GOULBURN BROKEN
CATCHMENT MANAGEMENT AUTHORITY

# FROM THE GROUND UP

Integrating agricultural and environmental practices to improve farm production and biodiversity

## ABOUT THE PROJECT

The *From the Ground Up* project will work with farmers, industry and community groups to improve farm soil health, native vegetation and biodiversity to boost the region's agricultural productivity and profitability and the natural resource base on which it depends.

The project will deliver practical soil and farm management information. This will be done through activities ranging from demonstration sites showcasing new and innovative farm practices for large-scale primary producers to handy tips and advice on farm planning, water planning, biodiversity conservation, soil improvement, and animal and pest plant and animal management for new landholders.

Topics have been identified by regional agricultural communities and industries, providing opportunities to address local issues and priorities that also contribute to broader regional and national environmental, economic and social outcomes.

The project is funded for one year (2018-19) through the Australian Government's National Landcare Program. It builds on the previous project Beyond SoilCare that engaged more than 8,000 farmers, industry staff, small landholders and students who participated in 325 activities over three years, resulting in over 50,000ha of improved land-management practices.

*This project is supported by the Goulburn Broken CMA through funding by the Australian Government's National Landcare Program.*

Australian Government | National Landcare Program

# PROJECT PRIORITIES

From the Ground Up will deliver against:

**Three primary land health priorities**

- hillslope erosion
- soil acidification
- soil carbon

**Two secondary priorities**

- native vegetation and biodiversity on-farm
- climate change adaptation

## HILLSLOPE EROSION

Hillslope erosion refers to the loss of soil and soil nutrients through movement of surface water down a slope. Forms of hillslope erosion include gully, sheet, rill and tunnel erosion. The loss of soil through hillslope erosion threatens water quality and the long-term viability of agricultural businesses if untreated due to the loss of top soil and subsequent soil horizons when severe.

Hillslope erosion is a significant issue in the mid to upper agricultural landscapes of the Goulburn Broken Catchment. In general, areas of high risk for hillslope erosion (and thus priority) are found on the south-eastern slopes of the Great Dividing Range (e.g. Strathbogie, Warby and Tallarook Ranges).

***Photo:*** *Field day participants discussing management options for gully erosion sites.*

## SOIL ACIDIFICATION

Soil acidification is the decrease of soil pH over time. Soil acidification occurs naturally in the environment, especially in high rainfall areas where soil nutrients are more readily leached through the soil profile. It is accelerated by agricultural production, for example agricultural product removal (crops, animal products, hay etc.). Soil acidity impacts nutrient availability (causing nutrient deficiencies and toxicity), soil biological activity and ultimately plant growth and survival.

Chemical soil testing by the Goulburn Broken CMA shows soil acidity risk is generally high across the Catchment, with the average 2012-13 Catchment rating of poor (pH (CaCl2) 4.7, n 744). Hotspots (very high rating and high risk) exist in the upper and mid-slopes of the Catchment.

***Photo:*** *A capital application of lime has been applied to raise the soil pH of this pasture paddock.*

## SOIL CARBON

Organic matter makes up a small proportion of a soil's mass but has a critical role in the physical, chemical and biological function of agricultural soils. Carbon is a measurable component of soil organic matter. Soil organic carbon is critical to soil health, as it contributes to the physical, chemical and biological function of agricultural soils. It typically makes up around 1-5% of the soils mass. Higher soil organic carbon levels have a positive effect on soil moisture retention and availability, nutrient cycling and retention, soil structure (aggregate stability and porosity), greenhouse gas emissions, soil biodiversity and soil buffering against weather extremes and physical/chemical changes.

Soil organic carbon levels are low to moderate across the agricultural landscapes of the Goulburn Broken Catchment with an average soil organic carbon level of 2.7% (n 744), with levels highly dependent on land use. Consequently, the potential to capture additional soil organic carbon is high in the northern plains where cropping is the dominant land use, and medium in the upper slopes of the Catchment.

