

Carbon Economy Opportunities for NRM - Victoria Examples



NRM Regions Australia
2nd of June 2017

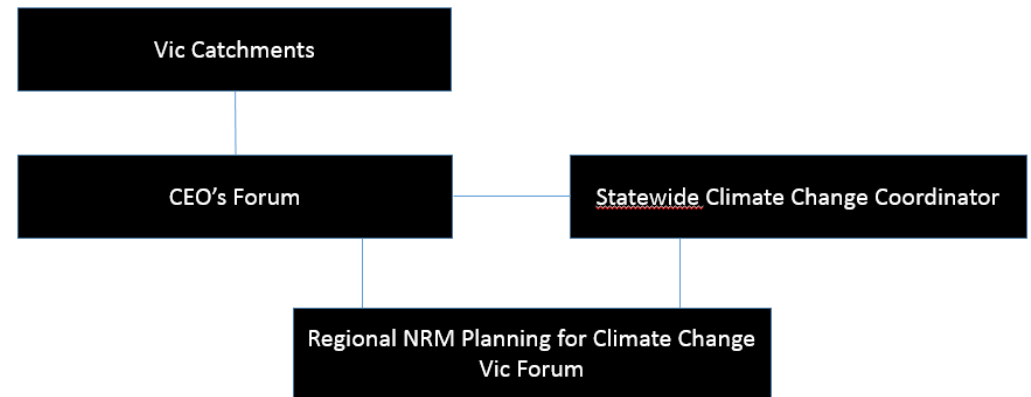


EAST GIPPSLAND
CATCHMENT
MANAGEMENT
AUTHORITY



Our Catchment Our Communities - Supporting implementation of the Victorian Government's water plan, *Water for Victoria*.

Victorian CMA's Collaboration on Climate Change

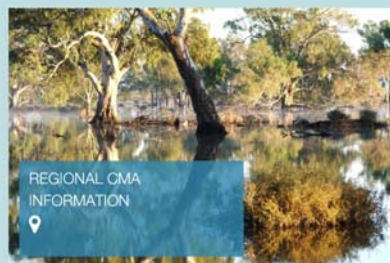


Victorian CMA's Collaboration on Climate Change



CLIMATE READY NATURAL RESOURCE MANAGEMENT PLANNING IN VICTORIA

This website provides access to regional natural resource management planning for climate change information developed by each of the 10 Catchment Management Authorities across Victoria. This includes information on regional climate change projections, impacts of climate change on natural resources, priority areas for climate change adaptation, carbon sequestration and management opportunities.



Regional Natural Resource Management Climate Change Adaptation Victorian Priorities

In a Victorian first, the Catchment Management Authorities (CMAs), funded through the Australian Government, have undertaken regional climate change adaptation planning.

The aim of this work is to identify priority landscapes and natural resource management actions for climate change adaptation and mitigation.

The Work

- supports implementation of Regional Catchment Strategies through the development of sub-strategies and plans; and
- identifies key priorities/actions for implementation within the regions.

The CMAs have a clear direction for climate change adaptation in the NRM sector based on rigorous processes, the best available information, a review of all strategies and plans, and community input. A list of state-wide adaptation priorities has been developed as result of this work.

The CMAs believe the collaborative effort to identify and develop this set of state-wide priorities supports the Victorian Government's vision to become a leader in climate change.

Key Priorities

Local Climate Change Adaptation Planning

Collaborative local planning that embeds current climate change knowledge leading to informed on-ground actions. This may include:

- Adaptation Pathways planning
- social-ecological system planning
- planning for transformation
- supporting adaptive management
- spatial mapping refinement
- collaboration with local government planning and floodplain management.

Landscape Connectivity

Addressing key climate change impacts and pressures to vulnerable land, biodiversity and water assets in priority areas identified in Climate Change Adaptation Plans. This may include:

- biolinks
- protection of drought refugia
- reducing key pressures on the condition of natural resources that are projected to be impacted under climate change.

Shared Learning

Supporting the exchange of information and new knowledge needed to build the capacity of regional land managers to implement on-ground actions.

Supporting Emissions Reduction Fund Opportunities

Providing information to identify co-benefit opportunities for a carbonbased mechanism within regions.

Building Soil Resilience

Supporting management practices that:

- promote improved productivity and soil carbon
- conserve soil that is vulnerable to extreme weather events
- reinstate perennial vegetation on vulnerable soils
- build understanding of soil management under climate change.

