Adelaide and Mount Lofty Ranges

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).

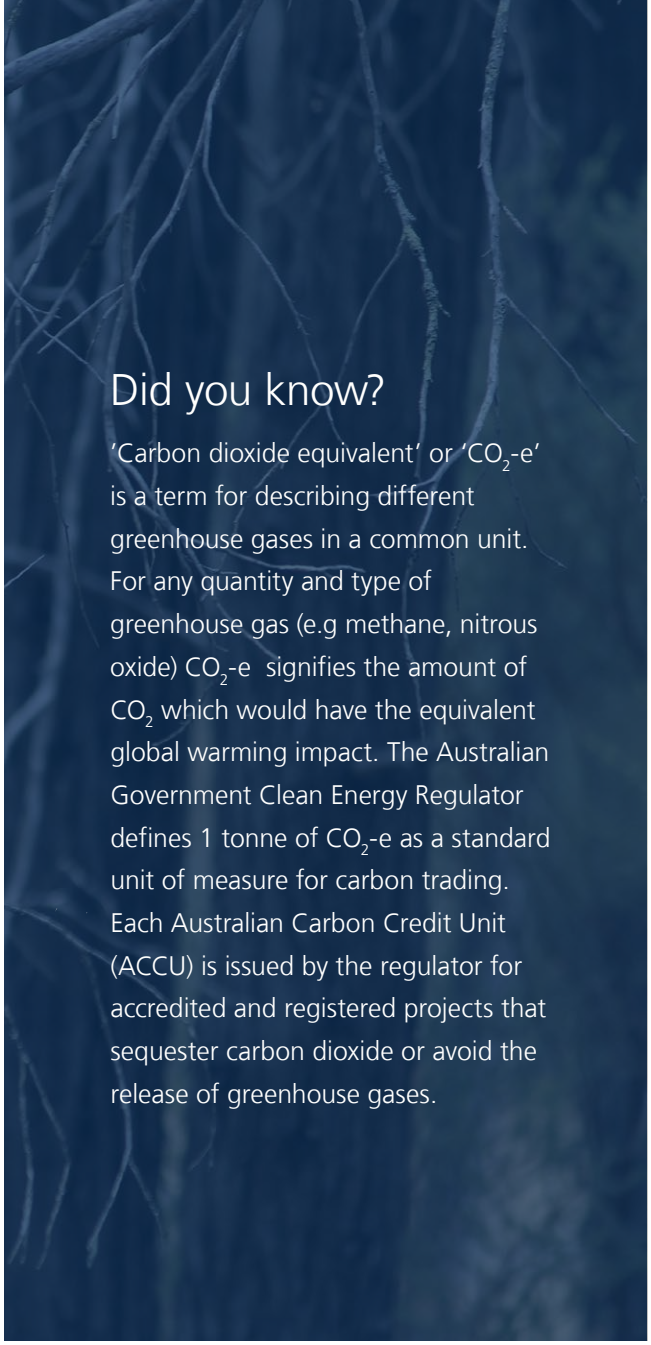
These information products provide context to landscape-scale planning and are not intended for use at the local or property-scale.

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 'CO_2-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) CO_2-e signifies the amount of CO_2 which would have the equivalent global warming impact. The Australian Government Clean Energy Regulator defines 1 tonne of CO_2-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

