



Conservation of Freshwater Ecosystem Values (CFEV) Project

Technical Report Executive Summary

'A strategic framework for statewide management and conservation of Tasmania's freshwater ecosystem values'



Conservation of Freshwater Ecosystems Values Project

Water Assessment Branch

Water Resources Division

Department of Primary Industries and Water

November 2008



action
Salinity & Water
AUSTRALIA

Published by:

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This report accompanies the Conservation of Freshwater Ecosystems Values database and outlines the methodology for conducting a statewide audit and conservation evaluation of Tasmania's freshwater-dependent ecosystem values, including the adopted assessment framework and data limitations.

Financial support contributed by the Tasmanian Government via the Department of Primary Industries and Water and the Australian Government through the National Action Plan for Salinity and Water Quality (NAP) is gratefully acknowledged.

This report has been divided into two parts: 1. Main report and 2. Appendices

Citation: DPIW. (2008). *Conservation of Freshwater Ecosystem Values (CFEV) project Technical Report*. Conservation of Freshwater Ecosystem Values Program. Department of Primary Industries and Water, Hobart, Tasmania.

ISBN: summary taken from 978-0-7246-6466-5

Cover photograph: Ringarooma River in flood, North-East Tasmania.
Danielle Hardie 2006

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Executive summary

The CFEV project and the CFEV Technical Report

The Conservation of Freshwater Ecosystem Values (CFEV) project is the first of its kind to develop a Comprehensive, Adequate and Representative (CAR) analysis of freshwater ecological values across Tasmania. This enables freshwater ecosystems to be considered alongside the terrestrial and marine systems in the context of property and water management planning throughout the state.

The CFEV project involved collating existing environmental and ecological data to produce an inventory of freshwater values within the state. These freshwater values were then ranked based on their conservation values to create a list of relative conservation management priorities.

The CFEV Technical Report is available as two volumes. The Main Report chronicles the methods used in the CFEV project, while the Appendix provides extensive background information and metadata for the contents of the CFEV database. This document will be an invaluable source of information for those using any of the assessment components or data output from the project.

How is CFEV different to other assessments of conservation value?

The CFEV project employed the CAR reserve concept, which attempts to make the reservation and management of ecosystems more objective, allowing little-known systems to be considered on a more even footing alongside their better known counterparts.

CAR stands for **Comprehensive, Adequate and Representative**, and each of these elements is considered essential to a CAR reserve system.

Comprehensiveness was addressed by the CFEV project through its assessment of all mapped examples of river systems, wetlands, lakes and waterbodies, saltmarshes, estuaries, karst systems in Tasmania.

Adequacy was incorporated into the CFEV assessment framework by ensuring that minimum numbers or spatial extent of each of the recognised conservation values are contained within the higher priority bands of the various CFEV assessment components described below.

Representativeness was addressed by including multiple biological and physical classifications for each of the various ecosystems^{*}.

In addition to the CAR elements, the CFEV project also considered distinctive features or Special Values (SVs)[†].

^{*} An ecosystem can be assessed for **representativeness** using any of the multiple ecological components within it. For example, any given wetland is an example of a specific frog assemblage class, a specific type of wetland vegetation class and a specific crayfish assemblage class. If one of these classes is rare (for example wetland vegetation), and the wetland is in better condition than other examples of that particular wetland vegetation class, then the wetland is considered to be a highly representative example of that class and therefore to be of higher conservation value.

[†] **Special Values** include rare and threatened species and communities, important geomorphic features, sites of high species diversity and sites of ecological significance such as migratory bird sites. Many of these SVs are recognised through legislation and current management and therefore provide a strong link between existing conservation management tools and the outputs of the CFEV project.

Scope and outputs of the CFEV project

The CFEV project included all mapped river systems, wetlands, lakes and waterbodies, saltmarshes, estuaries, karst systems and other groundwater dependent ecosystems in Tasmania. Each of these ecosystems was considered separately, with wetlands, for example being ranked against one another in terms of their relative conservation value. Rivers were considered as the segments between the confluences of the river network. Groundwater dependent ecosystems were considered as a list of locations but were not assessed further.

A key output of the project is the CFEV assessment framework (Figure 0.1) through which all Tasmanian freshwater-dependent ecosystems are assigned conservation value and a conservation management priority. These assessments of value and priority are collectively referred to as the CFEV assessment components. This is accompanied by the CFEV database, which describes the ecological character and the condition of each ecosystem.