Aboriginal Cultural Heritage

Protecting cultural sites vulnerable to the impacts of climate change and supporting and facilitating the use of traditional knowledge.

"Blue Carbon"

Planning to protect and increase sequestration in carbon-rich "Blue Carbon" coastal and freshwater systems. This may include;

- protection and restoration of the Victorian shoreline including mangrove, seagrass and salt marshes
- protection and restoration of Victoria's varied freshwater wetland systems.

Research Activities

Improving knowledge of best value adaptation and mitigation actions to guide planning and facilitate adaptive management. This will build on partnerships already developed through this work with organisations such as CSIRO, Deakin University and RMIT.

For more information please contact Kate Brunt at the Goulburn Broken CMA on 0457 832 643.



Opportunities from the Carbon Market

Business as usual

Investment advisor

**Research and method
development**

Auditor

Co-benefit verification

Project Partner

Commercial Participant

Aggregator

Blue Carbon - Building a Method

The Distribution and Abundance of 'Blue Carbon' within Port Phillip and Westernport



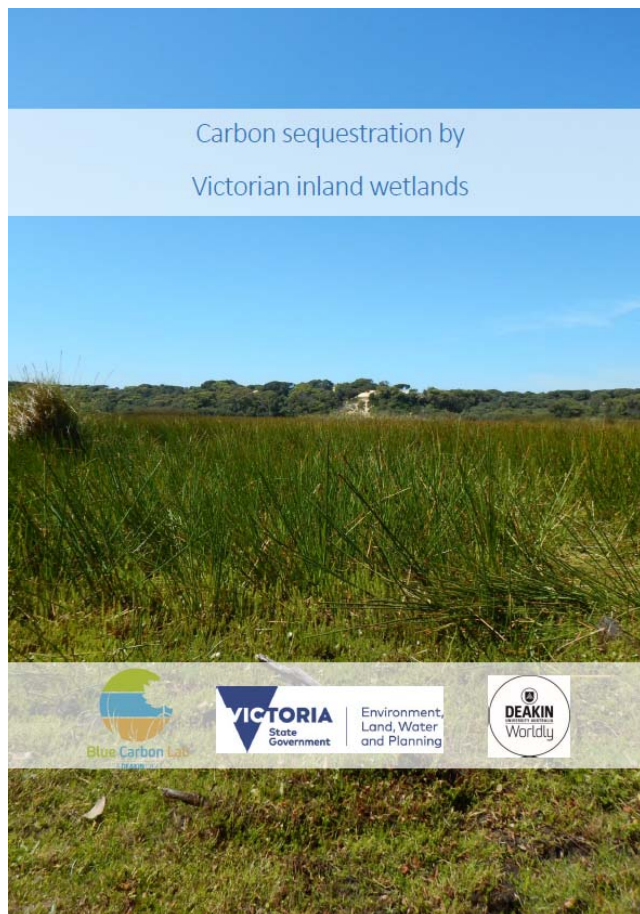
A report for the Port Phillip & Westernport Catchment Management Authority

Commissioned by Emmaline Froggatt

February 2015

Authors: Paul Carnell, Carolyn Ewers, Ellen Rochelmeyer, Richard Zavalas, Bruce Hawke, Daniel Ierodiaconou, Jonathan Sanderman and Peter Macreadie (corresponding author)

Cover photo: Saltmarsh and Mangroves next to the West Gate Bridge, Yarraville



Inland wetland rehabilitation to mitigate climate change impacts

Authoring Organisations:

Murray Local Land Services

Victorian Catchment Management Authorities

Deakin University Blue Carbon Lab

Murray Darling Wetlands Working Group Ltd.

Department of Environment, Land, Water and Planning, Victoria

Recent work in inland Victoria and NSW has highlighted the potential for inland wetlands to help mitigate climate change by improving carbon stores and offsetting carbon dioxide emissions.

As the impacts of climate change are becoming increasingly realised, wetlands are drawing more and more attention for their vast potential to capture atmospheric carbon. Until recently investigations of the carbon sequestration capacity of wetlands have concentrated on coastal or 'blue carbon' wetlands. But in fact, estimates identify inland wetlands as the earth's largest store of terrestrial carbon. Inland wetlands contain 33 per cent of global soil carbon, despite only occupying 8 per cent of the land surface area, and are capable of storing 30 to 40 times more carbon than forests.

Deakin University, Department of Environment, Land, Water and Planning (DELWP) and the Victorian CMAs set about to understand the carbon sequestration capacity of Victoria's inland wetlands through Australia's most comprehensive investigation of inland wetlands carbon stocks to date.