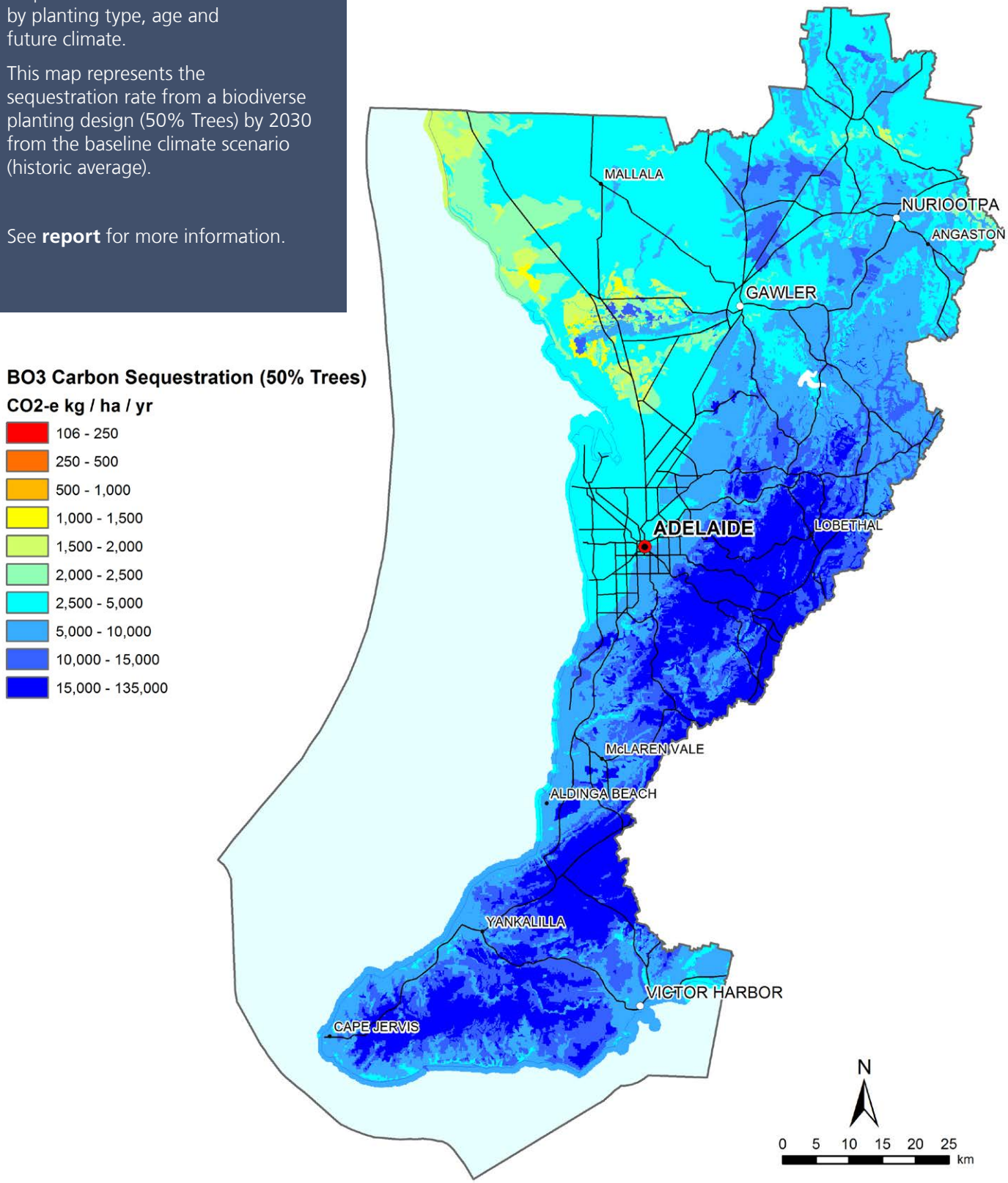
Carbon Sequestration

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.



