



Corangamite Catchment
Management Authority

**Review of the Operation of the
CCMA Regional Drainage
Schemes**

Background Report

January 2004



Contents

1.	Introduction	1
1.1	Introduction	1
1.2	Objectives	1
2.	Lake Corangamite And The Woody Yaloak Diversion Scheme	3
2.1	Background and Objectives	3
2.2	Scheme Description	3
2.3	Land Ownership	3
2.4	Background Information	6
2.5	Summary	6
2.6	Recent Developments and Issues	6
3.	Lake Colac And The Lough Calvert Drainage Scheme	9
3.1	Background and Objectives	9
3.2	Scheme Description	9
3.3	Land Ownership	9
3.4	Management and Operational Rules	11
3.5	Background Information	12
3.6	Summary	12
3.7	Recent Developments and Issues	12

Table Index

Table 1	Chronological Listing of Key Events - Woody Yaloak Diversion Scheme	7
Table 2	Chronological Listing of Key Events - Lough Calvert Drainage Scheme	13

Figure Index

Figure 1 – Locality plan	2
Figure 2 – Lake Corangamite and the Woody Yaloak Diversion Scheme	4
Figure 3 – Lake Colac And The Lough Calvert Drainage Scheme	10



Appendices

- A Background Information
- B Records of Review



1. Introduction

1.1 Introduction

This Background Report has been prepared for the “Review of the Operation of the Corangamite Catchment Management Authority (CMA) Regional Drainage Schemes”. The report represents Deliverable No 1 for this project.

1.2 Objectives

The purpose of this Background Report is to:

- ▶ Provide a comprehensive list of all available background information relevant to the: Lake Corangamite and Woody Yaloak Diversion Scheme, and the Lake Colac and Lough Calvert Drainage Scheme;
- ▶ Provide a summary of key recommendations and findings detailed in the previous reports; and
- ▶ Provide an overview of the systems and current relevant operational and management issues.

Figure 1 shows the locality of the two drainage schemes with respect to the area managed by the Corangamite CMA.

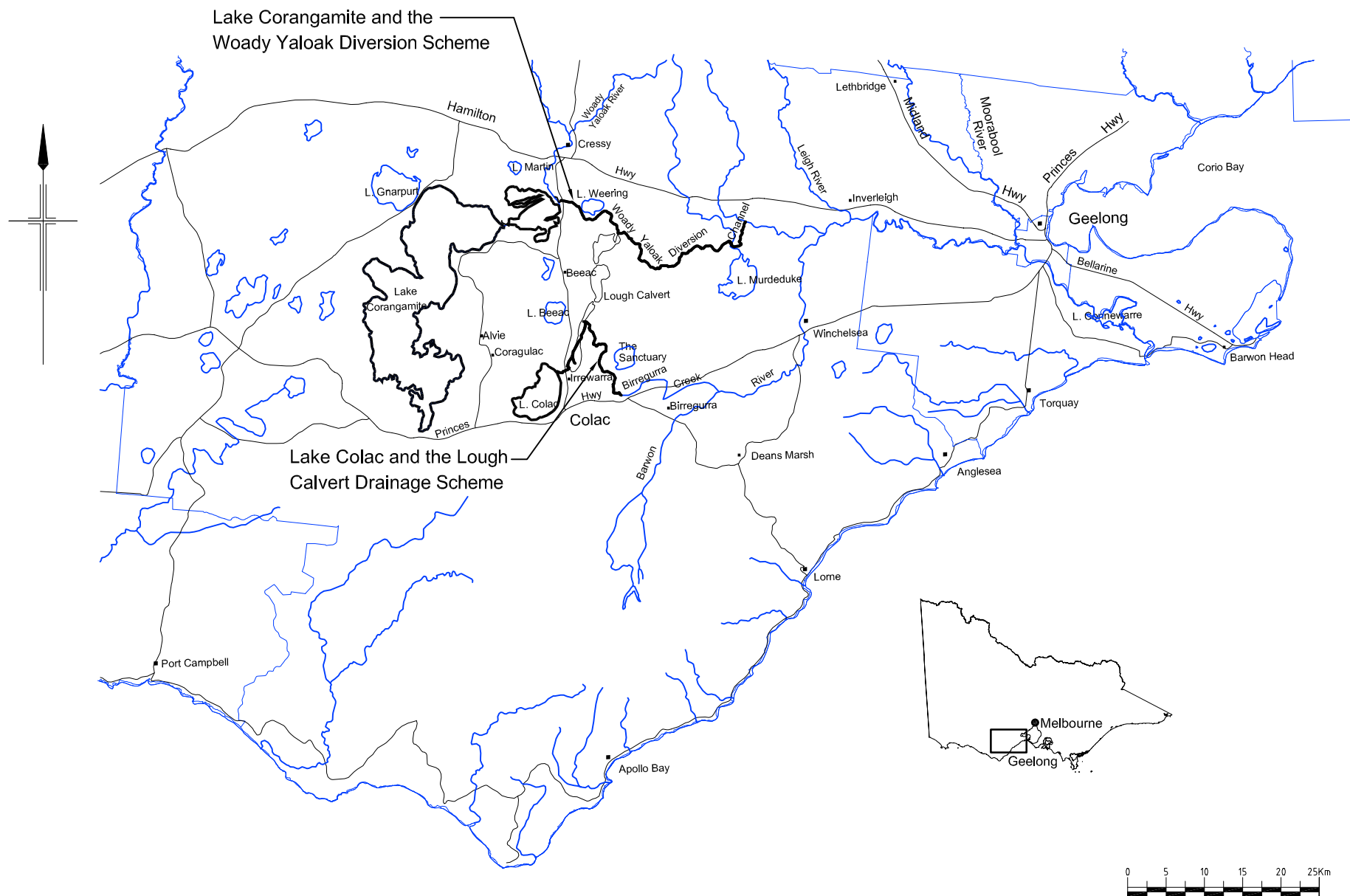


FIGURE 1 CORANGAMITE CMA REGIONAL DRAINAGE SCHEMES



2. Lake Corangamite And The Woody Yaloak Diversion Scheme

2.1 Background and Objectives

The Woody Yaloak Diversion Scheme (WYDS) is a flood protection scheme designed to protect rural properties around the perimeter of Lake Corangamite. The construction of the scheme was recommended by the Parliamentary Public Works Committee (PPWC) Inquiry undertaken in 1956 following successive years of flooding in the area between 1950 and 1953. The scheme was commissioned in May 1959.

