The Catchment Carbon Offsets Trial

The Catchment Carbon Offsets Trial (CCOT) aimed to complement Victorian Government policies and strategies relating to climate change, water, catchment management and biodiversity by demonstrating how projects could deliver emissions reductions, climate resilience and improve catchment management outcomes. The project was a collaboration between the Victorian water sector, which comprises Catchment Management Authorities (CMAs), Water Corporations and the Department of Environment, Land, Water and Planning (DELWP).

Catchment carbon offset concepts

The catchment carbon offset (CCO) concept was framed around the idea of projects being designed to retain and increase carbon stocks in the landscape while simultaneously providing environmental and social benefits that are consistent with regional NRM planning frameworks, programs and targets.

At the first CCOT stakeholder workshop the following key features and principles were developed:

- Offset projects result in permanent, real and additional reductions in atmospheric CO2 which are credibly quantified and independently verified.
- The sequestered carbon is resilient to climate change and "protected" from ownership and policy changes.
- Offset projects provide environmental, social, cultural and/or economic benefits which are consistent with Water Corporation, CMA and State Government policy and program objectives.
- Non-carbon benefits are visible, certain and clearly defined.
- Offset projects build or result from stable, long-term relationships within the water sector and with local communities.
- Offset projects are typically local to CMAs and Water Corporations.

Two alternative "models" of CCO were defined:

- Certified offsets satisfy the key features of CCOs (as above) and are formally certified under the Australian National Carbon Offset Standard (NCOS) or another complementary framework.
- Flexible offsets share the same essential features of CCOs, are credibly measured, but they are not independently verified and credited. They result in emissions reductions, which can be measured in state and national greenhouse gas accounts, but are not formally credited.While CCO projects generally targeted the generation of certified offsets to support Water Corporations' progress towards their net zero emissions (NZE) targets, the CCOT also considered the role, if any, of flexible offsets in CCO projects.

Appraisal of catchment carbon offset options

The three main forms of carbon offset are:

- Green carbon: carbon sequestered by and/or retained in woody perennial vegetation and soils in forests, woodlands or plantations;
- Blue carbon: carbon retained in aquatic or marine soils, vegetation or other structures (e.g. coral reefs); and
- Brown carbon: carbon stored in agricultural soils.

While brown carbon projects may provide some environmental benefits that are consistent with the CCO concept (e.g. improved soil health, climate resilience), their alignment with the full suite of features was not considered to be sufficient for them to qualify as CCOs. Blue carbon projects potentially align strongly with the CCO concept, however, methods for formal offset crediting are mostly lacking, as is the regulatory basis for owning any credits that might be generated.

Catchment carbon offset case study - Gellibrand River catchment

Six expressions of interest for the case study were received from five different applicants. A project from a consortium comprising Wannon Water, Corangamite CMA, Glenelg Hopkins CMA and the Centre for eResearch and Digital Innovation (CeRDI) was selected to be the CCOT case study.

This case study was selected because it was designed to improve water quality in the catchment above Wannon Water's Otway South water offtake on the Gellibrand River. Wannon Water's two water offtakes in the catchment are the main sources of drinking water for Warrnambool and surrounding areas. The case study was also designed to improve river health of a key Corangamite catchment waterway, provide certified carbon offsets to satisfy Wannon Water's expected annual requirements, build climate resilience in these landscapes and generate other environmental and social benefits.

The case study considered three main vegetation configurations (Figure 1):