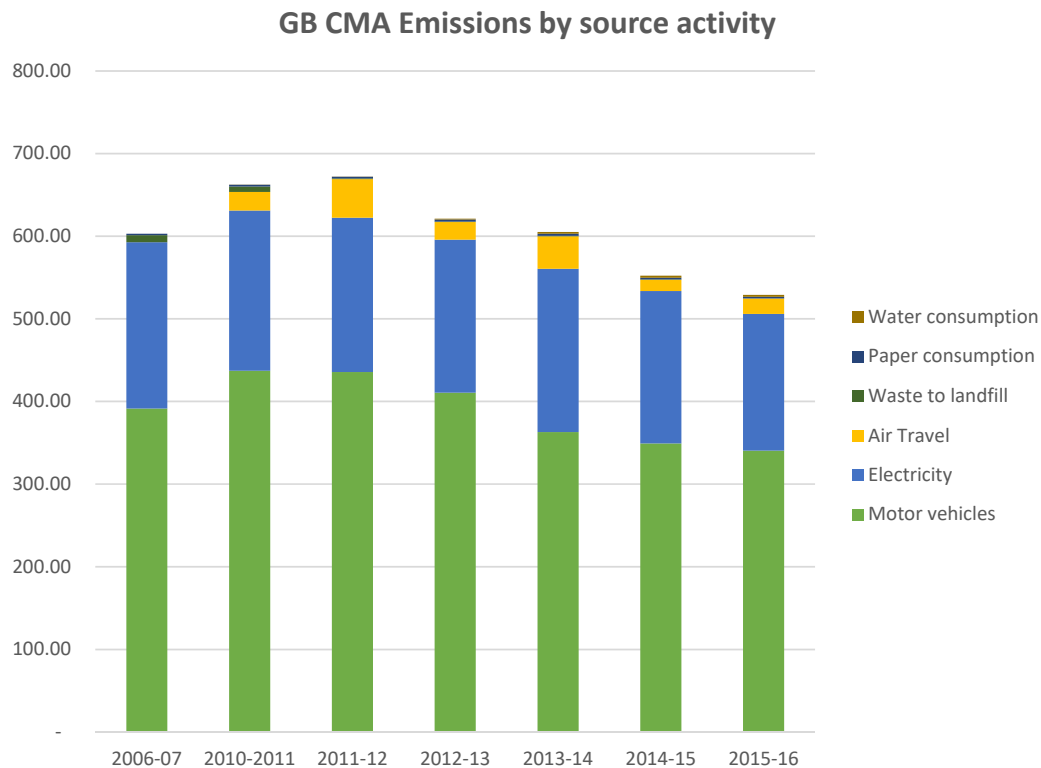
The project found that Victoria's wetlands are storing substantial amounts of carbon, with an estimated carbon sequestration of 3,117,682 tonnes of CO₂ equivalents per year, equivalent to the CO₂ emissions produced by 659,129 cars or emitted by 176,538 Australians in a year. The project also found that permanent open freshwater wetlands had the lowest carbon stocks, freshwater meadows and shallow freshwater marshes were in the mid-range, and the highest carbon stock values were in alpine peatlands.



Left: The field team measuring greenhouse gas concentrations using the Los Gatos Research (LGR) Ultra-portable Greenhouse Gas Analyser (Deakin University Blue Carbon Lab)

Right: Dr Paul Carnell and PhD candidate Quinn Ollivier taking sediment cores in the alpine region of Victoria (Deakin University Blue Carbon Lab)

