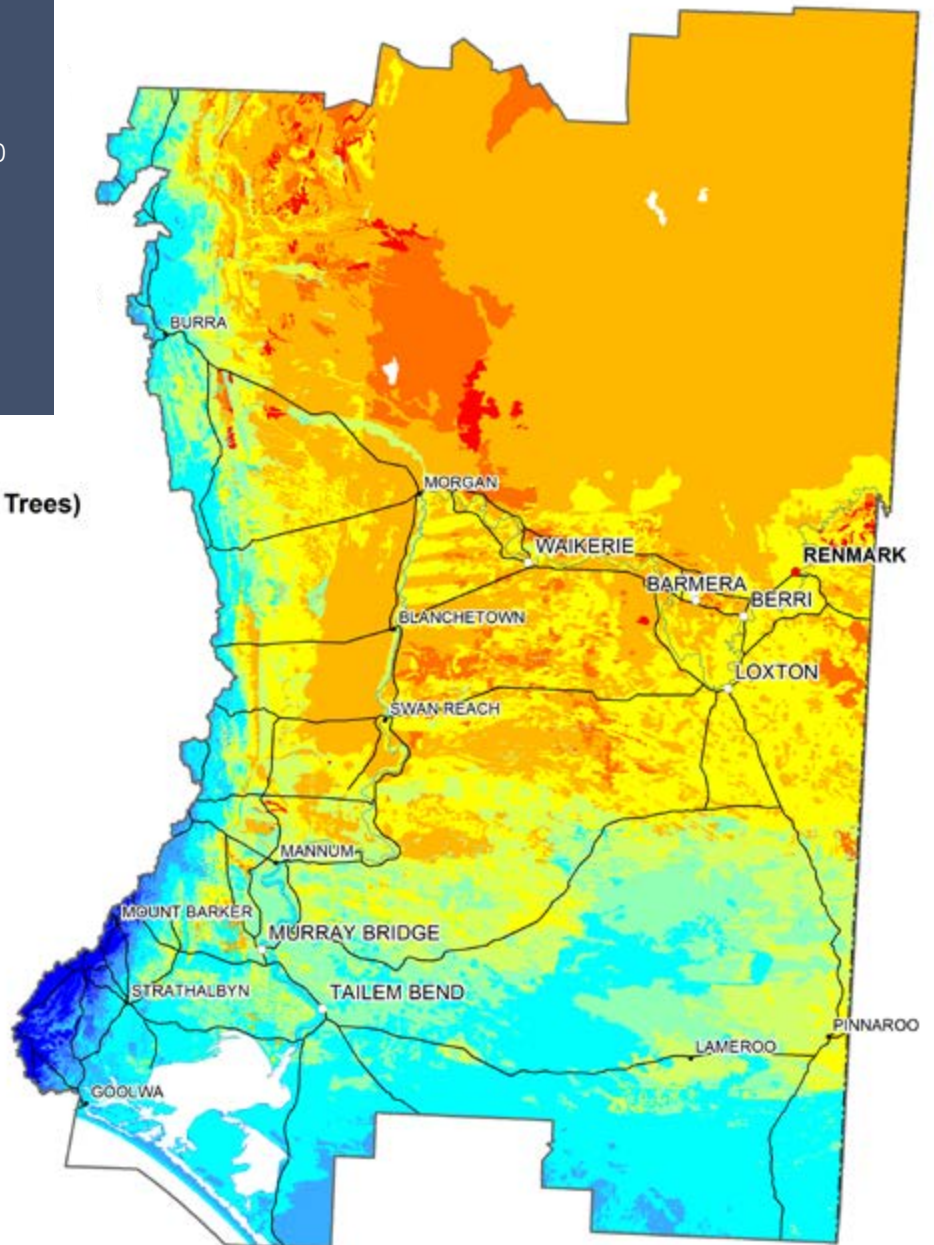
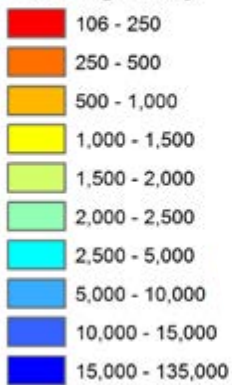
Sequestration is influenced by planting type, age and future climate.

