CORANGAMITE CMA

HEALTHY CATCHMENTS - HEALTHY WATERWAYS

Corangamite Research, Development and Investigation Priorities Document

2008-2009

Acknowledgements

A Steering Committee was formed in April 2007 to guide the development of the RD&I Annual Priorities Document. The committee members are:

Sandra McClelland (Immediate past Chair)	Deakin University
Associate Professor John Sherwood (Chair)	Corangamite Regional Implementation Committee
Sonia Mahony (Executive Officer)	Corangamite CMA
Professor Gerry Quinn	Deakin University
Sonya Love	Melbourne University
Peter Dahlhaus	University of Ballarat
Leigh Dennis	Corangamite CMA
Nick McCristal	Corangamite CMA

The Corangamite CMA would like to thank the members of the steering committee, with special thanks to the members not employed by the Corangamite CMA for their contributions to the development of the Annual Priorities Document.

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1.0 INTRODUCTION

In December 2006, the Corangamite Research, Development and Investigation Strategy 2006-2010 was endorsed by the Corangamite CMA Board. A strategic framework for research, development and investigation in the Corangamite region was a major outcome from the Strategy (see Figure 1). One of the key components of the strategic framework was the development of a Corangamite Annual Research, Development and Investigation Priorities Document. This is the first time that a priorities document for research, development and investigation has been developed for the Corangamite region.

The RD&I Annual Priorities Document was developed from the following:

- Key Research Questions in the Corangamite Research, Development and Investigation Strategy 2006-2010
- Resource Condition Targets in the Corangamite Regional Catchment Strategy (RCS).
- Gaps in knowledge for the implementation of the regional RCS sub-strategies e.g River Health Strategy, Soil Health Strategy, Salinity Action Plan etc..
- Stakeholder feedback from surveys
- Guidance from the Steering Committee
- Consultation with the Corangamite Regional Implementation Committee
- Consultation with the Corangamite CMA Board

1.1 Integrated RD&I Themes

As shown in Figure 1 a core element of the strategic framework for the Strategy are the five integrated RD&I themes. The five themes are based on the spheres of the earth. Everything in the earth's system can be placed into one of four major subsystems the lithosphere, hydrosphere, biosphere and atmosphere. Each of these four spheres can be further divided into sub-spheres. For the purposes of the Strategy a sub-sphere of the biosphere that is focused on human interaction with the earth (i.e. the anthroposphere) is acknowledged as a fifth sphere due to the inherent human influence on natural resource management.

Using the five spheres of the earth to categorise the key RD&I questions was decided upon because people are aware that the spheres are all intrinsically related to each other, and they are not strongly associated with any specific NRM agencies or programs. The Strategy and annual priorities aim to encourage integrated RD&I and not place rigid boundaries around the scope of the RD&I projects that are ultimately delivered.

1.2 Key Research Questions (5 year timeframe)

The Corangamite Research, Development and Investigation Strategy stipulates the key research questions that are a priority for the Corangamite CMA. The key research questions are based on a five year timeframe.

1.3 Priority Project Areas (1 year timeframe)

This document sets out annual priorities as 'Priority Project Areas', which can be linked back to a key research question from the Strategy and will be reviewed each year.

1.4 Rankings

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The Priority Project Areas have been ranked for each sphere. '1' indicates the highest priority for the region per sphere.

1.5 How will the Priority Project Areas be funded?

It is possible that funding for the regional RD&I priorities will come from the following sources:

- RCIP (NHT)
- Cooperative Research Centres
- Rural Industry Research and Development Organisations
- Australian Government Agencies e.g CSIRO
- Australian Research Council (ARC)
- State Government Agencies e.g DPI, Victorian Water Trust, DSE
- Industry e.g Gardiner Foundation, Alcoa, Shell
- Universities

1.6 Provisions from the Corangamite CMA

Letter of support
If you are applying for a research grant to undertake research that will address priorities listed in this document, the Corangamite CMA will happily provide you with a letter of support. Refer to the Expression of Interest form – Appendix 1.

Information

- The Corangamite CMA Knowledge Base is a web based repository that stores reports relevant to the Corangamite region. The Base also has a current research list which anyone can add to. To access the Base go to http://www.aanro.net/ccma/page/search.htm.