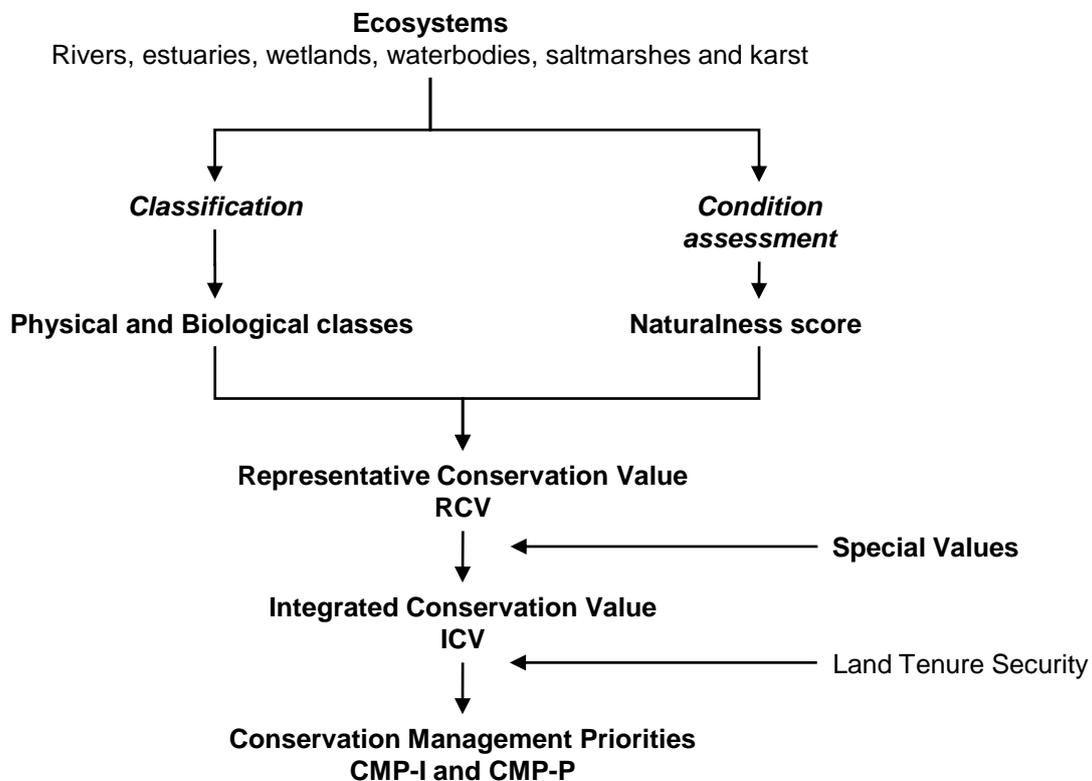


Figure 0.1 The CFEV assessment framework. Combines a range of information to produce assessments of conservation value and conservation management priority.

The design of the CFEV framework and the structure of the CFEV database allow the process to be updated periodically as our knowledge of these systems improves, or as more records of threatened species and other Special Values (SVs) are gathered.

CFEV assessment components

The CFEV database provides various assessment components that can inform a diverse range of conservation management tasks. Table 0.1 details the major uses of the three more commonly used assessment components.

Table 0.1 CFEV assessment components and their current uses.

Acronym	CFEV assessment component	Current use
ICV	Integrated Conservation Value	Catalogue and locate conservation values for environmental flow assessments, or other catchment management tasks.
CMPP2	Conservation Management Priority - Potential	Assessment of developments such as dams.
CMPI2	Conservation Management Priority - Potential	Identifying areas that could be added to the current reserve system to improve the conservation of freshwater dependent ecosystems in Tasmania.

The following pages provide statewide summaries for the three more commonly used CFEV assessment components together with descriptions of their use. The categories within these components are: Lower, Moderate, High and Very High. The Very High and High categories in all these CFEV assessment components contain the ecosystems that are of higher value or priority, and should therefore be considered in any management activities that have implications for freshwater dependent ecosystems. The tables demonstrate how extensive these values are statewide for each of the six ecosystem types assessed by the CFEV project, while the maps simply illustrate the distribution of each component using rivers as an example.

ICV - Where and what are the conservation values in Tasmania?

ICV is the **Integrated Conservation Value** of freshwater dependant ecosystems. It combines the CFEV assessment of representativeness (Representative Conservation Value - RCV) with information on Special Values (SVs). The High and Very High categories (Green and Blue in Figure 0.2) can be used to flag locations that contain rare biological or physical classes, Special Values or both.

Table 0.2 Integrated Conservation Value (ICV) of freshwater dependent ecosystems in Tasmania expressed as a percentage by extent (length for rivers and area for all other ecosystems).