This map represents the sequestration rate from a biodiverse planting design (50% Trees) by 2030 from the baseline climate scenario (historic average).

See **report** for more information.

BO3 Carbon Sequestration (50% Trees)

CO₂-e kg / ha / yr



Map 2

Carbon Sequestration

Mixed planting

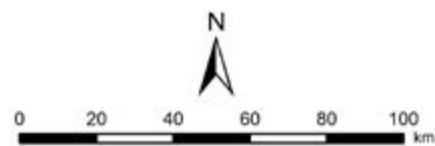
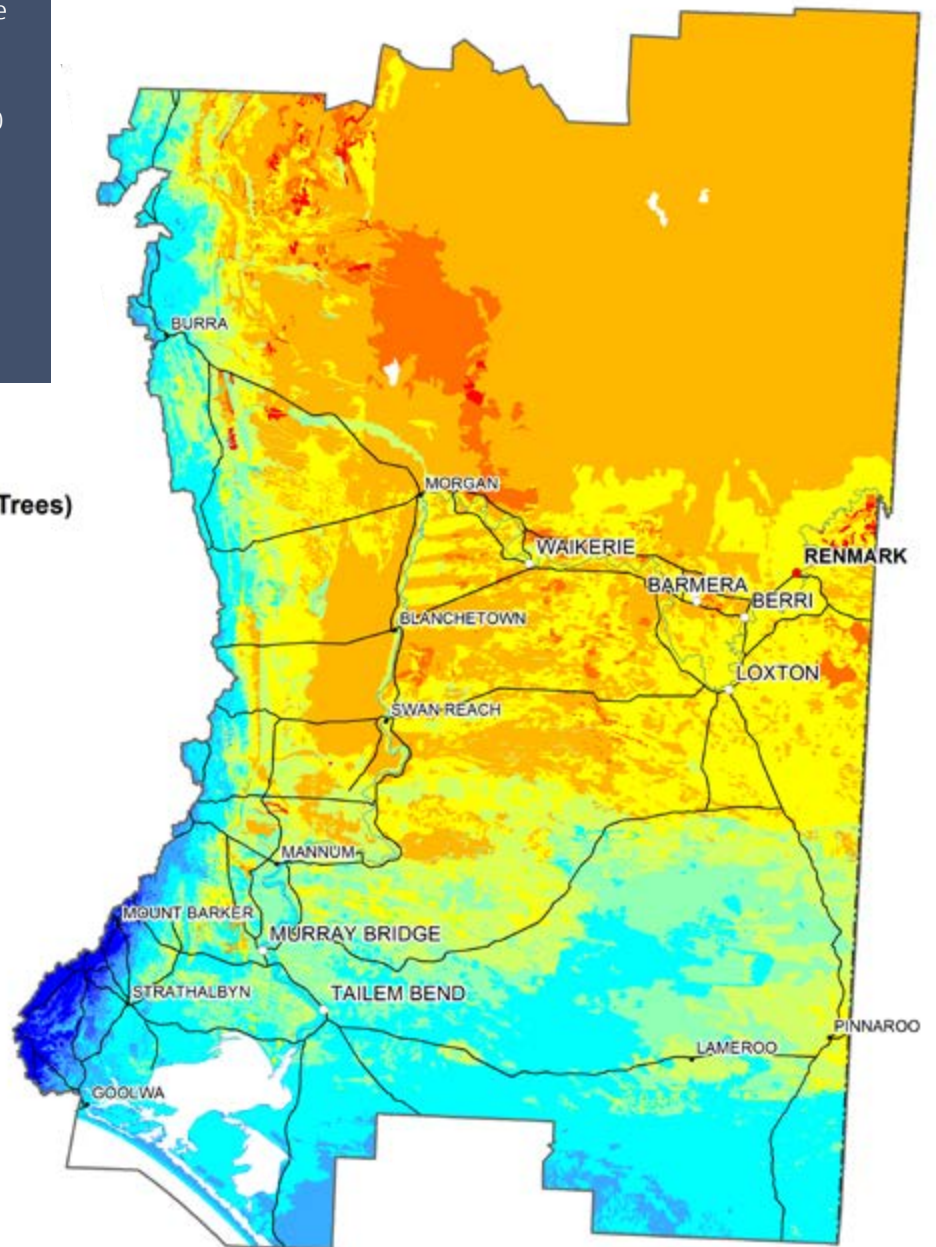
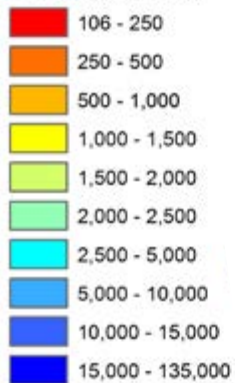
Sequestration is influenced by planting type, age and future climate

This map represents the sequestration rate from a mixed planting design (88% Trees) by 2030 from the baseline climate scenario (historic average).