Map 2

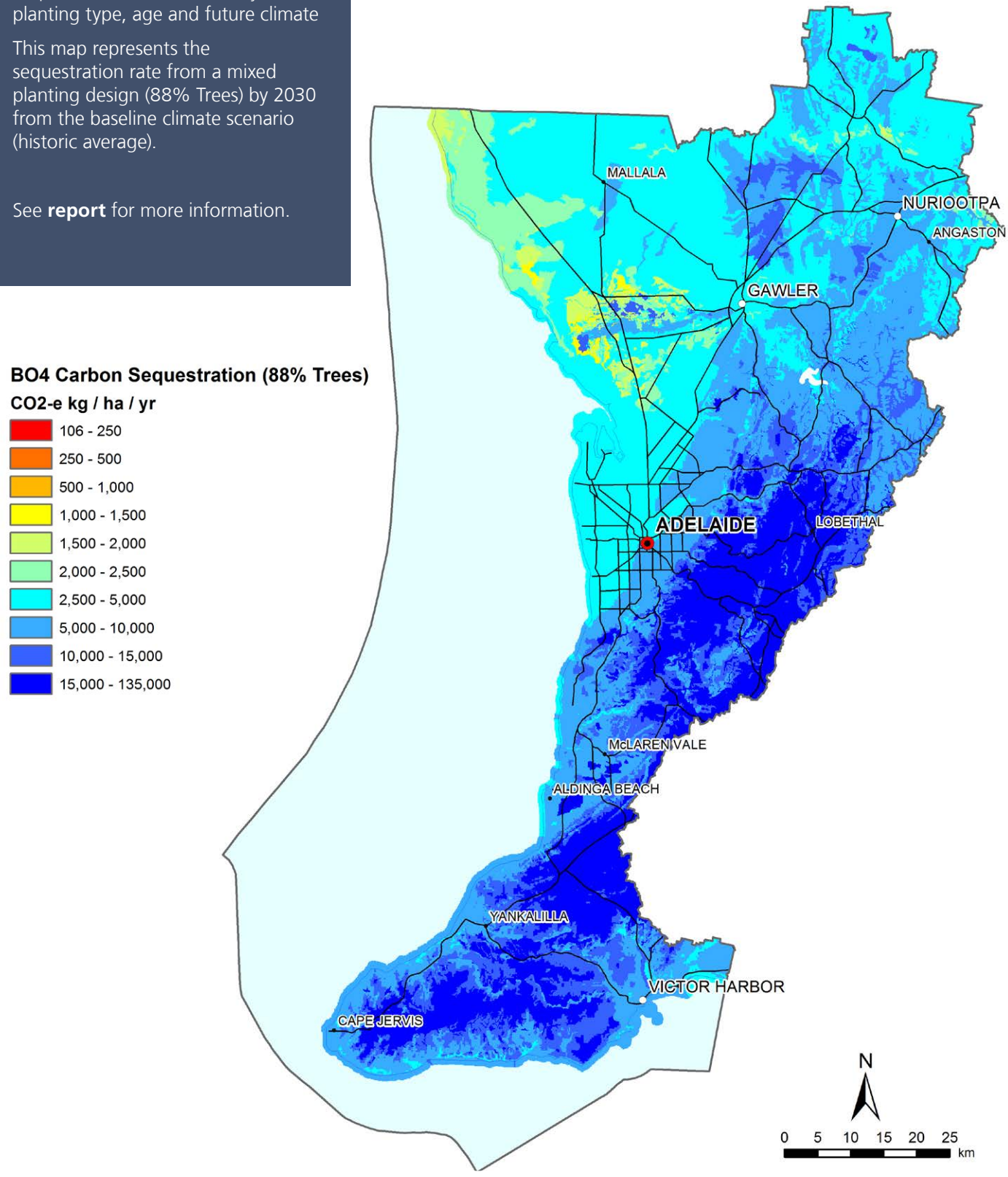
Carbon Sequestration

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.