Ecosystem	% Very High	% High	% Moderate	% Lower
Rivers	1.6	19.5	33.4	45.5
Waterbodies	75.4	17.9	6	0.7
Wetlands	24.6	35.2	26	14.2
Saltmarshes	9.5	54	36.5	0
Estuaries	79.4	16.5	4.1	0
Karst	26.8	46.4	26.8	0

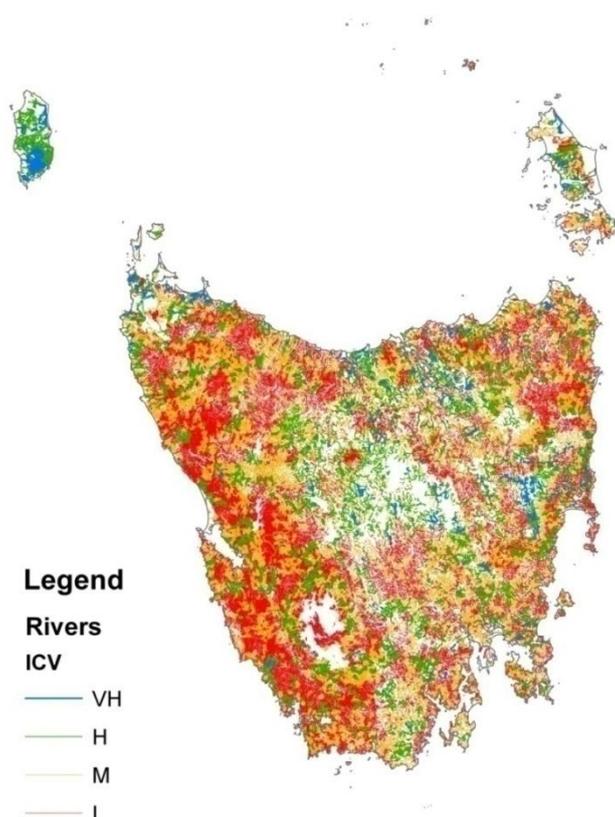


Figure 0.2 Integrated Conservation Value (ICV) of rivers in Tasmania. Patterns of ICV for other ecosystems will not necessarily follow the same distribution across the state, the river data simply illustrates the outputs that the CFEV project provides.

CMPP2 - Which areas have conservation values that will be sensitive to development?

Conservation Management Priority – Potential (CMPP2) provides a banded prioritisation designed to inform assessments of development such as dams that have the potential to affect freshwater dependent ecosystems. The High and Very High categories (Green and Blue in Figure 0.3) highlight a combination of underlying conservation values (as in ICV), land tenure and condition.

Table 0.3 Conservation Management Priority - Potential (CMPP2) of freshwater dependent ecosystems in Tasmania expressed as a percentage by extent (length for rivers and area for all other ecosystems).

Ecosystem	% Very High	% High	% Moderate	% Lower
Rivers	20.4	26.2	46.9	6.5
Waterbodies	38.2	56.5	5.2	0.1
Wetlands	57.4	27.4	7.7	7.5
Saltmarshes	55.5	17.9	26.6	0
Estuaries	68.5	27.5	4	0
Karst	66.4	22.3	11.3	0

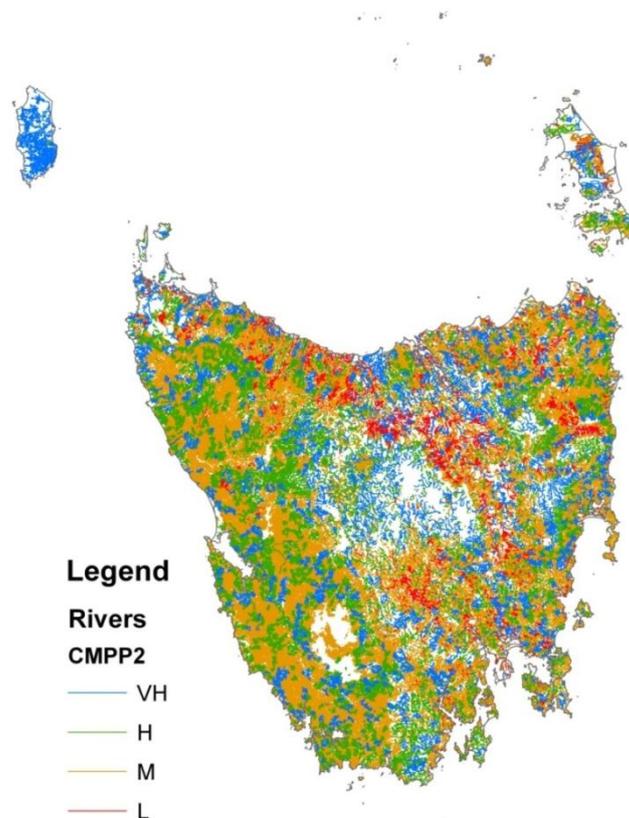


Figure 0.3 Conservation Management Priority - Potential (CMPP2) of rivers in Tasmania. Patterns of CMPP2 for other ecosystems will not necessarily follow the same distribution across the state, the river data simply illustrates the outputs that the CFEV project provides.

CMPI2 - Where would future reserves best protect freshwater ecosystem values?

