



Regenerating Australia



The Mulloon Institute

Who are we?

The Mulloon Institute is a not-for-profit research, education and advocacy organisation that actively demonstrates, monitors and shares innovative approaches to regenerative land management.

We aim to connect environment, farming and society through practical demonstrations at our living laboratory – Mulloon Creek Natural Farms – and beyond.

Our vision

To support the rebuilding of a resilient Australian landscape which produces the water, soil and biodiversity required to produce food and water security for the Australian population in the short and long term.

The Mulloon Institute aims to support the regeneration of 100 agricultural landscapes over the next 10 years. Our current 'catchment scale' project is with landowners from the Mulloon Catchment.

Our people

Our team is led by **Founder** Tony Coote AM, **Patron** Maj Gen Hon Michael Jeffery, AC, AO (Mil), CVO, MC (Retd), **Chairman** Hon Gary Nairn AO, **Science Advisory Council Chairman** Professor Stephen Dovers, and **Fundraising Co-ordinator** Rose Nairn.

Plus, our team of natural resource management specialists and scientists, including Peter Andrews OAM, workers, volunteers and supporters.

Issues we are addressing

The Mulloon Institute sees environmental health, agricultural health and human health as connected.

Our 'in the paddock' demonstrations are rebuilding landscape function and resilience by *rehydrating* a landscape that has been dehydrated by 200 years of soil erosion and loss of organic matter.

To address this we are:

- rebuilding soil fertility
- fixing more carbon in the landscape
- restoring lost biodiversity
- improving water quality and availability
- moderating climatic extremes.

This will lead to:

- increased agricultural productivity
- production of high quality nutrient dense food
- improved human health and community cohesion.

Pokorny's Pond – 'living' leaky weir made from rock, earth and vegetation, 2008.



Mulloon Community Landscape Rehydration Project

Background

The Mulloon Community Landscape Rehydration Project (MCLRP) covers 23,000 ha and more than 50 km of creeks. It aims to restore the landscape function and resilience of the entire Mulloon Catchment, which benefits agriculture, the environment and the community.

MCLRP is an action research project involving the landholders in the catchment. Other stakeholders include various levels of government, research, and the broader landcare community around Australia and the world.

Seeds for MCLRP were sown back in 2005 when The Mulloon Institute's Founder Tony Coote AM and his wife Toni invited landscape interpreter and thinker Peter Andrews OAM to his property just east of Canberra. That first meeting sparked a process that went on to transform Tony's property – Mulloon Creek Natural Farms – and the creek that runs through it.

Landscaping works begun in 2006 and included fencing a 3km section of deeply eroded creek, constructing a series of erosion control structures (living leaky weirs), and planting many thousands of trees, shrubs, reeds and rushes. The objective was to slow the creek's flow, raise its water level, de-energise and spread flood waters, and reinvigorate the floodplain. To measure the project's effect on the hydrology of the system, stream gauges were installed above and below the demonstration area, and twelve piezometers were set up throughout the floodplain.

Ten years on and much has changed. The creek is now a healthy, vibrant ecosystem, filtering water through its extensive reed beds, capturing flood sediments, recycling nutrients and providing complex habitat for birds, mammals, reptiles, frogs, fish and invertebrates. And the floodplain through which the creek flows is now 60% more productive than it was in 2006.

In fact, flows from the project site (which falls within Sydney's drinking water catchment) have also improved, benefiting downstream water users.

Today

So successful was the original demonstration that landowners all along Mulloon Creek have now come together to participate in a major extension of the project. Enter, the Mulloon Community Landscape Rehydration Project.