See **report** for more information.

BO4 Carbon Sequestration (88% Trees)

CO₂-e kg / ha / yr



Map 3

Carbon Sequestration

Carbon forestry

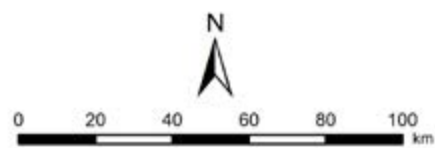
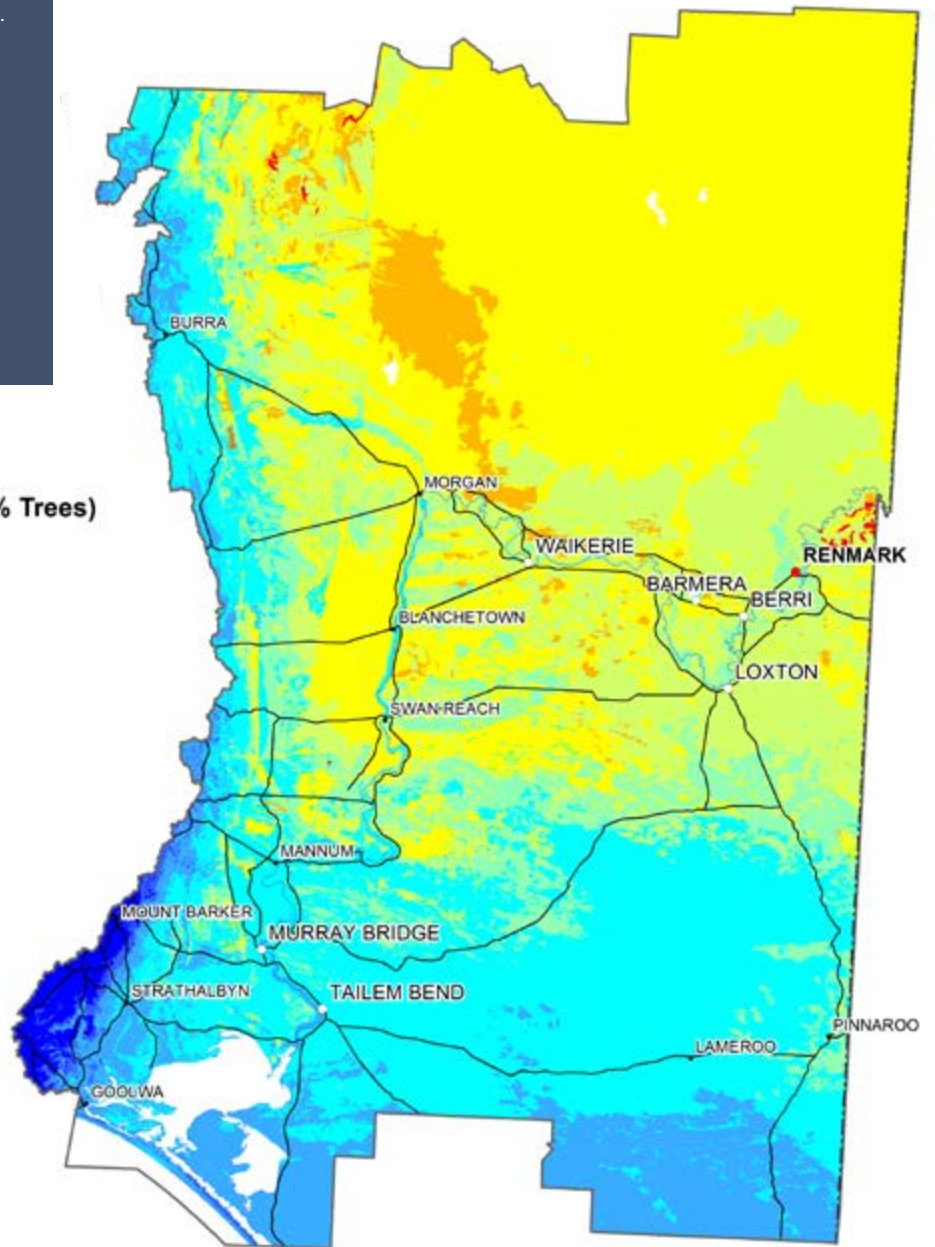
Sequestration is influenced by planting type, age and future climate.