As stated in the South-Western Region Water Management Strategy (NREC, 1989), the principal objectives of the WYDS were:

- ▶ To hasten the return of Lake Corangamite from the high levels of the 1950's (and the 1960's) to "normal" levels, taken to be EL 114.70m AHD;
- ▶ To reduce the "normal" level by several feet (metres), thus freeing up a large area of the Lake bed for grazing; and
- ▶ To control the Lake level so that climatic circumstances such as those from 1951 to 1956 would cause only the (lower) Crown Land portions of the Lake to be inundated.

2.2 Scheme Description

The background history of the scheme is extensively documented in the available background information. The South-Western Region Water Management Strategy (NREC, 1989) provides one of the most comprehensive descriptions of the history of the scheme.

Figure 2 shows the locality of the scheme and provides details on key information related to the lakes and structures.

2.3 Land Ownership

Prior to the implementation of the diversion scheme, the land around the perimeter of Lake Corangamite was freehold land. The Lake level increased significantly above "normal" levels following a series of wet years between 1951 and 1953 and in 1960. In 1966, the Lake Corangamite Act (1966) was passed which enabled local landholders to surrender land adjacent to the lake and below 118.06m AHD, in return for compensation. The surrendering of land was optional at the time, and approximately 1,508 ha up to 118.06 mAHd of land was transferred to the Crown.

It is unclear from existing published information, if additional land has been either surrendered under the Act or acquired since 1966. Clear definition of current land ownership below 118.06 mAHd will be the subject of subsequent stages of this review. Previously published literature does indicate however, that there remains 1000 ha of freehold land below 118.06mAHd (NREC, 1989).

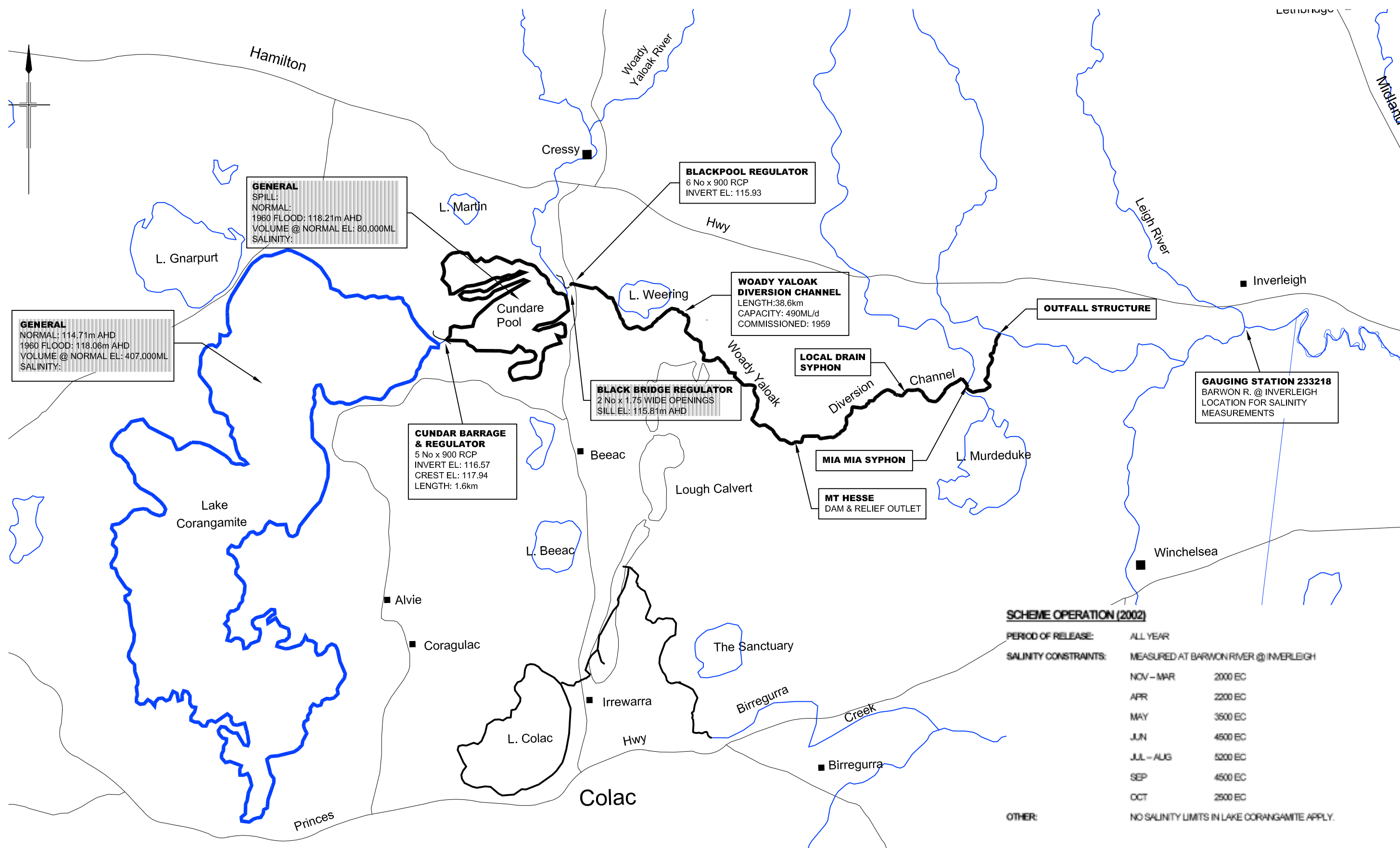


FIGURE 2 LAKE CORANGAMITE AND THE WOODY YALOEK DIVERSION SCHEME





Management and Operational Rules

2.3.1 Management and Operation

The State Rivers and Water Supply Commission (SR&WSC) was given responsibilities under the River Improvement and Drainage Act (1958) to maintain and operate the scheme. Funding for the scheme was made under appropriations by the Water Supply Loan Applications Acts.