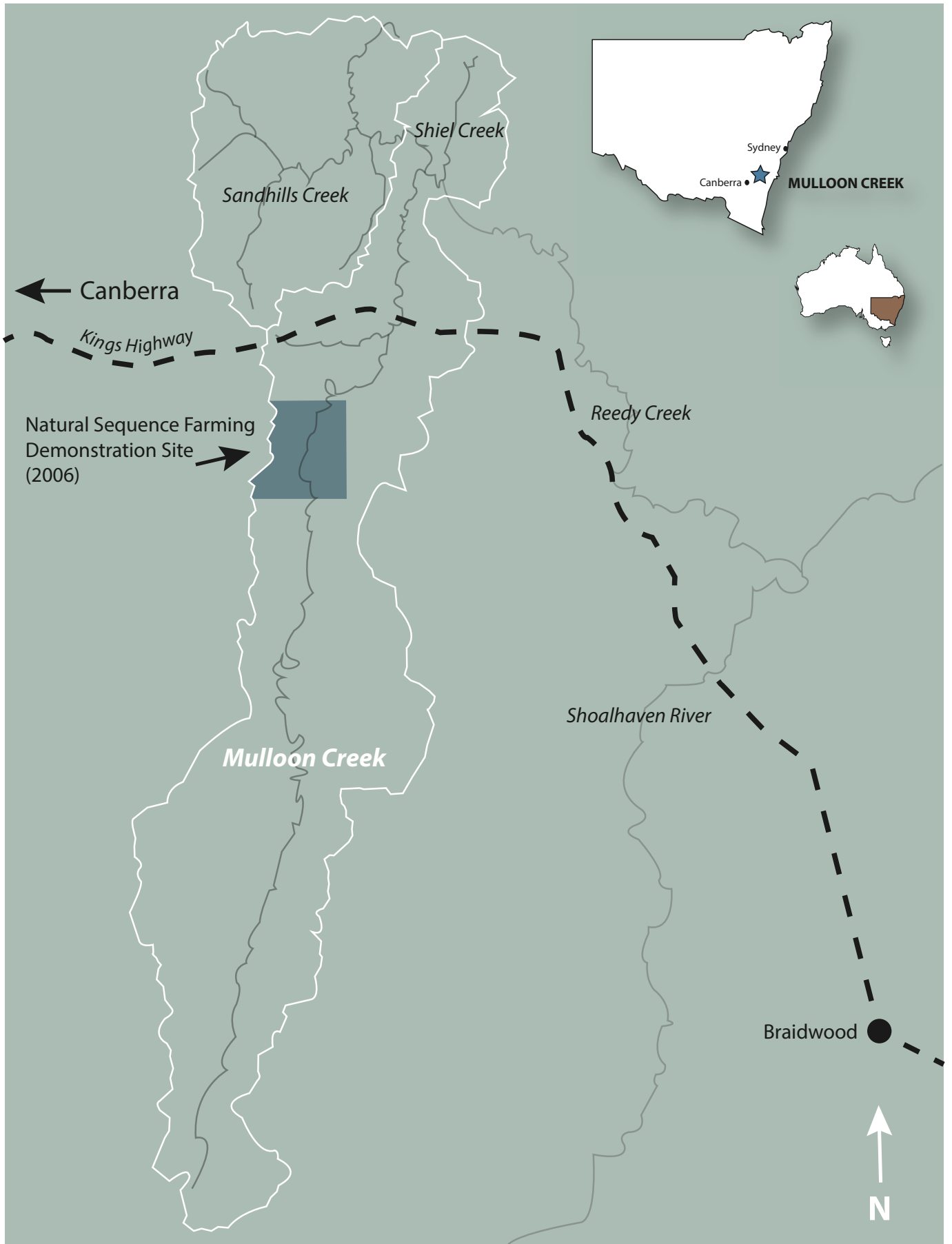
Engaging our local community

While many scientific, social, policy and capacity issues can arise when undertaking such a large scale project, The Mulloon Institute has adopted a 'Bringing the Community Along' strategy. This involves identifying the key interest groups and engaging with them throughout the project.

Communities and school groups from all around the country are participating in field days, study tours, workshops and working bees, and sharing their learnings with their own communities back home.

Engaging the international community

Rothamsted Research in the UK is engaged in research, monitoring and student projects, and the United Nations Sustainable Development Solutions Network has chosen our work as one of only five projects globally to help in the development of guidelines for sustainable, profitable and productive farming.



Mulloon Community Landscape Rehydration Project



The
Mulloon
Institute

Scale:
1:160,000

5,000 2,500 0 5,000 metres

Triple Ponds – Series of three log and rock structures.
Immediately after construction, 2006 (top),
Structures completely hidden by vegetation, 2013 (bottom).





Banking on water

Prior to European settlement, Australian creeks and rivers were 'bank full' with water even in times of drought (Figure 1). Their floodplains were fully hydrated with this 'banked' water, enabling the natural system to flourish even when dry times struck.