Carbon Neutral NRM

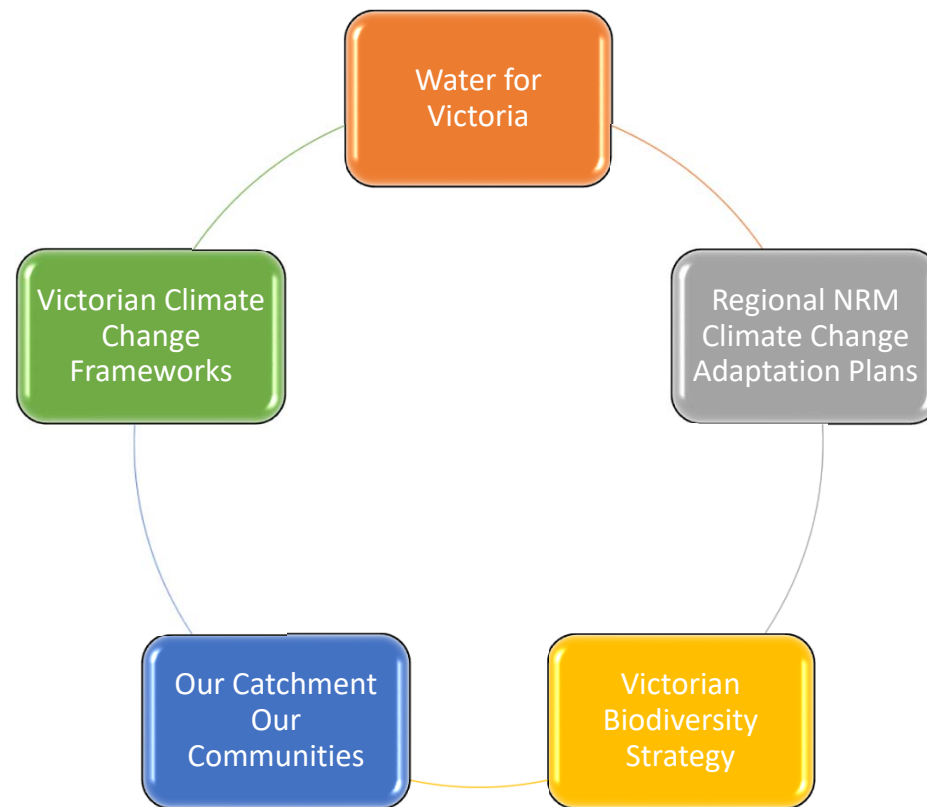


- Approx. 500 t CO2-e in 2015-2016.
- Emissions per FTE have dropped to 9.7 t CO-e which is a 24% reduction on 2006-07
- Offsetting will be required to become carbon neutral
- What opportunities are there to use the carbon market to become carbon neutral and achieve broader catchment goals?

Victorian Context

Emissions Reduction Fund

Only 1% of the all the Australian
Carbon Credit Units for Vegetation
issued are in Victoria.



Catchment Carbon Offsets



- Develop and pilot a framework that provides carbon offsets for the water industry and provide climate change adaptation outcomes.
- Increase alignment between a region's RCS (and supporting strategies) and water sector mitigation action to increase resilience of policy implementation.
- Seek further integration between outcomes of key policy areas of water, biodiversity and climate change.

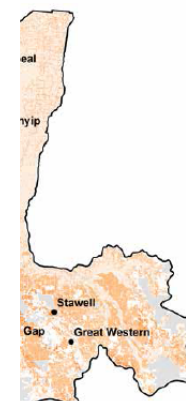
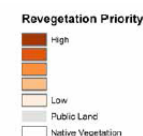
Regional Climate Change Adaptation Plan – Mitigation Activities

Table 12. Carbon options assessment for priority East Gippsland assets

Asset type	Priority Asset	Grazing system change	Environmental plantings	Human induced natural regeneration	Habitat restoration (Blue carbon)	Technical Feasibility	Adoption	Risk	Adverse impacts
Waterways	Mitchell River		✓	✓	✓	H	M	L	L
	Nicholson River		✓	✓	✓	H	M	L	L
	Wonnangatta River		✓	✓	✓	H	M	L	L
	Lower Snowy River	✓	✓	✓	✓	M	M	M	L
	Brodribb River		✓	✓	✓	M	M	L	L
	Cabbage Tree Creek		✓	✓	✓	H	M	L	L
	Cann River		✓	✓	✓	H	M	L	L
	Genoa River		✓	✓	✓	H	M	L	L
	Combiobar River		✓	✓	✓	M	M	L	L
Wetlands	Lower Mitchell wetlands	✓	✓	✓	✓	M	L	M	L
	Lower Tambo wetlands	✓	✓	✓	✓	M	L	M	L
	Gippsland Lakes fringing wetlands	✓	✓	✓	✓	M	L	L	L
	Red Gum Plains wetlands	✓	✓	✓	✓	H	L/M	L	L
	Alpine peatlands		NA	✓	✓	M	NA	M	L
	Snowy River wetlands	✓	✓	✓	✓	H	L	M	L
	Remote wetlands		?	?	✓	?	?	?	?
	Lake Tyers		✓	✓	✓	H	L/M	L	L
	Ewings Marsh		✓	✓	✓	M	?	L	L
Native vegetation	Red Gum Plains	✓	✓	✓		H	M	L	L
	Lowland Forest (Gippsland Lakes Hinterland)	✓	✓	✓		H	M	L	L
	Rainforest ecosystems	✓	✓	✓		H	L/M	L	L
Coastal habitats	Coastal zone		✓	✓	✓	M	?	L	L
	Lower Snowy estuary	✓			✓	M	L	M	L
	Mallacoota Inlet				✓	M	L	M	L
	Bemm River and Sydenham Inlet				✓	M	L	M	L
	East Cape Conran to the border		✓	✓	✓?	L/M	?	?	L
Soils	Tambo Valley	✓	✓	✓		M	L/M	M	M
	Dargo Mountain Basin	✓	✓	✓		M	L/M	M	M
	Snowy River flats	✓	✓	✓		M	L/M	M	L
	Buchan Valley	✓	✓	✓		M	L/M	M	M
	Snowy Mountain basin	✓	✓	✓		M	L/M	M	M