The Lake Corangamite Drainage Scheme Advisory Committee was established in 1979 (by the Rural Water Commission) to manage the drainage scheme.

Between 1980 and 1998, operation and maintenance remained the responsibility of the SR&WSC and its successor bodies. On 1 July 1998, the responsibility of the scheme was transferred from Southern Rural Water Authority to the Corangamite CMA.

The Lake Corangamite Drainage Scheme Advisory Committee has remained functional throughout this period of administrative change. The committee now known as the Woody Yaloak Advisory Committee, advises the CMA on issues of operation and maintenance of the scheme.

In December 1999, the State Government withdrew the ability for the CMA's to levy the community for catchment management activities. Since then the Corangamite CMA has provided funding for the operation of the scheme through its "Tariff Replacement Fund". The estimated operational cost is approximately \$80,000 (2002) per annum. The Corangamite CMA does not have a capital replacement program.

Staff from the managing body has historically been responsible for the day to day operation the scheme. The operation of the scheme is currently contracted to an engineering company, EarthTech Pty Ltd, under direction of the Corangamite CMA.

2.3.2 WYDC Operational Rules

The system is operated within the constraints of the operating rules. The main purpose of the operating rules is control salinity limits in the Barwon River. A summary of the current operating rules is detailed below. The rules are defined in detail in "Operating Instructions for the Woody Yaloak River (Lake Corangamite) Diversion Scheme" (Rural Water Commission, 1987). There has been no change to the operational rules since the commissioning of the scheme in 1959.



Allowable Period of Release: All Year

Salinity Constraints: Measured at Barwon River @ d/s Leigh River

Nov – Mar	2000 EC
Apr	2200 EC
May	3500 EC
Jun	4500 EC
Jul – Aug	5200 EC
Sep	4500 EC
Oct	2500 EC

Other: No salinity limits in Lake Corangamite apply

2.4 Background Information

A detailed reference list of background literature is provided in Appendix A.

A review of key documents relating to strategies, policies, and operational investigations has been undertaken. Summary sheets of this review are provided in Appendix B. It is intended that the documents relating to (generally) specific studies and investigations will be examined as part of the detailed investigation works being undertaken for this project (where applicable).

2.5 Summary

Table 1 details a chronological listing of the significant events relating to the Lake Corangamite and WYDC.

2.6 Recent Developments and Issues

Funding for the review and implementation of any recommendations (if applicable) may be available through the National Action Plan.



Table 1 Chronological Listing of Key Events - Woody Yaloak Diversion Scheme

Date	Details	Comments
1958	River Improvement and Drainage Act passed	
1951-53	Extensive flooding occurred throughout the region (6000 ha Flooded)	
1956	Parliamentary Public Works Committee (PPWC) Inquiry	Established to examine drainage issues in the area. Recommended construction of the Woody Yaloak Scheme
1957	Funding for flood protection works for Lake Corangamite made by appropriations by the Water Supply Loan Applications Acts	
1959	Woody Yaloak Diversion Channel commissioned (May 1959)	
1959	RWC undertook works in Breakwater-Marshall area to compensate for increased flows from Woody Yaloak Diversion Channel	
1960	Extensive flooding occurred throughout the region	Maximum height of 118.06 mAHD achieved in Lake Corangamite in November 1960
1961-65	Parliamentary Public Works Committee (PPWC) Inquiry	Established to examine drainage issues in the area. Recommended pumping 9000ML into Lake Corangamite Recommended acquisition of alienated land
1966	Lake Corangamite Act passed	Local landholders empowered to surrender land adjacent to the lake in return for compensation
1975	Extensive flooding occurred throughout the region	
1979	Lake Corangamite Drainage Scheme Advisory Committee established	Established to manage Woody Yaloak Diversion Scheme



Date	Details	Comments
1982	Western district Lakes designated as wetlands of international importance under the RAMSAR convention.	
1989	NREC Inquiry (delivery of South-Western Region Water Management Strategy)	Lough Calvert Scheme to be operated as present
	Government responded to NREC Inquiry	Request for further investigations
1992	October 1992 flood causes rise in Cundare Pool resulting in localised flooding.	
1998	Responsibility of scheme transferred to the Corangamite CMA.	
1999	Rating system abolished by CCMA.	All rating systems abolished. Funding currently provided under the Tariff Replacement Fund.

3. Lake Colac And The Lough Calvert Drainage Scheme

3.1 Background and Objectives

The Lough Calvert Drainage Scheme (LCDS) is a flood protection scheme designed to protect rural properties around the perimeter of Lake Colac and the Lough Calvert system. The initial scheme was commenced in 1953 following successive years of flooding in the area between 1950 and 1953. The scheme was again reviewed by the SR&WSC in 1979 following flooding that had occurred in 1975.

As stated in the South Western Region Water Management Strategy (NREC, 1989), the primary objectives of the WYDS are:

- ▶ To maintain the likelihood of uncontrolled flooding of freehold land within acceptable limits;
- ▶ To maintain the level of water in Lake Colac at such a height as to achieve the above objective as well as to provide a suitable venue for summer recreational activities on the Lake;
- ▶ To limit the effects of the drainage operation within the drainage area and on downstream users and biological systems; and
- ▶ To endeavour to have the depressions in the Lower Lough drained of surplus water by 30 September in any one year.

3.2 Scheme Description

The background history of the scheme is extensively documented in the available background information. The South-Western Region Water Management Strategy (NREC, 1989) provides one of the most comprehensive descriptions of the history of the scheme.

Figure 3 shows the locality of the scheme and provides details on key levels in the lakes and details of important structures.