***Photo:*** *A demonstration trial investigating the impacts of multi-species cover cropping (right) on soil health compared to conventional hay crops (left) will be continued as part of the project.*

## NATIVE VEGETATION AND BIODIVERSITY ON-FARM

Native vegetation provides habitat for native species, including threatened species, and broader biodiversity benefits within an ecosystem and across the landscape. On farms, native vegetation forms part of the productive landscapes, but can still play an important role in helping to conserve biodiversity. There is evidence that, at the landscape scale, 10-30% native vegetation cover can conserve most bird species.

In the Goulburn Broken Catchment, as elsewhere, forests, woodlands and grasslands have been heavily cleared and fragmented. Remnants are found on roadsides and watercourses, as scattered trees in paddocks, and as remnants of varying size and quality on private and public land. Vegetation condition continues to be poor for much of the Catchment's agricultural landscapes.

***Photo:*** *A corridor of native vegetation has been established to provide shade and shelter for livestock, and habitat and connectivity for native plants and animals.*

## CLIMATE CHANGE ADAPTATION

Climate change adaptation refers to the ways in which farmers can adapt their planning and management to better cope with the challenges imposed by a changing climate. Climate change combines with and influences non-climate pressures (e.g. market drivers), adding further complexity to land management planning and increasing the need for a flexible, interactive approach.

Currently there is a plethora of information about the potential impacts of climate change on agricultural industries and natural resources at the national or regional scale. The challenge now is to use this information at the farm-scale to support decision making.

***Photo:*** *The Gecko Clan Landcare Network established weather stations at each of their trial sites to understand the impacts of different land management practices and soil water availability.*

# PARTNERSHIP APPROACH

The project will deliver 18 sub-projects in partnership with 20 industry and community groups. Projects include:

## HILLSLOPE EROSION

**Goal: 54 farmers engaged, 10,009ha of improved practice.**

1. Hillslope erosion management workshop, Goulburn Broken CMA
2. Resilient sustainable agriculture enhancing farmer' skills and knowledge, Gecko Clan Landcare Network and Goulburn Broken CMA
3. Small acreage erosion control, Up2Us Landcare Alliance and Goulburn Broken CMA

## SOIL ACIDITY

**Goal: 155 farmers engaged, 26,300ha of improved practice.**

4. Soil acidity and lime decision-making workshops, Goulburn Broken CMA and Agriculture Victoria
5. Understanding soil acidity in cropping enterprises of the productive plains, Riverine Plains Incorporated and Goulburn Broken CMA
6. Investigating the impact of goat manure compost on soil acidity, Up2Us Landcare Alliance and Goulburn Broken CMA
7. Management of sub-surface irrigation system impacts on soil acidity, Australian Processing Tomato Research Council, Maize Industry Association, Goulburn Broken CMA and Agriculture Victoria

## SOIL CARBON

**Goal: 155 farmers engaged, 19,450ha of improved practice.**

8. Regenerative grazing management course, Goulburn Broken CMA and STIPA Native Grasses Association
9. Regenerative grazing demonstration site, Goulburn Broken CMA
10. Boosting soil carbon in cropping enterprises, Goulburn Broken CMA and Vic No Till Farmers Association
11. Improving the uptake of sustainable farming practices across the Shepparton Irrigation Region, Goulburn Murray Landcare Network and Goulburn Broken CMA
12. Increasing soil carbon to ameliorate compaction in irrigated soils, Irrigated Cropping Council, Goulburn Broken CMA and Agricultural Victoria
13. Service provider soil forum, Agriculture Victoria and Goulburn Broken CMA
14. Increasing soil testing on irrigated dairy farms, Murray Dairy and Goulburn Broken CMA

## NATIVE VEGETATION AND BIODIVERSITY

**Goal: 125 farmers engaged, 18,700ha of improved practice.**

15. Healthy Hectares course, Euroa Arboretum and Goulburn Broken CMA
16. Native grass identification and management workshops, Hughes Creek Catchment Collaborative and Goulburn Broken CMA
17. Increasing biodiversity in orchards to increase pollinators and improve native species selection to prevent spray drift, Fruit Growers Victoria and Goulburn Broken CMA
18. Biodiversity On-farm workshops, Goulburn Broken CMA

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**To find out more or to get involved in the project contact the Goulburn Broken CMA.**
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