This map represents the sequestration rate from a carbon forest design (100% Trees) by 2030 from the baseline climate scenario (historic average).

See **report** for more information.

BO5 Carbon Sequestration (100% Trees)

CO₂-e kg / ha / yr



Map 4

Soil Stabilisation

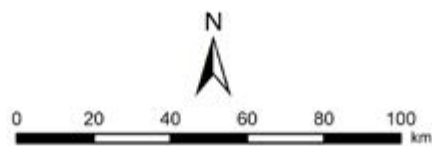
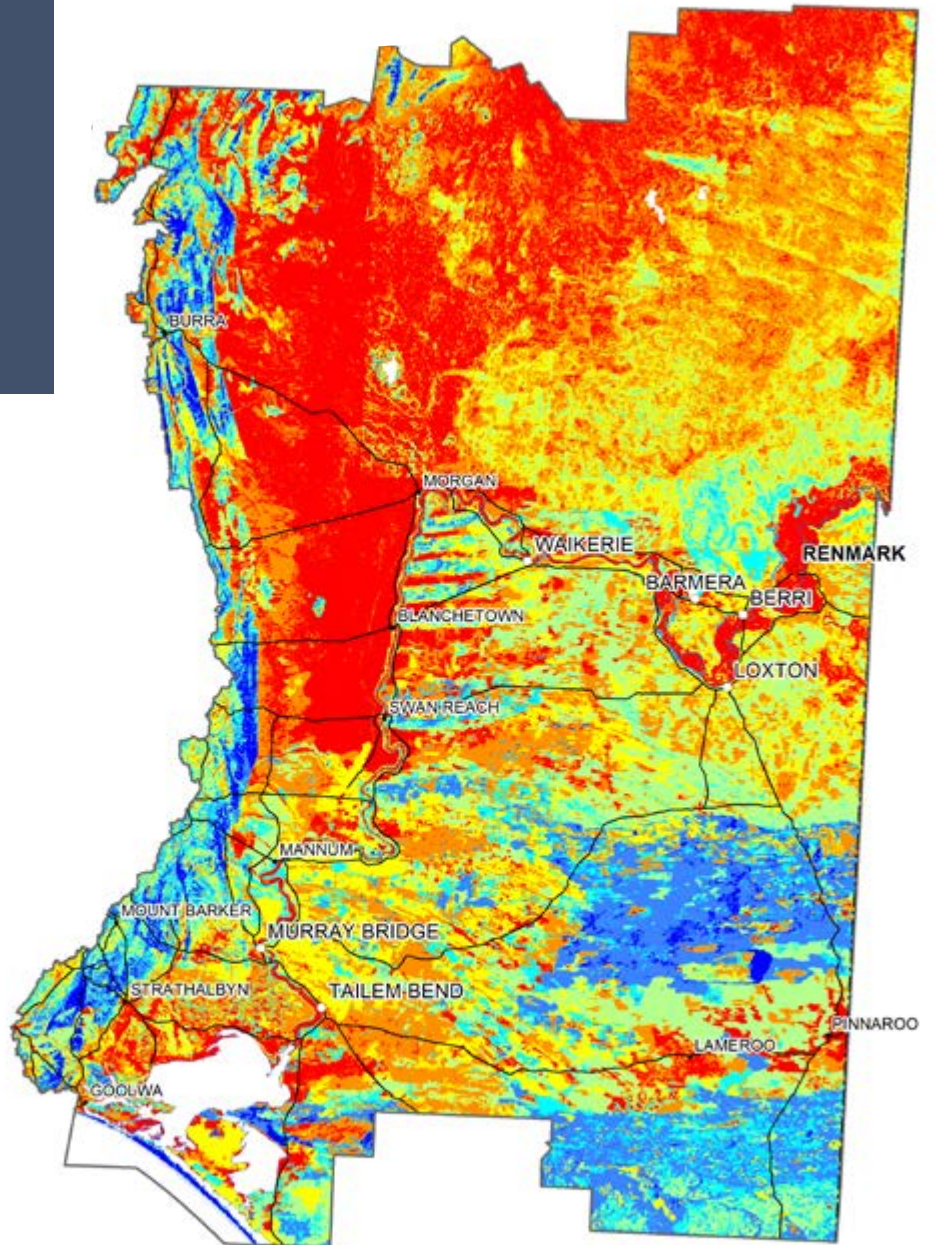
Soils and landscapes with increased susceptibility to erosion represent high opportunity for stabilisation in the context of a carbon planting.