- The Wimmera, Glenelg-Hopkins & Corangamite (WGC) Sustainability Research Network is a collaborative, virtual research network for organisations interested in sustainability research in South West Victoria. The website is a portal to announce events, contact researchers, find partners to collaborate on projects and identify new research needs. To access the Network go to www.wgcnetwork.vic.gov.au.

Organise presentations
If you would like to present your research findings to CMA staff or to a broader audience, the Corangamite CMA can assist. Refer to the Expression of Interest form – Appendix 1.

Potential funding opportunities
Limited funding for research may be available from the Corangamite CMA to undertake research (e.g post graduate study) that is addressing priorities listed in this document. Refer to the Expression of Interest form – Appendix 1.

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1.7 Expression of Interest

Please complete an Expression of Interest form (Appendix 1) if you:

- want to inform the Corangamite CMA that you are currently undertaking research that addresses all or part of a Priority Project Area;
- would like to undertake research to address all or part of a Priority Project Area listed in this document;
- need a Letter of Support from the CCMA for a funding application to address all or part a Priority Project Area listed in this document;
- are an investor that would like to notify the CCMA of funding opportunities;
- would like to present your research findings; or
- Other.

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2.0 ANNUAL PRIORITIES: 2008-2009

2.1 Anthroposphere: Social, Cultural and Economic

Scope: The anthroposphere is that part of the environment that is made or modified by humans for use in human activities. The anthroposphere is comprised of all human interactions and includes all social, cultural and economic aspects of human society.

PPA No.	Corangamite CMA Research, Development & Investigation PRIORITY PROJECT AREAS (Annual)	Asset being protected	Priority per sphere
5	Identify knowledge of traditional Aboriginal land management techniques for South Eastern Australia and assess applicability for incorporation into NRM delivery.	Vegetation	1
6	Identifying the triggers to encourage environmental stewardship (including wetlands) in community segments taking into account the change of demographics for landholders in the region.	Surface Waters	1
10	What approaches or mechanisms might be used to facilitate community participation in decisions about trade-offs between different landscape values and functions?	Land use	1
12	Undertake a full community network analysis to understand the strengths of community relationships and areas of influence for nrm.	Whole of Catchment	1
3	What extension approaches are most effective to increase adoption of BMPs for sustainable NRM? How do we know which extension approaches are appropriate for particular issues and contexts?	Land use	5
4	How do we best engage with local government to ensure that land use planning decisions are in line with land capability and suitability?	Land use	5
8	What are the implications for communities of trends in land-use change, particularly in relation to the growth of forestry?	Land use	5
2	Describe the value of ecosystem services provided by surface water and develop a suitable metric/communication program.	Surface Waters	8
7	Review of international approaches to conservation incentive mechanisms as well as other suitable market instruments which may be applicable to NRM delivery in the Corangamite region.	Vegetation	8
14	Undertake an analysis of urban community's impact on the environment at a household level.	Whole of Catchment	8
13	Describe the community knowledge of the linkages between land, water and catchment health.	Whole of Catchment	11
11	What values do Corangamite communities place on water resources?	Surface Waters	12
1	Define duty of care and improve extension of knowledge for adoption of good environmental stewardship.	Land use	13
9	What is the potential value to be gained in the market through the production of a sustainable certified product?	Land use	13

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2.2 Atmosphere: Air Quality and Climate Change

Scope: The atmosphere contains all the air in the earth's system. It extends from less than 1 m below the planet's surface to more than 10,000 km above the planet's surface. The upper portion of the atmosphere protects the organisms of the biosphere from the sun's ultraviolet radiation. As air in the lower atmosphere is heated or cooled, it moves around the planet creating climate. The result can be as simple as a breeze or as complex as a tornado.

PPA No.	Corangamite CMA Research, Development & Investigation PRIORITY PROJECT AREAS (Annual)	Asset being protected	Priority per sphere
15	How will climate change scenarios impact on floods, fire, erosion and salinity?	Infrastructure	**1 Fire highest priority**
16	What impact will predicted sea level rise and storm surges have on coastal assets?	Infrastructure	**2**
17	What would be the response of various wetland types to climate change scenarios?	Surface Waters	**3**

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2.3 Biosphere: Biodiversity and Ecology

Scope: The biosphere contains all living things which includes all of the plants, animals and micro-organisms on earth. Within the biosphere, living things form ecological communities based on the physical surroundings of an area.

