

# Corangamite Soil Health Strategy 2006-2012

A guide for investment to protect natural and built assets



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# Abbreviations

Acronym	Description
AROTS	Australian Rare or Threatened Species
ASS	Acid Sulphate Soils
BMP	Best Management Practices
CAP	Coastal Action Plan
CAMS	Catchment Activity Management System
CMA	Catchment Management Authority
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DPI	Department of Primary Industries
DSE	Department of Sustainability and Environment
EMO	Erosion Management Overlay
EPA	Environment Protection Authority
ESP	Exchangeable Sodium Percentage
GRDC	Grains Research & Development Corporation
LRA	Land Resource Assessment
LS	Landcare Strategy
LUIM	Land Use Impact Model
MAT	Management Action Target
NAP	National Action Plan for Salinity and Water Quality
NHT	Natural Heritage Trust
NLP	National Landcare Program
NPV	Net Present Value
NRM	Natural Resource Management
NVP	Native Vegetation Plan
PASS	Potential Acid Sulphate Soils
PIRVic	Primary Industries Research Victoria
RAV	Relative Asset Value
RAP	Rabbit Action Plan
RCIP	Regional Catchment Investment Plan
RCS	Regional Catchment Strategy
RCT	Resource Condition Target
RDS	Research and Development Strategy
RHS	River Health Strategy
RIC	Regional Implementation Committee
RSF	Relative Severity Factor
SALMIC	Sustainable Agriculture Land Management Implementation Committee
SAP	Salinity Action Plan
SFS	Southern Farming Systems
SHS	Soil Health Strategy
VROTS	Victorian Rare or Threatened Species
WAP	Weed Action Plan
WGLA	Working Group on Land Resource Assessment
WQS	Water Quality Strategy
WS	Wetland Strategy

# Executive Summary

**The Corangamite Soil Health Strategy aims to guide investment in a range of actions that will protect and enhance natural and built assets in the Corangamite region from a number of soil-based threats or threatening processes. The strategy identifies specific assets that should be protected or enhanced, the various threats, the asset managers and other stakeholders who have been involved in its development and will potentially be involved in its implementation.**

*The Soil Health Strategy focuses on the development and validation of priorities for investment to protect and enhance important natural and built assets in the Corangamite region. Importantly, these investment priorities are based on careful assessment of the relative value of assets and risks posed by threats.*

The Corangamite region extends over some 1.3 million hectares of south-west Victoria, and includes many high-value and irreplaceable natural resources, including internationally recognised lakes and wetlands. The region is home to a human population of some 400,000; the social and commercial fabric of their lives is as varied as any other part of the country and ranges from extensive and diverse primary industries to important manufacturing and exporting enterprises.

The Corangamite region includes part or all of nine municipalities; the Corangamite Catchment Management Authority (CMA) has delineated 15 landscape zones within its boundaries.

In the development of the strategy, many sectors of the Corangamite community were consulted. In some cases, self-evident needs and priorities for action could be and were identified, funding was arranged and work was initiated well before the finalisation of this document. Great encouragement for the future of the strategy may be taken from these initiatives and the ways they were established since they highlight a strong sense of 'ownership' of the soil health issue by various sectors of the local community.

Services provided by the assets of the region are equally vital for the current and future well-being of the natural environment and the resident human population. The threats to these assets are real. Many are immediate; their effects have been and are currently being felt, seen and measured.

Protection and enhancement of the assets through investment – which must be targeted because the task is so large – is a responsibility that cannot be denied. A critical issue for the strategy has been the development and application of a robust logic for determining the investment priorities.

## Foundations and direction

As a regional document, the strategy links to Victorian and Australian government strategies and fits within the broader framework set by their foundations, logic and direction. The Corangamite Soil Health Strategy aims to dovetail into and (in as many respects as possible), work closely with the wider state and national strategies, gaining more effective natural resource management outcomes all round.

The strategy takes a logical and objective approach to guiding investment based on definition of natural and built 'assets' that are at risk from various soil-based 'threats' – almost all of which arise as a result of disturbance of the natural environment through human activity in urban and rural development, recreational and other activities.

Priorities for investment are identified through several key measures. These include Relative Asset Value, area under threat and the relative severity of the threat. A formula linking these measures provided "Relative Risk Values" for the threatening processes addressed by the strategy in each of the 15 landscape zones in the region. More than 140 "Relative Risk Values" were developed from this process. From these, 20 priorities for investment have been identified, with the highest ranking subjected to field and research-based validation.

### Identifying assets and threats

Primary asset classes are identified: land, water quality, biodiversity, built infrastructure and cultural and heritage. In each primary class (except for 'cultural and heritage'), supporting secondary asset classes are defined.

There are 12 key threats: landslides, water erosion (sheet/rill and gully/tunnel erosion), acid sulphate soils, secondary salinity, waterlogging, soil structure decline, wind erosion, soil nutrient decline, soil acidification, soil contamination, soil organic carbon decline and soil biota decline.

Some of these act locally, virtually in situ with the asset, while others may be seen as 'mobile' in that they have the potential to impact other, off-site assets.

Five of the 12 threats were noted in the 20 highest Relative Risk Values: landslides, sheet/rill erosion, gully/tunnel erosion, secondary salinity and acid sulphate soils. All five impact on public assets and have the potential to impact all primary and secondary asset classes.