3.3 Land Ownership

Prior to the implementation of the drainage scheme, Lake Colac and the areas in the Lough System were entirely freehold land. Since that time, various scheme management agencies have undertaken acquisition and 'lease back' programs to a point where effected Lake Colac fringe land, and Lower Lough land is variously held as Crown Land, Freehold Land, or Lease Land. The exact proportions of each are unclear from the available documentation, and more work will be required later in the project to resolve the land status issues.

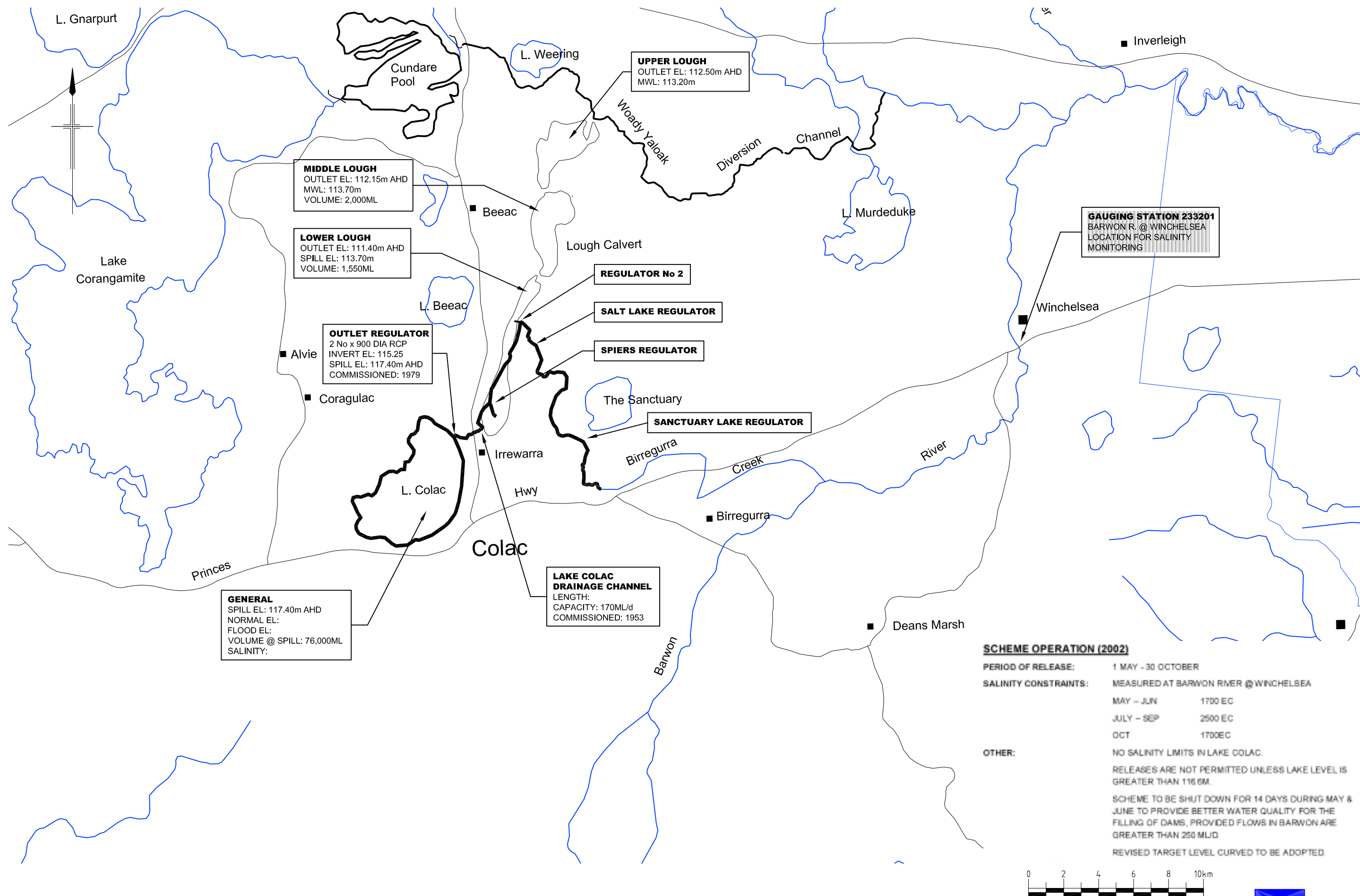
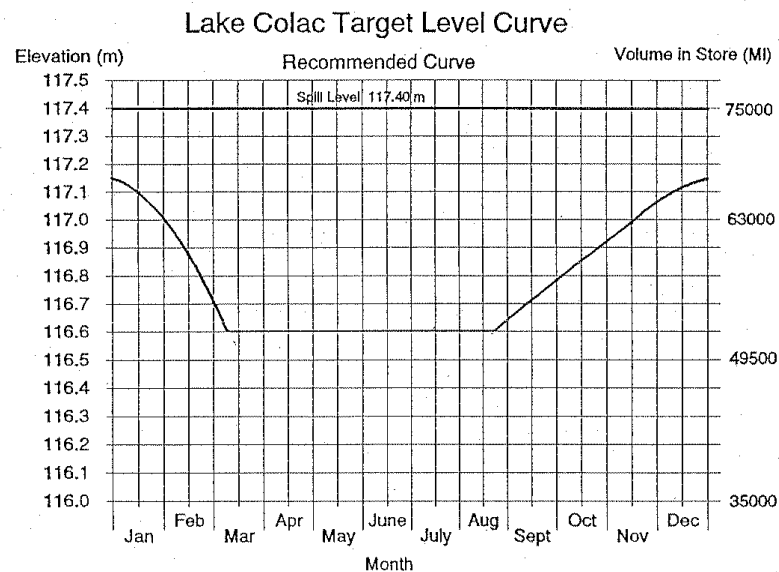


FIGURE 3 LAKE COLAC AND THE LOUGH CALVERT DRAINAGE SCHEME





Recommended Lake Colac Target Level Curve

3.4 Management and Operational Rules

3.4.1 Management and Operation

The Lough Calvert Drainage Trust was established in 1953 to manage, operate and levy (rate) the Lough Calvert Drainage Scheme. The Trust was constituted under the River Improvement Act (1948) and (originally) reported to the Department of Water Resources (NREC, 1989).