Map 3

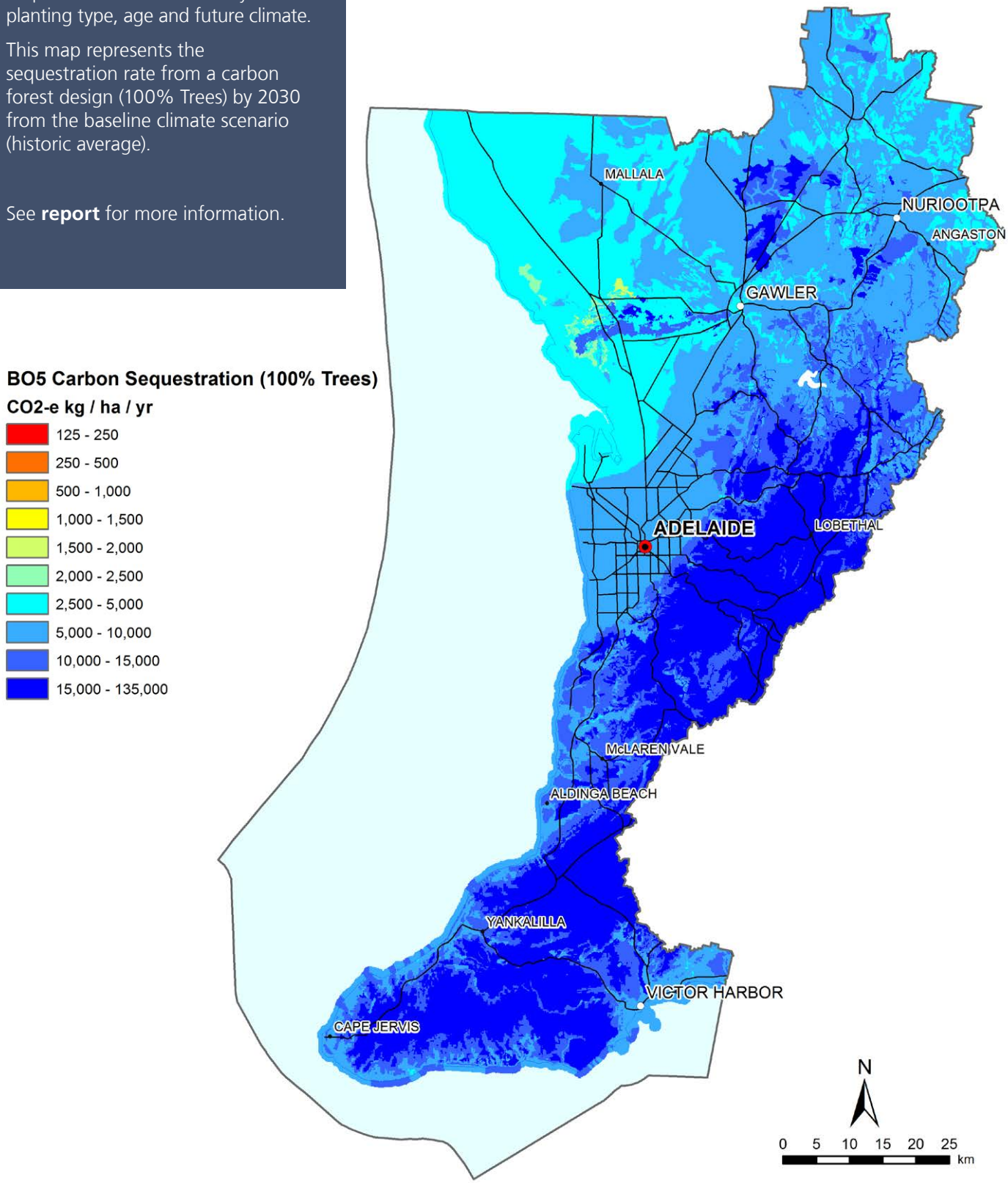
Carbon Sequestration

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.