Today, most of Australia's creeks and rivers are deeply incised (Figure 2). The 'bank' is dry, droughts bite harder and faster, and when it does rain the floods rip through causing further erosion and major infrastructure damage.

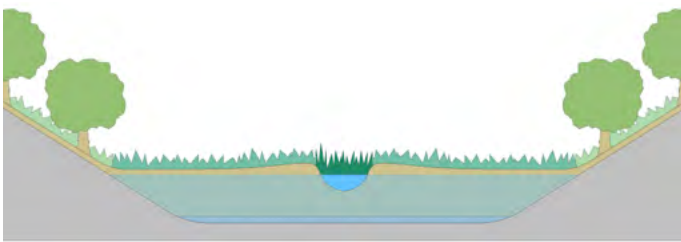


Figure 1 – Prior to European settlement.

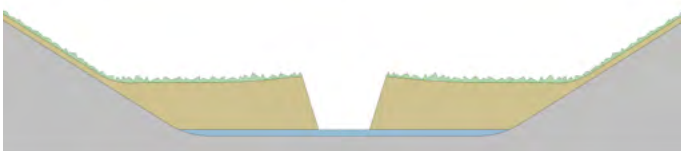


Figure 2 – Since European settlement.

Leaky weirs

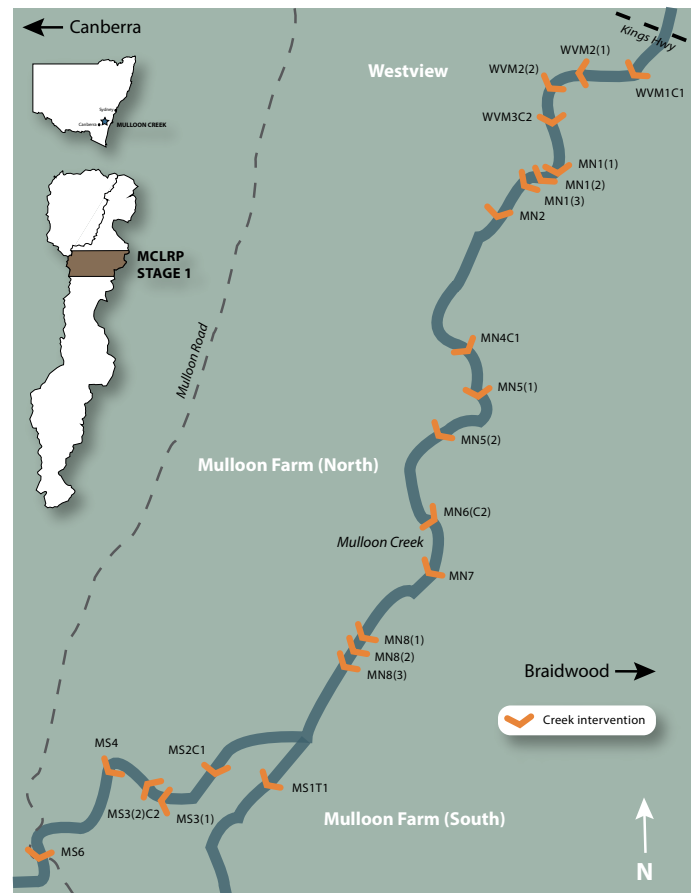
A major component of the Mulloon Community Landscape Rehydration Project is the construction of over 100 'living' leaky weirs within Mulloon Creek and its tributaries.

Leaky weirs are soft engineered 'natural' eco-structures designed to raise the water level of the creek, rehydrate the floodplain and rebuild vital aquatic and riparian habitat. Leaky weirs trigger the natural regeneration of the landscape, and become part of the living, growing system.

Undulating country & upslopes

But it is not just about the creeks and rivers. Rebuilding landscape function actually starts at the top of the hill. From here the whole valley system is fed.

Contours, perched wetlands and complex vegetation structures recharge the system. Sunlight and gravity provide the energy. Water, nutrients and biology dissipate and convey the energy, reinvigorating the whole valley – restoring ecosystem and agricultural health.



Leaky weirs & interventions along 3 kilometres of Mulloon Creek



Scale:
1:7,000

400 200 0 400 metres

Previous page: **Peter's Pond** – imported rock structure. Excavation work, 2006 (top), Completed rock structure in full flow, 2014 (middle). **Stuart Andrews** from Tarwyn Park Training instructing how to plan and build a contour, 2017 (bottom).