Assessment of Relative Risk Values by landscape zone to determine the ranking of the threats against each other, (i.e. the aggregate values across the 15 landscape zones) showed that secondary salinity had the highest aggregate Relative Risk Value, mostly because secondary salinity is relatively widespread and often interacts with large areas of agricultural production and high-value biodiversity areas. It also has the potential to impact on water quality, built infrastructure and cultural heritage sites.

*Landslides* had the second highest aggregate Relative Risk Value in the region and also have the potential to impact on all asset classes. Landslides have the highest Relative Severity Value, because they are capable of severely impacting invaluable and irreplaceable natural assets, destroying buildings and other built infrastructure and taking human life.

*Water erosion*, (sheet/rill and gully/tunnel) has the capacity to impact on all asset classes. These types of soil erosion pose greatest risk to water quality and agricultural production.

*Acid sulphate soils* (ASS) had one of the highest aggregate risk values. These soils were often found in wetlands. Acid sulphate soils have the potential to impact on all asset classes, with potentially catastrophic results.

*Soil structure decline*, *waterlogging*, *nutrient decline* and *soil acidification* had lower Relative Risk Values because they solely impact on agricultural production and not high-value public assets.

*Wind erosion* potentially causes impact on a range of assets. However, the likelihood of wind erosion events is relatively low compared with other threats to soil health in the region and therefore had a lower Relative Risk Value.



### Priorities for investment

'Validated priorities for investment' – the highest Relative Risk Values after field validation provides the key guidance for investment:

Final Rank	Landscape Zone	Threat	Known assets at risk from priority threat
1	Gellibrand	Landslides	Lower Gellibrand River, Johanna River, Stafford Creek and Kennedy Creek. Princetown and Simpson River.
2	Lismore	Secondary Salinity	Lake Martin.
3	Woody Yaloak	Gully & Tunnel Erosion	Mount Misery Creek, Moonlight Creek and Woody Yaloak River. High to very high native vegetation conservation potential, mostly along waterways from Mount Mercer to Pittong. Some rural roads north of the Rokewood-Skipton Road.
4	Woody Yaloak	Sheet & Rill Erosion	
5	Stony Rises	Secondary Salinity	Lake Martin and the upper reaches of Barongarook Creek.
6	Otway Coast	Landslides	Great Ocean Road, Turtons Track and Wild Dog Road. Wild Dog Creek, Barham River and Smythe Creek.
7	Curdies	Landslides	Scotts Creek, Curdies River, Cowley Creek and Port Campbell Creek. Coastal recreational areas.
8	Moorabool	Sheet & Rill Erosion	Eclipse Creek, Tea Tree Creek, Anakie Creek and Deadman Gully. Central Highlands/Barwon Water-managed Proclaimed Water Reservoir.
9	Moorabool	Gully & Tunnel Erosion	
10	Woody Yaloak	Secondary Salinity	Woody Yaloak River, Lake Corangamite.
11	Murdeduke	Secondary Salinity	Native vegetation of very high to high conservation significance potential. Wetlands along Mia Mia Creek, Warrambine Creek north of Wingeel Swamp, and in groups of small wetlands east of Eurack near Hesse Road.
12	Leigh	Gully & Tunnel Erosion	Woodbourne Creek, Lower Williamson Creek, Yarrowee River and Leigh River.
13	Leigh	Sheet & Rill Erosion	
14	Upper Barwon	Landslides	Roads along the flanks of the Otway Ranges. Waterways along the western flanks of the Barwon River Valley, south of Birregurra.
15	Aire	Landslides	Aire River and the west branch of the Ford River.
16	Upper Barwon	Sheet & Rill Erosion	Wormbete Creek, Yan Yan Gurt Creek and Barwon River.
17	Upper Barwon	Gully & Tunnel Erosion	
18	Thompsons	Sheet & Rill Erosion	Thompson Creek and Spring Creek.
19	Bellarine	Acid Sulphate Soils	Point Henry environments.
20	Thompsons	Acid Sulphate Soils	Breamlea Wetlands and Lower Thompson Creek.

Resource condition targets and management action targets have been developed for the strategy to help monitor the effectiveness of implementation. These targets will be improved as further research is completed.

The cost of addressing the priorities in the Corangamite Soil Health Strategy in the next five years of implementation is approximately \$5,500,000. However, this figure may change significantly as new information becomes available.

#### Partnerships and joint action to address the threats

Perhaps most importantly of all, the strategy recognises the pivotal role of partnerships in the effective implementation of the various actions.

A diverse range of public and private sector asset managers and other stakeholders influence soil-management practices, and therefore soil health, in the region. These same individuals and entities also make significant inputs to other aspects of natural resource management. Their involvement in partnership approaches to soil health actions is therefore essential.

As part of its facilitation and communication, the Corangamite CMA has a central role in ensuring that multi-agency or multi-asset manager projects are proposed in common, implemented in collaboration and reported to investors as a whole, thus enabling the achievement of multiple outcomes.

Targeted actions have been developed to address the 20 highest validated priorities for investment. An important task now is the communication of these priorities and the development of partnership-based projects and funding applications.

To guide the development and operation of these partnerships and the entire implementation program, four 'Principles of Implementation' are included in the strategy.

#### Conclusion

There are real, active and latent soil-related threats to the natural and built assets of the Corangamite region. These are identified, linked and ranked via a logical and objective framework in this strategy. Validated priorities for investment are identified with specific action plans, targets and monitoring activities.





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