Between 1953 and 1998, operation and maintenance remained the responsibility of the State Rivers and Water Supply Commission and its successor bodies. On 1 July 1998, the responsibility of the scheme was transferred to the Corangamite CMA. The CMA established the Lough Calvert Advisory Committee. This committee is responsible for advising the CMA in issues of management and operation of the scheme.

The Corangamite CMA currently provides the funding for the operation of the scheme through its "Tariff Replacement Fund". The estimated operation cost is approximately \$70,000 (2002) per annum. The Corangamite CMA does not have a capital replacement program.

The operation of the scheme is currently contracted to an engineering company, EarthTech Pty Ltd, under direction of the Corangamite CMA.

3.4.2 LCDS Operational Rules

The system is operated within the constraints of the operating rules. The main purpose of the operating rules is to minimise the impact of the scheme control on salinity in the Barwon River. The current operating rules are detailed below. The operational rules have been formally changed once, following a review by Johnson et al in 1992. These changes were adopted in 1994.



Allowable Period of Release:	1 May - 30 October
Salinity Constraints:	Measured at Barwon River @ Winchelsea
	May – Jun 1700 EC
	July – Sep 2500 EC
	Oct 1700EC
Other:	No salinity limits in Lake Colac
	Releases are not permitted unless lake level is greater than 116.6m
	Scheme to be shut down for 14 days during May & June to provide better water quality for the filling of dams, provided flows in Barwon are greater than 250 ML/d
	Revised target level curved to be adopted (refer below)

3.5 Background Information

A detailed reference list of background literature is provided in Appendix A.

A review of documents relating to strategies, policies, and operational investigations has been undertaken. Summary sheets of this review are provided in Appendix B. It is intended that the documents relating to (generally) specific studies and investigations will be examined as part of the detailed investigation works being undertaken for this project (where applicable).

3.6 Summary

Table 2 details a chronological listing of the significant events relating to the Lake Colac and LCDS.

3.7 Recent Developments and Issues

Funding for the review and implementation of any recommendations (if applicable) may be available through the National Action Plan.



Table 2 Chronological Listing of Key Events - Lough Calvert Drainage Scheme

Date	Details	Comments
1951-52	Extensive flooding occurred throughout the region	
1952-53	Lake Colac drainage channel and associated works constructed	Constructed to alleviate flooding in Lake Colac and the Lough areas.
1953	Lough Calvert Drainage Trust established (26/05/1953)	Established to manage Lough Calvert Drainage Scheme Responsible for Operation, Maintenance and Rating
1958	River Improvement and Drainage Act passed	
1960	Extensive flooding occurred throughout the region	
1973	Out of season releases were made to prevent spilling	
1975	Extensive flooding occurred throughout the region Lake Colac overflowed	
1975-76	Out of season releases authorised to alleviate flooding	Salinity in Barwon River rose to over 10,000 EC
1979	SR&WSC prepared a flood mitigation report	Recommended structural improvements drainage scheme to improve operational efficiency. Other recommendations included acquisition of land and construction of additional drains.
1979	Lake Colac Outlet Replaced (2 x 900 dia pipes x 46m long, EL 115.25)	
1980-81	Illegal release occurred from drainage scheme during summer period	Premier instructed Trust and Commission to ensure the outfall regulator remains locked during out of season
1982	Western district Lakes designated as wetlands of international importance under the RAMSAR convention.	



Date	Details	Comments
1984	Out of season releases were made to prevent spilling	
1985	Master Plan established for Lough Calvert Drainage Trust	
1987	Permission granted by the Minister to waive salinity criteria to alleviate flooding in Lake Colac (Aug-Sept)	
1988	DCFL submission (July 1988)	
1988	Revised operating rules submitted by RWC	
1988	Revised operating rules proposed by RWC not adopted after NREC enquiry.	
1989	NREC Inquiry (delivery of South-Western Region Water Management Strategy)	Rules for operation should remain unchanged RWC to trial opening of No 2 Regulator at end of season Eastern shore of Lake Colac and Birregurra Ck to be rehabilitated.
1991	Lake Colac filled and overflowed	
1991	Minister requests a review of the operational rules for Lough Calvert Scheme	Following spilling of Lake and subsequent flooding.
1992	Johnson Report Delivered Review of Operational Rules for Lake Colac and Lough Calvert Drainage Scheme	Operational Review Committee to be established Modified Operational Rules proposed Acquire freehold land below 112.90 in Lower Lough South
1992	Permission granted by the Minister to release water during Dec-Jan	
1994	Modified operational rules introduced	Following recommendations from Johnson Report.
1994	Operation Review Committee established	Following recommendations from Johnson Report. Established to monitor the operation of the scheme.



Date	Details	Comments
1995	Telemetric rain gauges installed on Barwon River at Forrest	
1998	Responsibility for scheme transferred to the Corangamite Catchment Management Authority.	
1999	Rating system abolished by CCMA.	All rating systems abolished. Funding currently provided under the Tariff Replacement Fund.