PPA No.	Corangamite CMA Research, Development & Investigation PRIORITY PROJECT AREAS (Annual)	Asset being protected	Priority per sphere
31	Provide a GIS layer for threatened fauna species critical habitat areas in the Corangamite region.	Flora and vegetation	1
24	GIS Layer/Model/Tool for correlation of threatened spp to wetlands plus threat ID.	Surface Waters	2
19	Describe the value of ecosystem services provided by biodiversity and develop a suitable metric/communication program.	Vegetation	3
21	Develop a model/program to assess the current viability and trend of threatened spp in Corangamite.	Fauna	4
18	Develop recovery plans and implement actions for threatened native fish that use estuaries.	Coasts, estuaries and marine	5
25	Identify the key threatening processes to threatened fish species..	Coasts, estuaries and marine	5
26	Investigate and prescribe a suite of current recommended practices for threatened EVC protection, enhancement and restoration in the Corangamite region.	Vegetation	6
30	Which EVC's and threatened species are most susceptible to impacts from Pest, Plants & Animals?	Land use	7
27	What conditions are required to sustain Migratory bird populations in Ramsar Lakes?	Surface Waters	8
22	Develop appropriate indicators/parameters/tools for ecological impact modelling/monitoring for flora and fauna and to adequately assess regional ecological condition and trends.	Fauna	9
23	Develop appropriate indicators, tools and monitoring designs to adequately assess trends in coastal marine ecological condition.	Coasts, estuaries and marine	10

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28	What is the current extent and the trends in extent for high priority Pest Plants & Animals (ecological impact)?	Flora	**11**
20	Determine the impact of catchment health (general) as well as specific land use practices on marine ecology.	Coasts, estuaries and marine	**12**
29	What is the potential impact +- to threatened spp from farm forestry in Corangamite?	Land use	**13**

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2.4 Hydrosphere: Water and Aquatic Systems

Scope: The hydrosphere contains all the solid, liquid, and gaseous water of the planet. It ranges from 10 to 20 kilometres in thickness. The hydrosphere extends from earth's surface downward several kilometres into the lithosphere and upward about 12 kilometres into the atmosphere.

It is important to note that the scope of this theme is not limited to water quality in rivers, oceans and lakes. The theme also covers the areas of interaction between the hydrosphere and the lithosphere (e.g. floodplains) and many aspects associated with aquatic systems (e.g. environmental flows).

Note: the term aquatic systems has been used in this section of the document to refer to any of the following: coastal waters, estuaries, floodplains, groundwater, marine waters, the riparian zones, rivers and wetlands.

PPA No.	Corangamite CMA Research, Development & Investigation PRIORITY PROJECT AREAS (Annual)	Asset being protected	Priority per sphere
37	What is the flow exchange between ground and surface water systems in the region and what are the sustainable yields for groundwater extraction outside proclaimed areas?	Water use	1
39	What are the key indicators of condition for estuaries in the region?	Surface Waters	2
35	Predicted groundwater extraction levels for different climate scenarios.	Water use	3
40	What are the BMPs for wetland management?	Surface Waters	4
34	Modelling the major sediment, nutrient, pollutant and contaminant sources and transport mechanisms for High Value Waterways.	Surface Waters	5
33	How are land use practices contributing to salinity levels and nutrient loads in waterways?	Surface Waters	6
38	What proportion of surface water runoff is captured in catchment dams by basin? Trends?	Water use	7
36	What are the environmental flow requirements for Priority estuaries?	Water use	8
32	Develop BMP paddocks to prevent nutrients entering waterways. BMP for mitigation i.e. buffers etc..	Surface Waters	9
41	Identifying the effects of wetland reinstatement.	Surface Waters	10

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2.5 Lithosphere: Land and Landscapes

Scope: The lithosphere is all of the solid land of the planet's crust (surface), the semi-solid land underneath the crust, and the liquid land near the centre of the planet. For the purpose of this strategy, however, the focus is the outermost layers of the lithosphere which consist of loose soil, sand, clay and rock.

It is important to note that this theme is not limited to examining soil quality across the landscape. The theme also covers the areas of interaction between the lithosphere, the hydrosphere and the atmosphere (e.g. soil erosion) and many landscape scale issues (e.g. salinity).