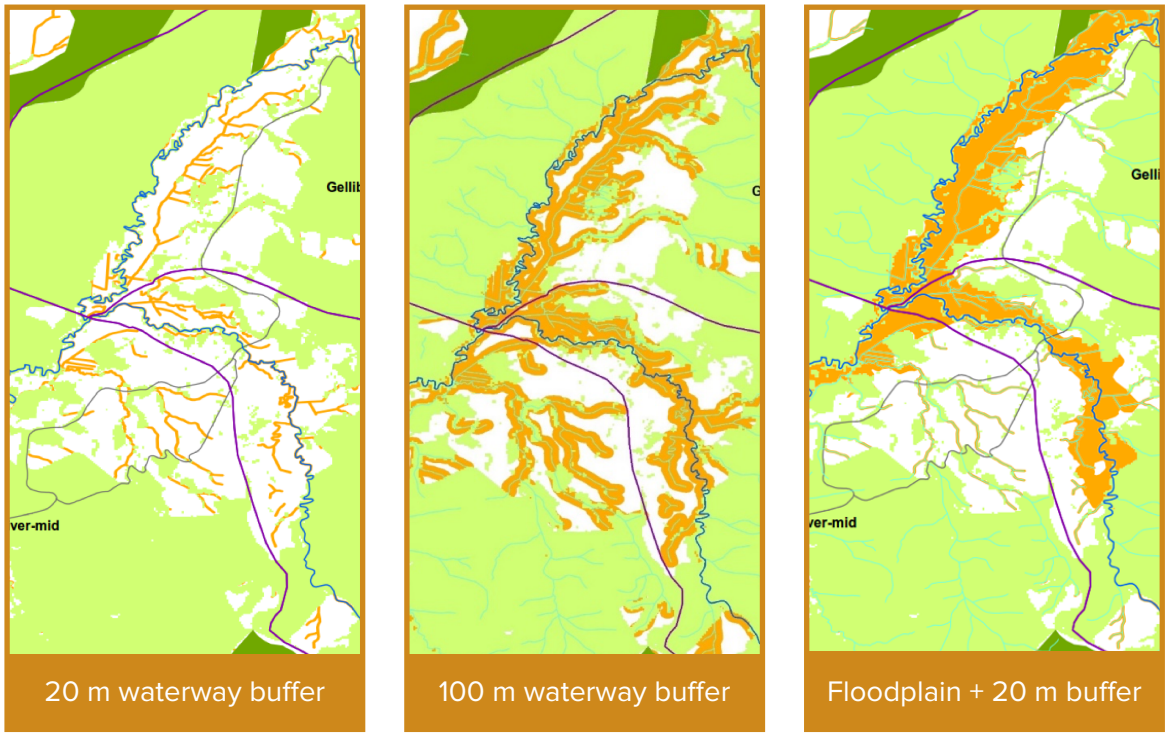
- **20 m waterway buffer:** 20 m revegetated buffer both sides of all defined waterways within the case study catchment . This represents what is considered to be the minimum width of revegetated buffer to materially improve water quality in the main waterways and catchment.
- **100 m waterway buffer:** 100 m revegetated buffer both sides of all defined waterways within the case study catchment. This represents what is assumed to be the plausible upper limit of revegetation in the catchment.
- **Floodplain + 20 m buffer:** 20 m revegetated buffer both sides of all defined waterways, with further areas of revegetation occupying all of the floodplain for a 1% annual exceedance probability (AEP) flood event (or 100 y average recurrence interval flood). In each configuration, the 20 m buffer either side of the waterway was to be revegetated with locally indigenous species of trees and shrubs.

In the 100 m waterway buffer and floodplain+20 m buffer configurations, the plantings outside the 20 m riparian buffer were either environmental plantings (EP) or farm forestry (FF) plantings (assumed to be Eucalyptus globulus). According to the design, EP would remain unharvested while FF plantings were assumed to be harvested for pulpwood on a 15-year rotation and then replanted.

In evaluating the potential outcomes of the CCO project, the case study considered two alternatives:

1. **Base case**: a "do nothing" option in which no new action would be taken to manage source water quality upstream of the Otway South offtake or to improve river health. Existing water treatment infrastructure would be used to satisfy health-based water quality targets. While this is a "base case" for evaluation purposes, because of the water quality risks, it is unlikely to be a realistic option for Wannon Water.
2. **Engineered water quality treatment:** in this option, rather than treat the catchment's water source, ultra-violet (UV) treatment would be introduced at each of the five plants treating water from the Gellibrand River. This would allow Wannon Water's drinking water supplies to meet evolving health-based water quality targets and to treat growing levels of Cryptosporidium and Giardia in the source water – without treating the catchment.

Figure 1: Representations of the case study's main revegetation configurations



The Gellibrand River catchment upstream of the Otway South offtake, near the junction of Kennedy's Creek and the Gellibrand River.