Map 4

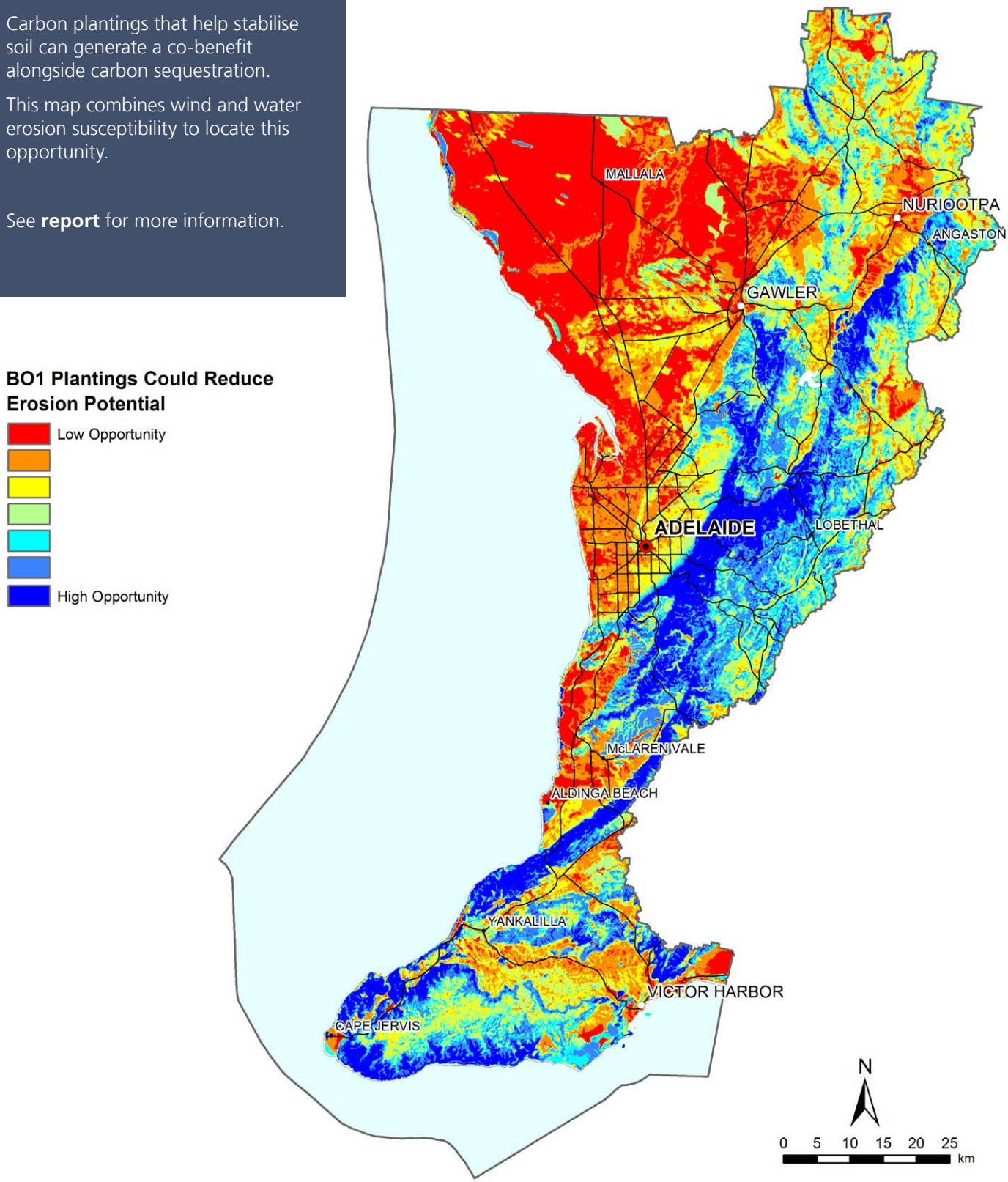
Soil Stabilisation

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.