Carbon plantings that help stabilise soil can generate a co-benefit alongside carbon sequestration.

This map combines wind and water erosion susceptibility to locate this opportunity.

See **report** for more information.

BO1 Plantings Could Reduce Erosion Potential



Map 5

Surface Water

Carbon plantings present a possible risk of reducing surface water runoff.

Increasing the area of woody vegetation in a catchment will divert rainfall from surface water flows by reducing runoff. This has the potential to impact other economic and environmental uses.

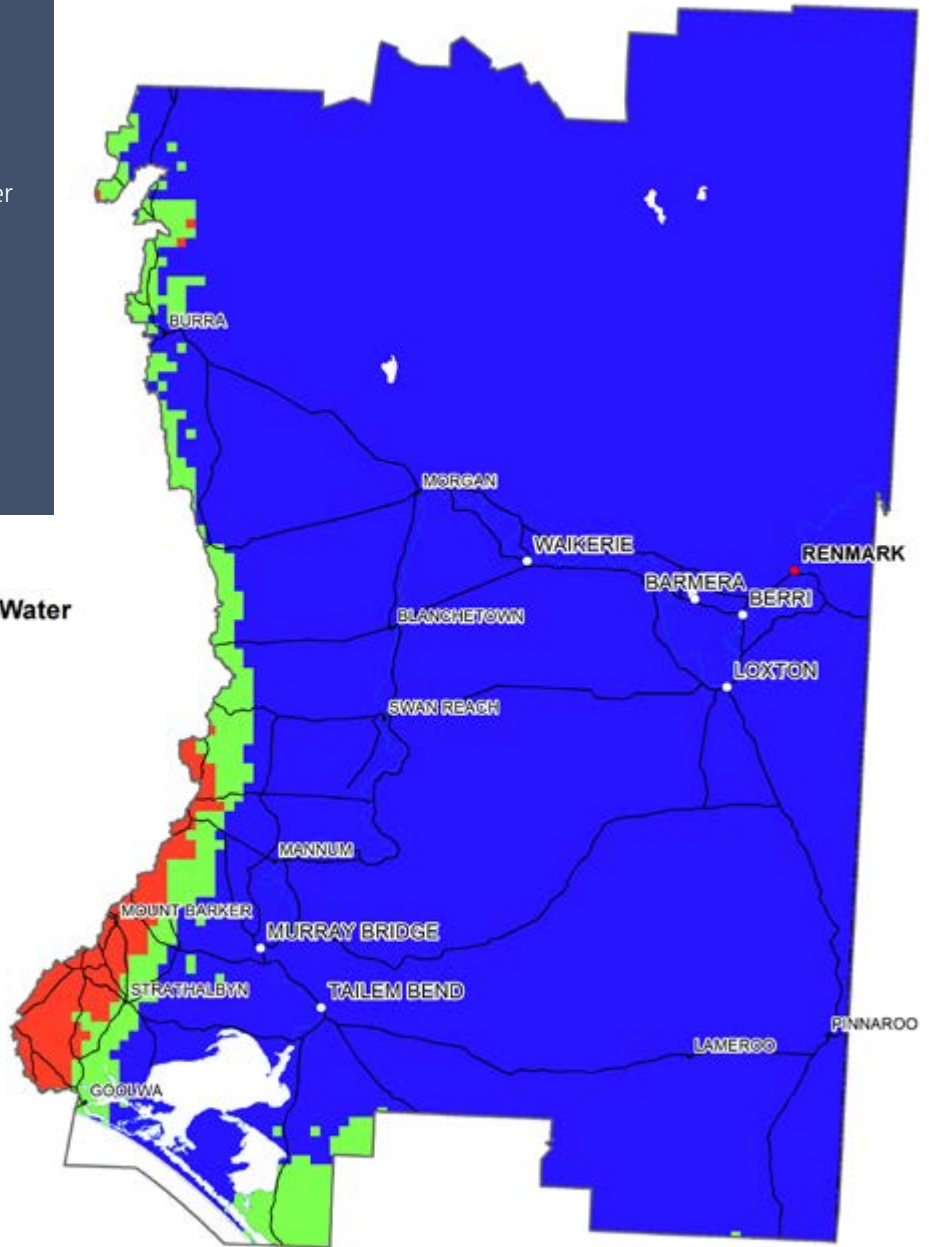
This map shows the likelihood of vegetation intercepting surface water based on long-term average annual rainfall categories:

- Low 0 – 450 mm
- Moderate 450 – 600 mm
- High 600 mm +

See **report** for more information.

BR2 Plantings Intercept Surface Water

- No Data
- High Likelihood
- Moderate Likelihood
- Low Likelihood



Map 6

Groundwater

It may or may not be favourable for carbon plantings to intercept groundwater.

A carbon planting could reduce water availability by lowering the water table.

This may present a risk for other economic and environmental uses.

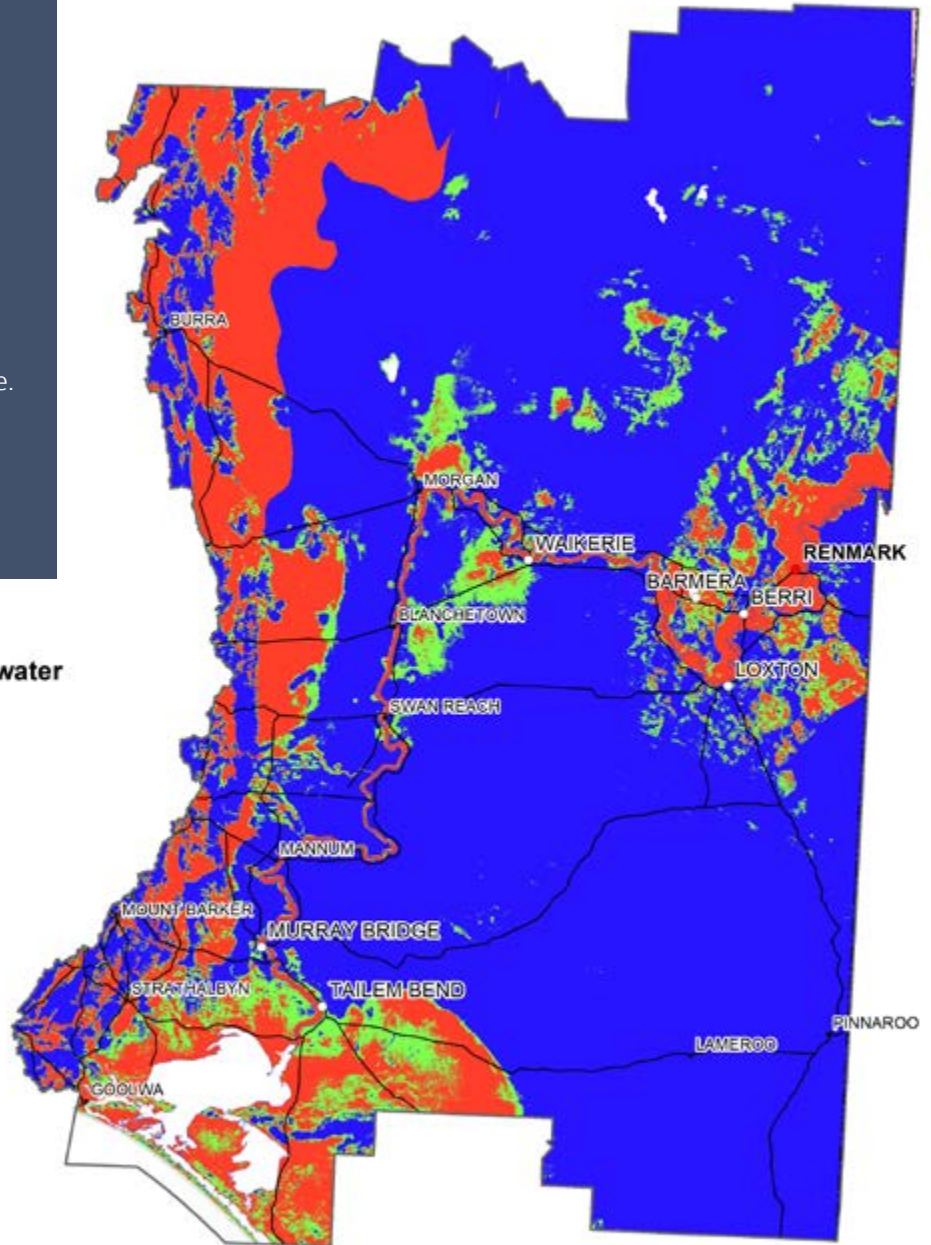
In some cases, groundwater interception may be a favourable co-benefit e.g. if lowering water tables mitigates local dryland salinity issues.