One of the original purpose of the CFEV project was to indicate areas that would be suitable as additional reserves for freshwater dependent ecosystems. The assessment component: *Conservation Management Priority - Immediate* (CMPI2) best serves this function as it recognises conservation values, but ranks sites that are not currently within the reserve system as being of a higher priority, than those that are currently included. In Figure 0.4, the extensive areas of red or lower CMPI, are areas already catered for in the current reserve system, irrespective of their conservation values (eg. the World Heritage Area in the South West).

Table 0.4 Conservation Management Priority - Immediate (CMPI2) of freshwater dependent ecosystems in Tasmania expressed as a percentage by extent (length for rivers and area for all other ecosystems).

Ecosystem	% Very High	% High	% Moderate	% Lower
Rivers	10.6	3.6	27.4	58.4
Waterbodies	35.2	47.7	12	5.1
Wetlands	24.2	5.8	14.2	55.8
Saltmarshes	45.6	6.2	35.5	12.7
Estuaries	55.2	1.1	31.3	12.4
Karst	27.6	15.6	19.1	37.7

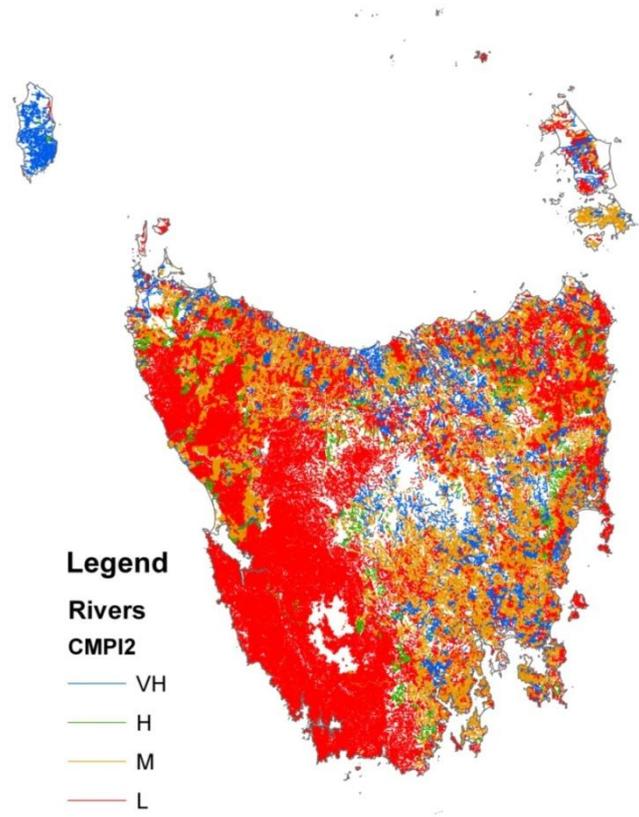


Figure 0.4 Conservation Management Priority - Immediate (CMPI2) of rivers in Tasmania. Patterns of CMPI for other ecosystems will not necessarily follow the same distribution across the state.

CFEV tools

Web-based access to the CFEV database has been developed which will improve the adoption of the CFEV database as a decision-making tool. Two interfaces currently provide access to the CFEV database through the web.

A simple user interface with quick access to the more commonly used CFEV assessment components is available through the Water Information Systems of Tasmania (WIST - <http://www.water.dpiw.tas.gov.au>).

For more technical users, the CFEV corporate Interface (CFEVC I - <https://cfev.dpiw.tas.gov.au>) allows access to the full range of CFEV variables, together with a range of summary tools and a far more GIS-styled user interface.

Guides to the interpretation of CFVEV data and links to a range of CFEV documents can be found on the CFEV website at: <http://www.dpiw.tas.gov.au/cfev>

CFEV and other government activities

The CFEV project was developed as part of the Water Development Plan for Tasmania. The development of the CFEV database has contributed to a number of Priority Benchmarks of Tasmania *Together*, which have been developed as a result of the most extensive community consultation in Tasmania's history. These include the Government's protection and maintenance of the state's natural diversity, while ensuring that there is a balance between environmental protection and economic and social development. The use of the CFEV database in freshwater management decision-making will assist in managing our natural resources in a sustainable way, now and for future generations.

The CFEV database has been created as a resource for a range of users including:

- State Government agencies including Department of Primary Industries and Water (DPIW)
- Natural Resource Management (NRM) regions
- consultants
- forestry agencies
- Hydro Tasmania
- local government
- the general public

It has already become an integral part of a number of core activities for the DPIW, including dam assessment, water management planning and environmental flows assessment.

The CFEV project is the only example of its kind in Australia and provides an excellent basis to inform the establishment of a national system for identifying high conservation value aquatic ecosystems. No other system currently in use in Australia allows the combination of existing reserves and assessments of conservation value to be integrated with the objectivity of CAR reserve concepts.