Map 5

Surface Water

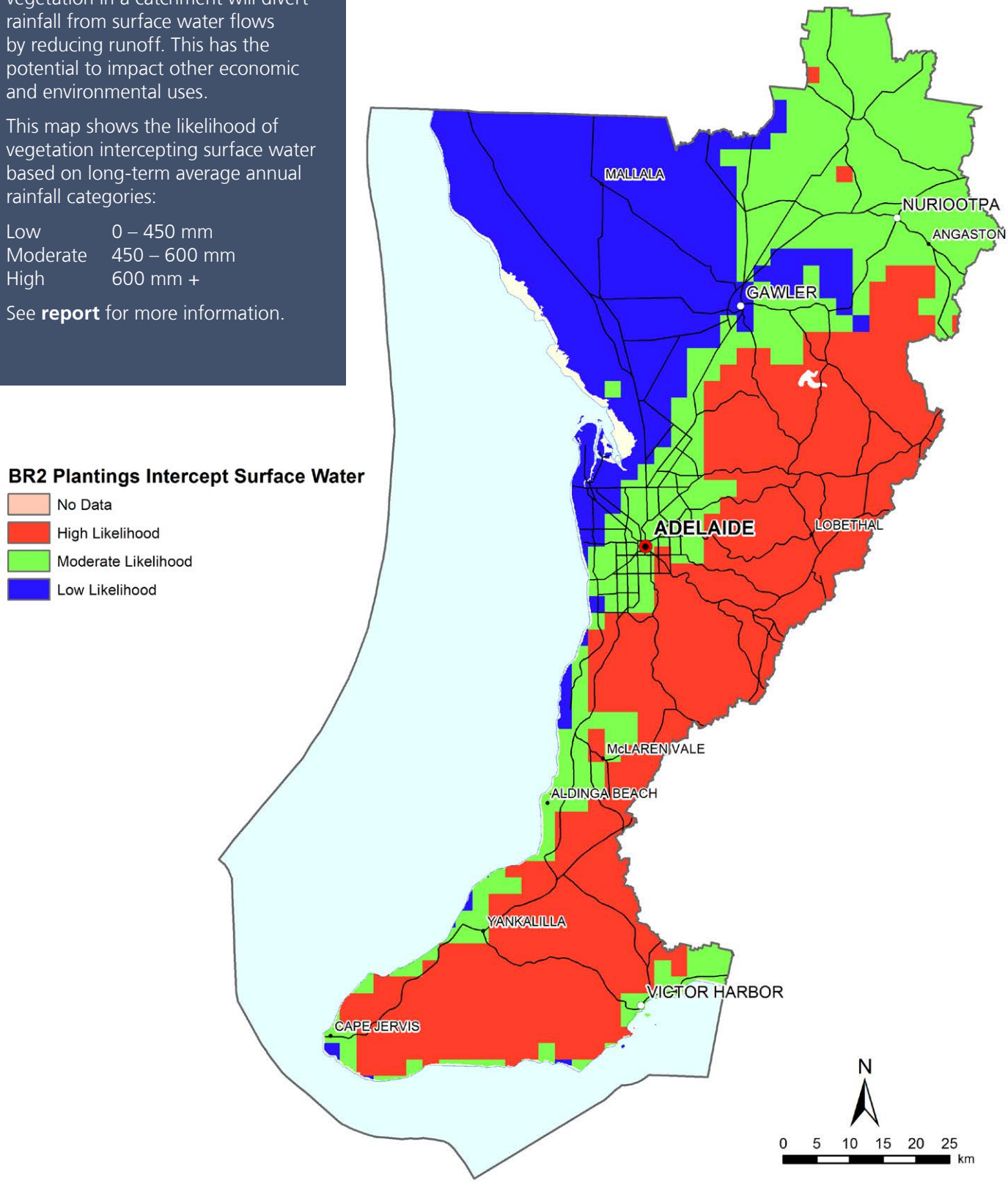
Carbon plantings present a possible risk of reducing surface water runoff.

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.