PPA No.	Corangamite CMA Research, Development & Investigation PRIORITY PROJECT AREAS (Annual)	Asset being protected	Priority per sphere
42	What is the risk to key assets (including infrastructure) from erosion (including landslides) in the Corangamite region?	Land use	1
47	What are the salinity process models in the high priority salinity target areas?	Land use	1
44	Develop appropriate models to determine land capability and suitability.	Land use	3
45	What are the appropriate indicators for soil health in the region?	Land use	3
43	What are the best practices to maintain soil and land health for land use and land types in the Corangamite region?	Land use	3
46	What is the actual risk to assets (in terms of likelihood and consequence) from secondary salinity in the target areas?	Land use	6
48	What are the trends in soil condition?	Land use	6

3.0 Further information

For further information please contact:

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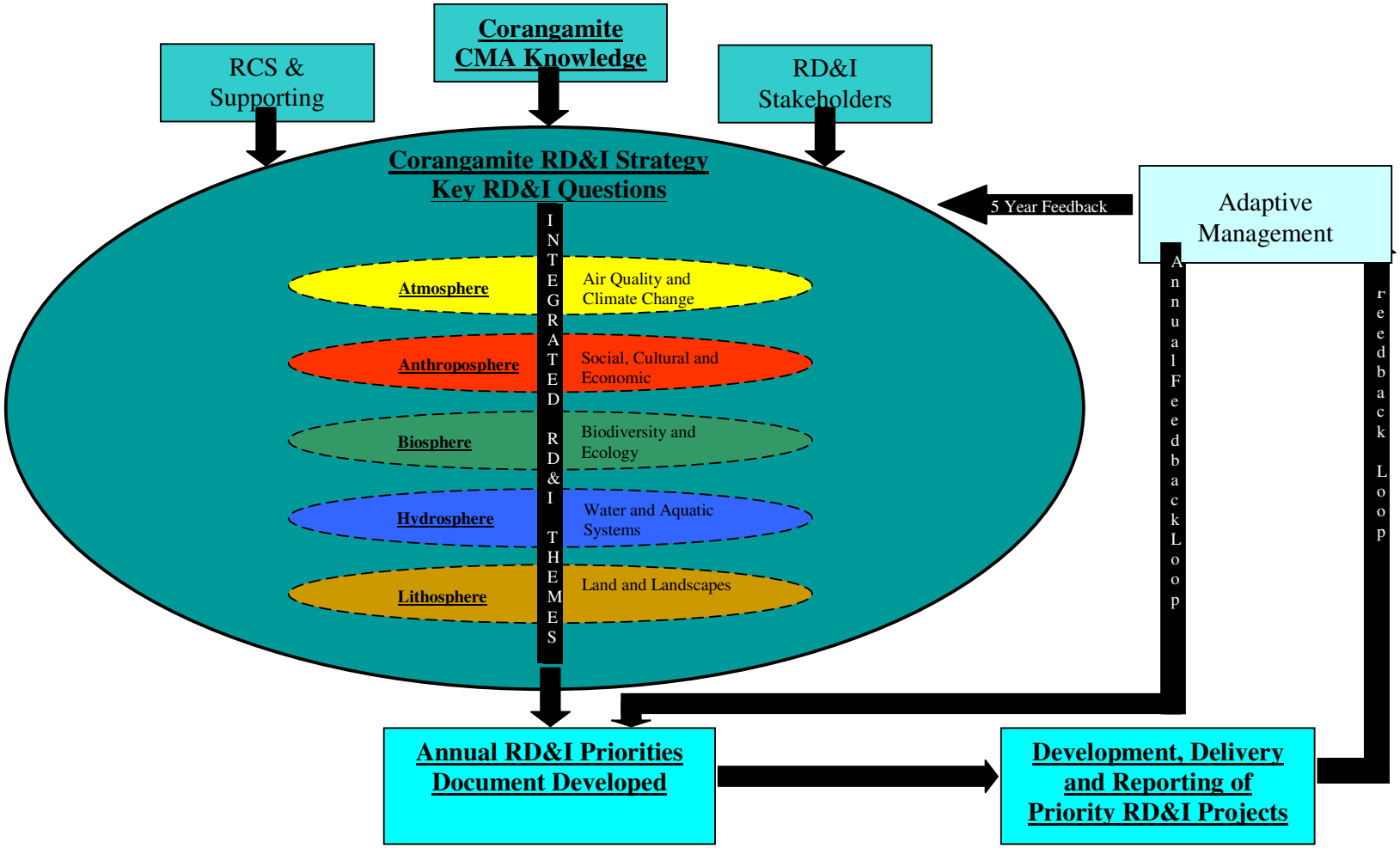
Figure 1: Corangamite RD&I Strategic Framework



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