Appendix A

Background Information

Reference List

Review of the Operation of the CCMA Regional Drainage Schemes Reference List

ID	Published	Provided (Yes/No)	Reviewed (Yes/No)	Author (name)	Author (organisation)	Title	Prepared for
1	Apr-92	Yes	Yes	Williams, W.D.	University of Adelaide (Department of Zoology)	<i>The Biological Status of Lake Corangamite and Other Lakes in Western Victoria</i>	Report to Department of Conservation and Environment, Colac
2	Feb-95	Yes	Yes		Hamilton MacLeod & Partners Pty Ltd	<i>A Waterway Management Strategy for the Lake Colac Catchment</i>	Colac Region Water Authority
3	Oct-92	Yes	Yes		Department of Conservation and Natural Resources	<i>Briefing Note on Johnson Report (Lough Calvert Drainage Scheme)</i>	Prepared for the Minister for Natural Resources
3.1	Jun-92	Yes	Yes	Johnson, K. (Chairman)	Review Committee	<i>Lake Colac and Lough Calvert Drainage Scheme - Review of Operating Rules</i>	Lake Colac and Lough Calvert Drainage Scheme Committee
4		Yes		Smith, I.	FFF Coordinator	<i>Management of Lough Calvert Wetlands & Lake Thurrumbong for Wildlife Conservation</i>	Report to Lake Colac Lough Calvert Operational Committee
5	Feb-91	Yes	Yes	Pamminger, F.	Rural Water Commission of Victoria	<i>Lake Corangamite Project - A Study of the Physical Effects of Altering the Operating Rules of the Woody Yaloak Diversion Scheme (Report No. 1991/5)</i>	RWC Woody Yaloak Review Committee
6	Jun-92	Yes	Yes	Forsyth, D.	Rural Water Commission of Victoria	<i>Briefing Note - Lake Corangamite Project</i>	Prepared for the Minister for Conservation and Environment
7	May-98	Yes			Hamilton MacLeod & Partners Pty Ltd & Theiss Environmental Services	<i>Barwon River Flow and Salinity Outputs 1974 – 1995</i>	Prepared for Lake Colac Lough Calvert Operational Committee
8	Nov-98	Yes		Saddler, S.	Natural Resources and Environment (Arthur Rylah Institute for Environmental Research)	<i>Fish Survey of the Barwon River as Baseline Data for an Assessment of Saline Disposal from Lough Calvert</i>	Prepared for Lake Colac Lough Calvert Operational Committee
9	Jan-80	Yes	Yes		Environment Protection Authority	<i>Draft State Environment Protection Policy or The Waters of Lake Colac and Catchment</i>	Environment Protection Authority
10	Jul-79	Yes	Yes		State Rivers and Water Supply Commission, Victoria	<i>Lake Colac-Lough Calvert Flood Mitigation Report</i>	State Rivers and Water Supply Commission Victoria
11	Jun-98	Yes			Hamilton Partners Consulting	<i>Examination of Issues as Identified in the Johnson Report Review of Operating Rules of the Lake Colac Scheme</i>	Prepared for Lake Colac Lough Calvert Operational Committee
12	Jun-87	Yes	Yes		Rural Water Commission of Victoria	<i>Operating Instructions for the Woody Yaloak River (Lake Corangamite) Diversion Scheme</i>	Rural Water Commission
13	Nov-89	Yes	Yes		Department of Conservation and Environment	<i>Water Resources of South-Western Victoria - A Management Strategy</i>	Department of Conservation and Environment - Victoria
13.1	1990	Yes	Yes		Natural Resources and Environment Committee	<i>South-Western Region Water Management Strategy</i>	State Government Senate Inquiry
14	Dec-94	Yes	Yes	Williams, W.D.	University of Adelaide (Department of Zoology)	<i>Lake Corangamite, Australia, a Permanent Saline Lake: Conservation and Management Issues</i>	Lakes & Reservoirs: Research and Management 1995 1:55-64 publication.
15	May-95	Yes	Yes		HydroTechnology (Rural Water Commission of Victoria)	<i>Impact of Raised levels in Cundare Pool on surrounding aquifers.</i>	Southern Water
16	Mar-88	Yes	Yes		ACIL Australia Pty Ltd	<i>Corangamite Basin Drainage Schemes Review – An Economic Assessment</i>	Prepared for the Rural Water Commission
17	Jun-98	Yes		Rhodes, J.	University of Ballarat	<i>Regional Groundwater Flow East of Lake Corangamite (Final year project)</i>	
18	Sep-91	Yes	Yes	Hooke, D.	Rural Water Commission of Victoria	<i>Salt Loads Generated by Lough Calvert Drainage Scheme and Woody Yaloak Diversion Scheme, and their Contribution to Barwon River Salinity - Short Version (Report No. 1991/29)</i>	

ID	Published	Provided (Yes/No)	Reviewed (Yes/No)	Author (name)	Author (organisation)	Title	Prepared for
19	Jan-89	Yes	Yes		Rural Water Commission of Victoria	Lake Corangamite Salinity Survey	
20	Jun-89	Yes	Yes	Dickenson, C.	Rural Water Commission of Victoria	Lake Corangamite April 1989 Salinity Survey	
21	Nov-95	Yes		Dickenson, C.	University of Ballarat	Numerical Modelling of Groundwater Flow Systems Around Lake Corangamite (Honours Research Thesis –1995)	Corangamite Regional Salinity Implementation Group
22	Dec-99	Yes		Blackham, M.	University of Ballarat	Numerical Modelling of Groundwater Flow Systems in the Lake Corangamite – Barwon River Regional (Honours Research Thesis)	
23	Aug-91	Yes	Yes	Camerson, M.	Department of Conservation and Environment	A Report on the Effects of Salinity Upon the Biota of a Number of Lakes in the Western District of Victoria, Including an Investigation of Groundwater – Wetland Relationships	
24	Jul-96	Yes		Coram, J		Groundwater – Surface Water Interactions Around Some Shallow Lakes of the Corangamite Salinity Region – a Summary Report with Management Recommendations	Corangamite Regional Salinity Implementation Group
25	Jul-95	Yes	Yes	Dickenson, C.	University of Ballarat	Modelling Groundwater – Lake Interactions: A Literature Review	
26	Jan-98	Yes			Theiss Environmental Services	Surface Water Salinity in the Corangamite Region	Department of Natural Resources and Environment
27	Jun-98	Yes			Sinclair Knight Merz	Water Quality in the Corangamite Salinity Region	Pamphlet prepared for the Department of Natural Resources and Environment
28	Mar-96	Yes		Kefford, B. & Robley, A.	Department of Conservation and Natural Resources	A Preliminary Study of the Impact of the Birregurra Creek on Macroinvertebrates of the Barwon River; With Reference to Saline Water Disposal	
29	Oct-97	Yes			Sinclair Knight Merz	The Impact of Baseflow Quality on Stream Water Quality in the Woody Yaloak Catchment	Prepared for the Department of Natural Resources and Environment
30	Aug-02	Yes		Overman, T.	Corangamite Catchment Management Authority	From Forrest to Falls – An Investigation of the health of the Barwon River from the Otways to Geelong and a guide to its rehabilitation. (Draft – August 2002)	CCMA
31	Aug-02	Yes		Thomas, J.		Working Draft of Regional Catchment Strategy (2002)	CCMA
32	Jul-02			Thomas, J.		Natural Assets, Threats, and Risks in the Corangamite Region (2002)	CCMA
33	Jul-02			Allen, C	Corangamite Catchment Management Authority	Wetlands Inventory: Corangamite Region (2002)	CCMA
34	Dec-01	Yes			Federal & State NAP	Schedule to the agreement between the Commonwealth of Australia and the State of Victoria for the Implementation of the Inter-governmental agreement on a National Action Plan for Salinity and Water Quality.	State recipients of NAP Funds
35	Sep-01	Yes			Federal & State NAP	An agreement between the Commonwealth of Australia and the State of Victoria for the Implementation of the Inter-governmental agreement on a National Action Plan for Salinity and Water Quality.	State recipients of NAP Funds
36	Apr-91	Yes	Yes	Meagher, D.R (QC)		Legal opinions on the closure/ operation of the Woody Yaloak DS	RWC of Victoria
37	Oct-92	Yes	Yes	Finkelstein, R.A. (Solicitor General)	Victorian Government	Water Acts and the Woody Yaloak Diversion Scheme	Minister for Water Resources
38	May-95	Yes	Yes		HydroTechnology (Rural Water Commission of Victoria)	Impact of Raised levels in Cundare Pool on surrounding aquifers.	Southern Water