Map 6

Groundwater

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

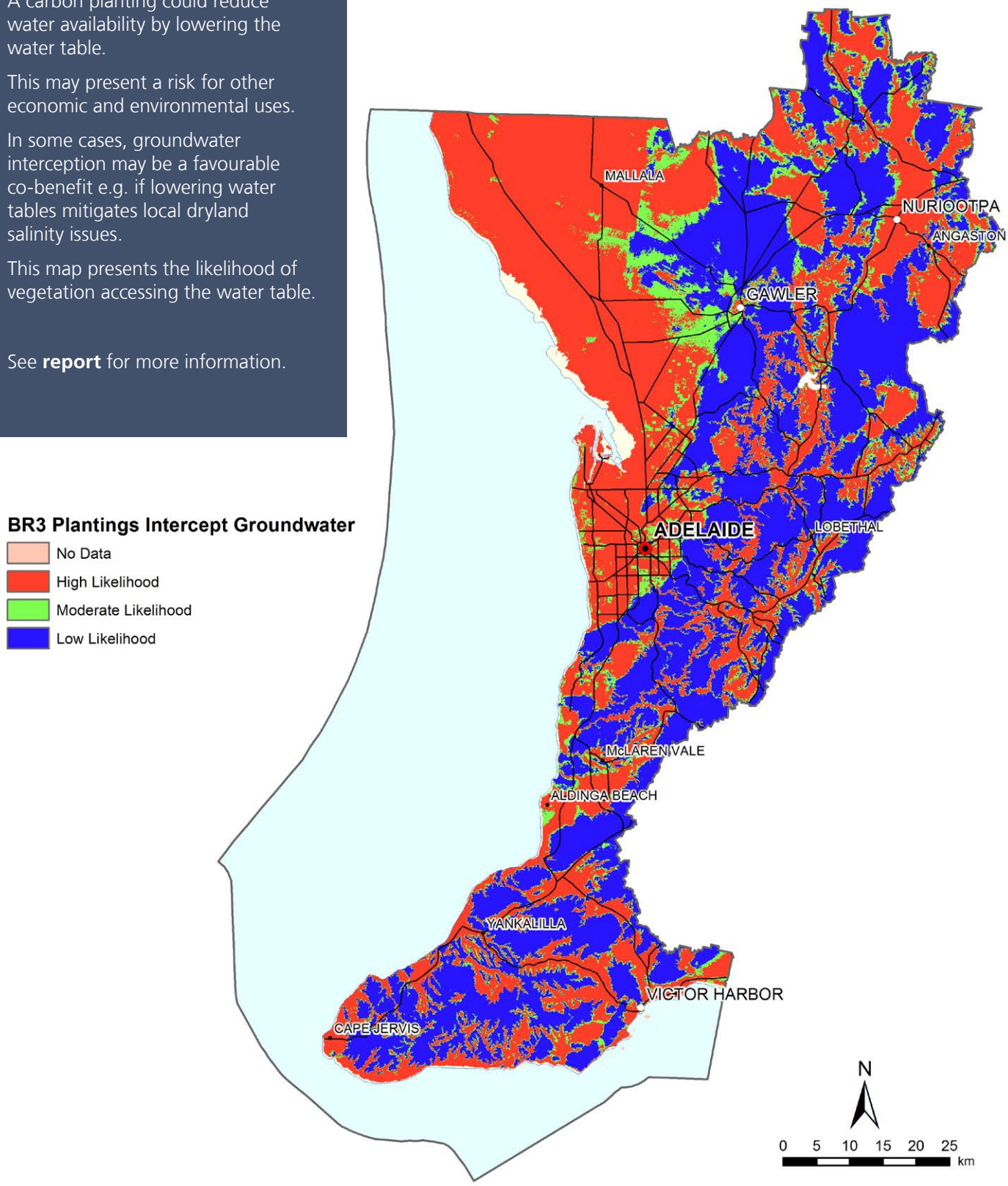
A carbon planting could reduce water availability by lowering the water table.

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.



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 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.

Government of South Australia

Department of Environment, Water and Natural Resources