10 Steps

Reducing the carbon footprint of **Tasmanian dairy**

9

CO_2

Farming carbon – rivers, soils and trees

Supported by:

DairyTas

Dairy Australia

LIC LIVESTOCK IMPROVEMENT

Tree Alliance

Tasmanian Government

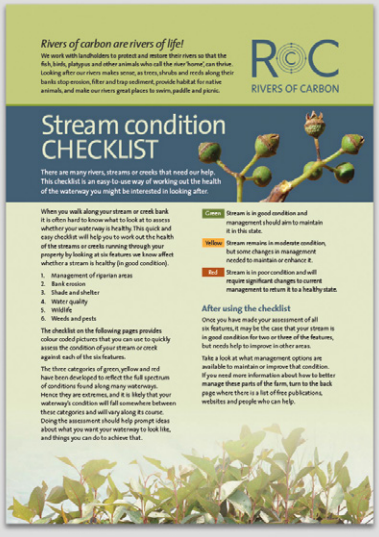
Being a farmer means shaking hands with nature

Cows out of Creeks and protecting riparian areas

Keeping stock out of waterways and having good riparian buffers strips is a win-win for storing carbon, protecting water quality, managing floods, improving biodiversity and having shade and shelter for stock. Modified river systems store less than 2% of the carbon they used to. Natural river systems are complex, "messy" and retain water, nutrients and carbon. Modified river systems are simple, "neat" and designed to keep water moving. These systems are carbon poor.

Image 01
Neat, tidy but carbon poor. Note the eroding banks, lack of native vegetation and cattle accessing the stream contributing to poor water quality. Yass River, NSW. Photo credit: Lori Gould.

Image 02
Carbon rich, mixed layers of native vegetation in a restored site on Yass River, NSW, Photo credit: Siwan Lovett.


Rivers of carbon are rivers of life!

We work with landholders to protect and restore their rivers so that the fish, birds, platypus and other animals who call the river 'home', can thrive. Looking after our rivers makes sense, as trees, shrubs and reeds along their banks stop erosion, filter and trap sediment, provide habitat for native animals, and make our rivers great places to swim, paddle and picnic.

ROC RIVERS OF CARBON

Stream condition CHECKLIST

There are many rivers, streams or creeks that need our help. This checklist is an easy-to-use way of working out the health of the waterway you might be interested in looking after.

When you walk along your stream or creek bank it is often hard to know what to look at to assess whether your waterway is healthy. This quick and easy checklist will help you to work out the health of the streams or creeks running through your property by looking at six features we know affect whether a stream is healthy (in good condition).

1. Management of riparian areas
2. Bank erosion
3. Shade and shelter
4. Water quality
5. Wildlife
6. Weeds and pests

The checklist on the following pages provides colour coded pictures that you can use to quickly assess the condition of your stream or creek against each of the six features.

The three categories of green, yellow and red have been developed to reflect the full spectrum of conditions found along many waterways. Hence they are extremes, and it is likely that your waterway's condition will fall somewhere between these categories and will vary along its course. Doing the assessment should help prompt ideas about what you want your waterway to look like, and things you can do to achieve that.

Green: Stream is in good condition and management should aim to maintain it in this state.

Yellow: Stream remains in moderate condition, but some changes in management needed to maintain or enhance it.

Red: Stream is in poor condition and will require significant changes to current management to return it to a healthy state.

After using the checklist

Once you have made your assessment of all six features, it may be the case that your stream is in good condition for two or three of the features, but needs help to improve in other areas.

Take a look at what management options are available to maintain or improve that condition. If you need more information about how to better manage these parts of the farm, turn to the back page where there is a list of free publications, websites and people who can help.

7 Step River Restoration Process

(from riversofcarbon.org.au)

1. Protect first, restore second
2. Prioritise high recovery sites (best bang for buck)
3. Connect to remnant vegetation
4. Allow and accept that rivers need to move
5. Remove stock, stabilise, revegetate and manage weeds
6. Give nature time to heal and trust in that process
7. Seek support and inspiration from others

The Rivers of Carbon Stream Condition Checklist is a great resource with photos to easily assess river health.

Building soil carbon is good farming

Tasmanian dairy farms generally have good soil carbon levels. Soil carbon means healthy, more productive and resilient soils. Poor farming practices can deplete soil carbon. Soil carbon stored on dairy farms does not offset methane emissions from livestock, because the methane belched by cows has a higher global warming potential than the carbon dioxide absorbed by the pasture as it grows.