This map presents the likelihood of vegetation accessing the water table.

See **report** for more information.

BR3 Plantings Intercept Groundwater

- No Data
- High Likelihood
- Moderate Likelihood
- Low Likelihood



4 Further information

The following web links provide more information on a range of issues that influence carbon plantings in South Australia, including scientific reports, data, strategies, legislation and policy.

Science and data

1. Reports on the science behind carbon from revegetation in South Australia including a carbon sequestration estimation tool can be found here:
https://www.environment.sa.gov.au/Science/Science_research/land-condition-sustainable-management/carbon-from-revegetation
<https://data.environment.sa.gov.au/Content/Publications/carbon-sequestration-from-revegetation-estimator-ver.1.1.xlsx>
2. Information on potential woodlot species are found in the following FloraSearch reports:

Developing Species for Woody Biomass Crops in Lower Rainfall Southern Australia - FloraSearch 3a:
<https://rirdc.infoservices.com.au/items/09-043>

Potential Agroforestry Species and Regional Industries for lower rainfall Southern Australia. FloraSearch 2:
<https://rirdc.infoservices.com.au/items/07-082>
3. The Land Use Trade Off model (LUTO) has been developed by the CSIRO and models carbon payments relative to competing land uses: Australian land-use and sustainability data: 2013 to 2050 can be accessed from:
<http://doi.org/10.4225/08/5756169E381CC>
4. Land use and other map layers can be found in NatureMaps:
<https://data.environment.sa.gov.au/NatureMaps>
5. Projections of future changes in climate in South Australia's NRM regions:
<https://data.environment.sa.gov.au/Climate/SA-Climate-Ready>

Strategies and frameworks

6. South Australia's Climate Change Strategy 2015 - 2050:
http://www.environment.sa.gov.au/Science/Science_research/climate-change/climate-change-initiatives-in-south-australia/sa-climate-change-strategy
7. Carbon Neutral Adelaide Action Plan 2016 - 2021:
<https://www.carbonneutraladelaide.com.au/>
8. Australian Government's Carbon Farming Initiative:
<https://www.environment.gov.au/climate-change/emissions-reduction-fund/cfi/about>
9. Natural Resource Management Plans:
<https://www.environment.sa.gov.au/about-us/our-plans>

Regulatory information

10. Local Government:
<http://www.lga.sa.gov.au/councils>
11. Native Vegetation Council:
<https://www.environment.sa.gov.au/about-us/boards-and-committees/native-vegetation-council>
12. Environmental Protection Authority:
<http://www.epa.sa.gov.au/contact>
13. Pastoral Board:
<http://www.naturalresources.sa.gov.au/aridlands/about-us/pastoral-board/pastoral-unit>
14. Regional NRM Boards:
<https://www.environment.sa.gov.au/about-us/boards-and-committees/natural-resources-management-boards>
15. Water Allocation Plans
<https://www.environment.sa.gov.au/managing-natural-resources/water-resources/planning/water-allocation-plans>



This work was made possible by the investment of the Department of Environment, Water and Natural Resources and the Australian Government's Regional Natural Resource Management (NRM) Planning for Climate Change Fund delivered through the Natural Resources South Australian Murray-Darling Basin, Adelaide & Mt Lofty Ranges, South East and Northern & Yorke Boards.

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