ID	Published	Provided (Yes/No)	Reviewed (Yes/No)	Author (name)	Author (organisation)	Title	Prepared for
39	Aug-93				HydroTechnology (Rural Water Commission of Victoria)	Lake Corangamite Salinity Survey Feb-March 1993	DCNR, Colac Region
40	May-96	Yes		Kefford, B. & Robley, A.	Department of Conservation and Natural Resources	<i>The effect of saline water disposal from the Lough Calvert Drainage Scheme on macroinvertebrates and water quality around the confluence of the Barwon River and Birregurra Creek.</i>	Victorian Salinity Bureau
41	May-98	Yes		Kefford, B.	Department of Natural Resources and Environment (Marine and Freshwater Resources Institute)	<i>The impact of flow in Birregurra Creek not associated with the Lough Calvert Drainage Scheme on the Barwon River.</i>	Barwon River Health Study, CCMA
G1	Jun-01	Yes		Canale, G. Papas, P. Nicol, M. Kefford, B. Crowther, D & McKay, S.		<i>Preliminary Assessment if the Health of the Barwon River Catchment in the Absence of Saline Water Disposal</i>	DNRE
G2	Jun-05	Yes		Kefford, B. J.		<i>Is salinity the only water quality parameter affected when saline water is disposed in rivers?</i>	IJSLR
G3	May-00	Yes			Corangamite Catchment Management Authority	<i>Barwon River Health Strategy Newsletter</i>	CCMA
G4	Nov-00	Yes			Corangamite Catchment Management Authority	<i>Barwon River Line No 3</i>	CCMA
G5	Mar-01	Yes				<i>Barwon River Line No 4</i>	CCMA
G6	20/06/105	Yes		Kefford, B. J.		<i>The relationship between electrical conductivity and selected macroinvertebrate communities in four river systems of south-west Victoria, Australia</i>	IJSLR
G7	Mar-00	Yes		Kefford, B. J.		<i>A Preliminary Investigation of the Toxicity of Saline Lakes that are Disposed into the Barwon River, South-West Victoria</i>	DNRE
G8	Jun-98	Yes			South West Region Task Force	<i>Managing the Water Resource of South-Western Victoria – Water Body Management Issues Paper</i>	Water Victoria
	Jun-54	No		Wallis, J.D.	State Rivers and Water Supply Commission Victoria	<i>Diversions of the Woody Yaloak River to the Barwon River</i>	
	Jan-53	No		Newton, H.J.	State Rivers and Water Supply Commission Victoria	<i>The underground Water Resources of the Corangamite Region</i>	
	Jan-56	No		Alexander, G.M. & Sutcliffe, A.J.	G.M Alexander and A.J Sutcliffe	<i>Lake Corangamite 1st Progress Report - Preliminary Hydrologic Investigation of Lake Corangamite Floodings</i>	
	Jan-56	No		Horsfall, R.A .		<i>Lake Corangamite 2nd Progress Report - Proposed Diversion of Woody Yaloack River at North Weering</i>	
	May-58	No		Horsfall, R.A .		<i>The Lake Corangamite Reclamation Project</i>	
	Jan-89	No		Gill, B.	Rural Water Commission of Victoria	<i>Hydrogeological Review of Salinity Problems in the Barwon/Corangamite Region (Report No. 1988/16)</i>	Investigations Branch - Rural Water Commission of Victoria
	Apr-87	No		Macmillan, L. Kunert, C. & Blakers, M.	L. Macmillan, C Kunert, M Blakers	<i>Nature Conservation Value and Status of Rivers in the South-Western Region</i>	Department of Water Resources
	Aug-87	No		Farmer-Bowers, Q.		<i>Recreational Values Associated with Water Bodies in the South-Western Region</i>	Department of Water Resources
	Dec-87	No			ID&A Pty Ltd	<i>Rehabilitation of Warrambine and Birregurra Creeks</i>	Department of Water Resources
	May-86	No			Hamilton and MacLeod Pty Ltd	<i>Lough Calvert Drainage Trust - Master Plan</i>	