Trees on dairy farms

There are multiple benefits to trees on dairy farms:

- Salinity, biodiversity, aesthetics, shade and shelter, animal welfare, managing heat and cold stress
- Income diversification/ financial resilience
  – timber income
  – carbon offset income
- Nutrient sink areas in catchments
- Capital appreciation (typically 20% tree coverage = price premium)

Carbon offsets with trees FAQ

Is it possible to 100% offset my dairy farm emissions with trees?

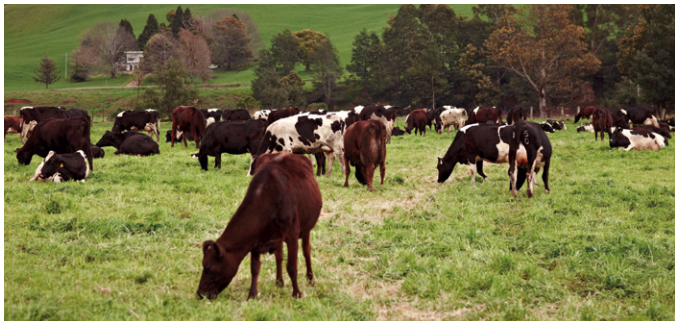
- In short, no. While below data shows it is probably not realistic to 100% offset dairy farm emissions with trees, there are many good reasons for protecting existing vegetation and also planting more trees.
- A realistic target for all farms is to offset minimum 10% of methane emissions with trees. In practice, this might look like shelterbelts in most paddocks, riparian areas with good buffers and remnant bush areas on support blocks, off the milking platform. It might also include a tree-lined driveway and a beautiful garden around the house and sheds.

Can I buy an existing forestry block to offset my dairy farm emissions?

- It may be possible to find an option in the voluntary market if you have extremely good data, but you can't claim any forestry carbon offsets against the dairy farm under the legislated Emissions Reduction Fund.
- The Emissions Reduction Fund is Australia's only legislated mechanism for carbon trading
- The carbon credits for plantations planted post 1990 sit with the Australian Government to help it meet Paris carbon abatement commitments
- This is particularly relevant to large corporate farms who looking to market themselves as "carbon neutral by 2030"

How much carbon is sequestered by Tas forest types? How many hectares of trees to plant to be "carbon neutral"?

- Farmers need to seek specific advice for their own situation. Some rough "rules of thumb" are provided below. Private Forests Tasmania Tree Alliance can provide more information **treealliance.com.au**
- Options are shown for voluntary offsets, Emissions Reduction Fund eligible projects with 25 year maintenance obligation, Emissions Reduction Fund eligible projects with 100 year maintenance obligation
- Large areas of forest operations are needed to fully offset dairy emissions. Dairy farmers need to ask "Do I have the necessary forestry knowledge/ skills? Do I need forestry expertise?"



Approximately 65% of emissions from a dairy farm are methane. For Tasmanian farms, this is roughly 3 t CO_2e/cow/year. Exact numbers depend on breeding, feed quality, maintenance requirements, reproductive efficiency and many other factors. Below figures are enteric methane from the cows alone. Improving energy and fuel efficiency, nitrogen fertiliser use and effluent management are among other strategies to reduce emissions for the dairy farm system.

Offsetting the methane emissions from 100 cows with trees

Forest type	Annual carbon sequestration - based on growth, voluntary offset, not recognised by Emissions Reduction Fund (t CO_2e per ha)	Approximate area needed for voluntary offset	Annual carbon sequestration -based on carbon trading models with a 25 year maintenance obligation (t CO_2e per ha)	Approximate area need for carbon trading offset with 25 year maintenance obligation	Annual carbon sequestration -based on carbon trading models with a 100 year maintenance obligation (t CO_2e per ha)	Approximate area needed for carbon trading offset with 100 year maintenance obligation
Pine plantation medium productivity, unthinned	26	11 ha	20	15 ha	25	12 ha
Eucalypt regrowth (high rainfall) regenerating, high productivity	17	18 ha	13	23 ha	16	19 ha
Eucalypt regrowth (low rainfall) regenerating. low productivity	8	38 ha	6	50 ha	7	43 ha

Above data is from Balmaan (2021) Generalised GHG Reductions from Tasmanian Forest Activities.
treealliance.com.au/resources

Tasmanian Government

Supported by:

DairyTas | Dairy Australia | LIC Livestock Improvement | Tree Alliance

Contact

DairyTas Office
admin@dairytas.net.au
03 6432 2233

www.dairyaustralia.com.au/dairytas-10steps