Benchmarking & monitoring

MCLRP is a triple bottom line action research project, measuring biophysical, economic and social outcomes.

With many unknowns associated with landscape scale regeneration, we have established several comprehensive scientific benchmarks against which the project can be monitored in the long term.

Benchmarks established:

- water quality, stream flow and groundwater
- biodiversity
- climate
- landscape function
- soil fertility and carbon levels
- primary productivity
- community perceptions and motivation.

capacity building

Farmers from within the Mulloon catchment and beyond are participating in a range of training programs to help them:

- read indicators of landscape health, function and resilience
- better manage their stock and pastures
- set up similar projects in their own areas.

These capacity building activities will support the effort of each landholder in contributing to the goals of the MCLRP.

At the end of the day, its the management decisions of each individual that contributes to the function and fertility of the catchment as a whole.

Landscape Rehydration Field Day 2015



On-ground actions

- Building living streambed structures (leaky weirs) within Mulloon Creek to address bed and bank erosion, recreate complex pond and wetland habitat, and re-establish the functional connection between the creek and its floodplain.
- Fencing and revegetating sensitive areas, including creeks and gullies.
- Addressing soil erosion with a variety of physical interventions.
- Building mulched contours that simulate perched wetlands to spread water and fertility across the landscape.

Education

Participants from around Australia are invited to take part in practical workshops conducted at Mulloon Creek, and provided in partnership with Tarwyn Park Training over four days.

Participants learn how to:

- read the landscape
- gain maximum benefit from their property's natural resources (water, soil, plants, animals, sunlight and gravity)
- locate, design and build landscape structures such as leaky weirs and mulch contours
- lower farm costs and increase profits
- redesign their property with improved confidence in making landscape function improvements.

The Mulloon Institute is also creating a 'How To' guide to compliment this training and to illustrate the scientific fundamentals underpinning landscape rehydration. The guide will take participants through a step-by-step process for undertaking paddock scale and landscape scale rehydration projects.

Outreach

The Mulloon Institute recognises that communities well beyond Mulloon Creek are interested in the ideas of landscape rehydration and regeneration.

We are committed to sharing our knowledge far and wide and to supporting communities wishing to do similar things.

To do this we regularly conduct seminars, farm walks and workshops with Landcare communities by invitation.

We also instruct landholders on planning and carrying out projects on their own farms, at both paddock and catchment scale.

Long-term Sustainable Fund

We are building an endowment, in perpetuity, to support our work to fix the Australian landscape. Founder Tony Coote AM has contributed substantially through land, in-kind donations and cash. We look to match that generosity with new donations.

Weather stations in the Mulloon Catchment



Donating to The Mulloon Institute

Registered charity

The Mulloon Institute is a Registered Charity with Deductible Gift Recipient status. We have a suitably experienced and qualified Board, Advisory Council and Science Advisory Council in place as part of our proper governance structure.

Your donation will contribute to our vision of rebuilding a resilient Australian landscape. In a very tangible way, donating to us will help us to fully implement the Mulloon Community Landscape Rehydration Project and help sustain vital landscape repair into the future.

- **Creek rehabilitation works**

Adopt a creek structure or series of structures and have it named after you or your organisation. Watch how it grows and evolves, via modern imaging technology or by visiting in person.

- **Scientific monitoring**

Instruments such as groundwater piezometers and stream gauges will maintain real-time data on water quality, stream flow and groundwater levels throughout Mulloon Creek and its floodplains. The data will be available online so you can keep an eye on how the creek flow changes as the project progresses.

- **Education**

We regularly host students from schools and universities wanting to learn about landscape regeneration. We are currently developing learning materials that align our vision with the curriculum goals of the Australian education system. By supporting us to develop these learning materials, you'll be helping contribute to the learning outcomes of tomorrow's leaders.

Pokorny's Pond – 'Living' leaky weir made from rock, earth and vegetation – 2006 (inset) and 2008 (main).



Thanks to our current supporters



The Mulloon Institute
3585 Kings Highway
Bungendore NSW 2621
AUSTRALIA

Contact:

Hon Gary Nairn AO (Chairman)
garynairn@themullooninstitute.org
0419 420 108

 www.themullooninstitute.org

 TheMulloonInstitute

 mulloonnstitute