Note: *Brown lines and areas mark the extent of revegetation under each of the configurations. The location of the waterway is shown for the 100 m waterway buffer and floodplain + 20 m buffer configurations. The illustration shows the Gellibrand River floodplain at the junction between the Gellibrand and Carlisle Rivers and does not differentiate between environmental and farm forestry plantings in the 100 m and floodplain + 20 buffer configurations.*

Case study findings

The case study results and its conclusions are documented in detail in a separate report. A summary of the main findings are:

- At least in the Gellibrand catchment, a CCO project could provide a cost-effective option to generate certifiable carbon offsets to help Wannon Water meet its emissions reduction targets. It could do so while improving catchment water quality and providing other complementary environmental and social benefits.
- The process and tools used in designing and evaluating the case study project could be applied to potential CCO projects in other settings and at different scales.
- Configuration of the CCO as a 20 m wide waterway buffer was the most cost-effective option to provide the required carbon offsets and achieve the project's other design objectives. In other settings, different designs may be more appropriate and a catchment carbon offset project may be more or less cost-effective.
- In some settings, the inclusion of FF plantings could significantly improve the financial performance of a large CCO project. If appropriately integrated with EP in CCO design, the overall project could provide certified offsets and a variety of environmental and social benefits.
- With some project designs, it would be possible to generate significant non-certifiable abatement that would contribute towards the achieving the State's net zero emissions target. In this case study the flexible offsets would mainly be achieved through avoidance of agricultural emissions rather than a flexible model of CCO planting.
- Collaboration was the key to the successful design and execution of the CCO concept.

Conclusions

The CCOT has created an important legacy that has:

- Established that CCO projects can be an appropriate means of generating carbon offsets, while simultaneously providing various environmental and social benefits.
- Created a vocabulary and conceptual framework for considering multi-benefit carbon offsets.
- Provided a replicable process for designing and evaluating CCO projects, as well as supporting information and tools.

As well as supporting collaborative interactions among water sector organisations, the CCOT also highlighted the following additional benefits of the CCO concept:

Water Corporations	• Emissions reductions through carbon offsets compliant with Statement of Obligations. • Improved water quality, water security and Catchment health. • Increased efficiency in establishing carbon offsets through partnerships with CMAs. • Strengthened regional partnerships
Catchment Management Authorities	• New avenue for implementation of the Regional Catchment Strategy. • New investment source in Catchment health. • Riparian protection and enhancement. • Strengthened regional partnerships.
State Government	• Supports the implementation of the Climate Change Act 2017 and the Victorian Climate Change Framework. • Supports the implementation of the Victorian Climate Change Adaptation Plan, Biodiversity Strategy and Water for Victoria. • Strengthened regional partnerships.
Private Landholders	• Investment source for natural capital works on farm. • Improved understanding of carbon market and future opportunities.
Carbon market	• Demonstration of process to understand and communicate genuine multiple outcomes from the carbon market.
Community	• Improved Catchment health leading to: – Protection and enhancement of native flora and fauna, – Increased biodiversity, – Improved recreational opportunities including bushwalking, fishing, canoeing.

Recommendations

While the CCO project case study could move to implementation, it is recommended that further work is done to prove the process and adapt the tools developed during the trial so that they are more generically applicable. This work would include:

- Adaptation of the CCO project evaluation tools - particularly the financial analysis tool and project score card – to make them more generically applicable to CCO projects.
- Undertake several additional collaborative water sector case studies to evaluate the CCO concept for appropriateness and cost-effectiveness for other design requirements and landscape settings. These case studies would be undertaken and reported back to the stakeholder group gathered for the CCOT (and other interested parties).
- If the additional case studies provide further evidence of the appropriateness of the CCO concept, further work could be undertaken with CeRDI to develop and deliver web-based tools and information to support the wider implementation of CCO projects.

Copies of the CCOT evaluation report and the Case Study report can be found at:

www.nrmclimate.vic.gov.au
(under the *Data and Projects* tab)

For more information, or to discuss future opportunities, please contact Kate Brunt at the Goulburn Broken CMA on 0457 832 643.

CORANGAMITE CMA · EAST GIPPSLAND CATCHMENT MANAGEMENT AUTHORITY · Glenelg Hopkins CMA · GOULBURN BROKEN CATCHMENT MANAGEMENT AUTHORITY · mallee catchment management authority · NORTH CENTRAL Catchment Management Authority · NORTH EAST CATCHMENT MANAGEMENT AUTHORITY

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