Figure 18. Terrestrial carbon sequestration priorities



Revegetation including erosion control.

Catchment Carbon Offsets – Outcomes to date


Discussion Paper:

- Context
- **Catchment Carbon Offsets Concept** 
- Primary characteristic
- SWOT analysis
- Presents two models and characteristics

- They result in the retention of carbon stocks in the landscape and further carbon sequestration;
- They also provide environmental benefits, consistent with regional NRM planning frameworks, programs and targets.

Catchment Carbon Offsets – Outcomes to date

Discussion Paper:

- Context
- Catchment Carbon Offsets Concept
- **Primary characteristic** 
- SWOT analysis
- Presents two models and characteristics

- Carbon sequestration is credible, quantified and verified.
- Ownership of project benefits and outcomes is certain.
- Transferability of benefits and outcomes is understood.
- They comprise ‘new’ carbon sinks, representing a real and additional reduction in atmospheric carbon.
- Sequestered carbon is permanent and protected from future ownership/policy changes and resilient under climate change.
- Provide social and/or cultural benefits consistent with Water Corporation and Government objectives (i.e. public health, Indigenous or community engagement, local employment, liveability, supports lower risk land development).
- Projects are “local” to Water Corporations and CMAs.

Catchment Carbon Offsets – Outcomes to date

	Catchment carbon offset project types		
	CMA business-as-usual projects	Flexible model	Certified model
Carbon sequestration potential	Low-high, depending on location and type of project.		
Environmental service provision	Primary objective of project. Moderate-high, depending on project.		Potentially a secondary objective. Low-high, depending on project.
Measurement of carbon sequestration	Not typical practice.	Required. Use accepted models or calculation tools.	Required. Use method applicable to project type.
Measurement of other environmental services	Inputs routinely measured & reported.	Inputs measured & reported. Environmental service outcomes potentially measured & reported, but measurement not necessarily required.	
Type of carbon offset provided	Sequestered carbon contributes to the state greenhouse gas account and progress towards ZNE at that level. May contribute to a narrative about an entity's progress with emissions reductions.		Produces ACCUs and can formally offset an entity's emissions.
Revenue generation potential from carbon or environmental services	Not typically. May be eligible for cost-sharing with CMA.	Unlikely. May be eligible for cost-sharing with CMA	Revenue from carbon. Projects may also be eligible for cost share with CMA.
Regulatory compliance burden	Low. Verification of project completion and assurance of security of sequestered carbon.		Significant: carbon maintenance obligation; verification & reporting.
Costs	Establishment and maintenance. Opportunity cost of foregone agricultural or other production.		
	Potential land price implications (favourable/unfavourable) associated with some mechanisms to provide assurance of security of carbon.		Offset registration, verification & reporting. Potential land price implications of carbon maintenance obligation.
External investor drivers	Environmental service provision – NRM and social benefits.		Ownership of carbon offset. Potential interest in environmental service provision.
Landholder risks and obligations	Low and typically limited to maintenance requirements.		Significant: due to carbon maintenance obligation.

Note: References to "carbon sequestration" in the table also incorporate emissions avoidance.

Catchment Carbon Offsets – Outcomes to date

Stakeholder Workshop:

- Water Corporations
- CMAs
- State Govt.
- NGOs
- Testing apatite, key characteristic, type of sequestration
- Positive response

Catchment Carbon Offsets – Next

- Appraisal of the Framework and Models – appropriates, effectiveness (project inputs and outputs) and Legacy
- EOI Process – select the case study location
- Case Study - Inception workshop, project plan, implementation pathways, benefits and risk analysis, case study evaluation

Thank you

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