ID	Published	Provided (Yes/No)	Reviewed (Yes/No)	Author (name)	Author (organisation)	Title	Prepared for
	May-88	No		Nathan, R.J. McMahon, T.A & Brockwell, P.J		<i>Stochastic Generation of Rainfall and Evaporation Data for Lake Corangamite Catchment</i>	
	Sep-84	No				<i>Regional Drainage and Stream Management - The Task Force Appointed to Review the Recommendations of the Public Bodies Review Committee's Eighth Report.</i>	
	1988	No			Rural Water Commission of Victoria	<i>Project Report for the Corangamite Basin Drainage Schemes Review (Report No 1988/23)</i>	Natural Resources and Environment Committee
	1988	No		Tunbridge, B.R.	B.R. Tunbridge	<i>Environmental Flows and Fish Populations in Waters in the South Western Region of Victoria</i>	Department of Conservation, Forests and Lands
	1966	No				<i>Lake Corangamite Act</i>	
	1966	No			Land Conservation Council	<i>Report on the Corangamite Study Area</i>	
	1990	No		Adams, G.	Rural Water Commission of Victoria	<i>Corangamite Review Technical Report - A Report on Analyses Conducted by the Rural Water Commission for the Corangamite Basin Drainage Schemes Review (Report No 1990/9)</i>	
	Dec-92	No		C. Nicholson, W. Straw, F Conroy, R. MacEwan		<i>Restoring the Balance - A Strategy for Managing Salinity in the Corangamite Salinity Region</i>	Corangamite Salinity Forum
	1983	No		Duff, J.S.		<i>Soil Salting in the Lake Corangamite Region of South Western Victoria (Masters Thesis)</i>	University of Melbourne
	1996	No		Heislars, D.		<i>A Review of DNRE and Community Groundwater Monitoring Arrangements for the Corangamite Salinity Region</i>	Centre for Land Protection Research Monitoring Report
	1992	No		Kearns, B		<i>Agricultural Cost of Salinity in the Corangamite Salinity Region</i>	Corangamite Salinity Management Strategy, Salt Action Victoria
	1992	No		Kearns, B		<i>Benefit/Cost Analysis of Salinity Control Programs in the Corangamite Salinity Region</i>	Corangamite Salinity Management Strategy, Salt Action Victoria
	May-76	No			Land Conservation Council	<i>Report on the Corangamite Study Area</i>	Land Conservation Council, Victoria
	Sep-78	No			Land Conservation Council	<i>Final Recommendations Corangamite Area</i>	Land Conservation Council, Victoria
	May-88	No			Corangamite Salinity Forum	<i>Draft Regional Salinity Report - Corangamite Region</i>	Salt Force, Victoria
	1992	No		Muske, E		<i>Saline Discharge in the Corangamite Salinity Region</i>	Department of Conservation and Natural Resources, Colac
	Nov-92	No		Nicholson, C. et al		<i>Priority Salinity Areas in the Corangamite Salinity Region</i>	Department of Conservation and Natural Resources, Colac
	Dec-94	No			HydroTechnology (Rural Water Commission of Victoria)	<i>Surface Water Salinities in the Corangamite Region</i>	Rural Water Corporation



Appendix B

Records of Review

Summary Sheets

Review of the Operation of the CCMA Regional Drainage Schemes

Literature Review - Record Sheet

ID	1
Title	The Biological Status of Lake Corangamite and Other Lakes in Western Victoria
Author	University of Adelaide (Department of Zoology) , Williams, W.D.
Published	Apr-92
Prepared for	Report to Department of Conservation and Environment, Colac

Subjects
Environmental
Ecology
Areas of Focus (streams, storages etc)
Lake Corangamite
Lake Colac
Objectives/Purpose
Evaluate present (1992) biological status of L Corangamite (18 lakes in total)
Compare present status with previous condition
Methodology/Data
Available data ind. 1979/80, Feb 1992)
Impacts
After the composition of the biota (several species have disappeared)
Decrease the value of the lake to bird life
Minor change to biological status
Outcomes/Recommendations
Major changes have occurred in Lake Cor. Since 1980
(salinity has increased, water levels fallen)
Environmental impact has been significant
Other comments
Reference to numerous publication on ecology of lakes in area.

Review of the Operation of the CCMA Regional Drainage Schemes

Literature Review - Record Sheet

ID	2
Title	A Waterway Management Strategy for the Lake Colac Catchment
Author	Hamilton MacLeod & Partners Pty Ltd ,
Published	Feb-95
Prepared for	Colac Region Water Authority

Subjects	Strategy
Areas of Focus (streams, storages etc)	
	Lake Colac
Objectives/Purpose	
	Develop catchment strategy
	Print uncontrolled flooding on freehold land
	To limit pondage on freehold land in Lough Areas
	To limit the effects of the drainage operation "The Birregurra Creek & Barwon River"
Methodology/Data	
	Desktop study
	Works proposals and implementation schedule
Impacts	
	Bank stability in lower reach of Barongerook Creek
	Erosion control in middle reach of Deans Creek
	Erosion control around the rural foreshore Lake Colac (fencing, reveg)
	Bed siltation in Lake Colac
Outcomes/Recommendations	
Other comments	
	Deans & Barongarook Creek - "salinity hot spots"
	Operational Review Committee - objection

Review of the Operation of the CCMA Regional Drainage Schemes

Literature Review - Record Sheet

ID	3
Title	Briefing Note on Johnson Report (Lough Calvert Drainage Scheme)
Author	Department of Conservation and Natural Resources ,
Published	Oct-92
Prepared for	Prepared for the Minister for Natural Resources

Subjects

Areas of Focus (streams, storages etc)

Objectives/Purpose

Methodology/Data

Impacts

Outcomes/Recommendations

Other comments

Review of the Operation of the CCMA Regional Drainage Schemes

Literature Review - Record Sheet

ID	3.1
Title	Lake Colac and Lough Calvert Drainage Scheme - Review of Operating Rules
Author	Review Committee , Johnson, K. (Chairman)
Published	Jun-92
Prepared for	Lake Colac and Lough Calvert Drainage Scheme Committee

Subjects	Salinity
	Modelling
	Operating Rules
Areas of Focus (streams, storages etc)	
	Lake Colac
	Lough Calvert Drainage Scheme
Objectives/Purpose	
	Under direction from the Minister
	To review operating rules of the Lough Calvert drainage scheme
Methodology/Data	
	Analysis of alternative operating rules
	RWC computer model used for previous NREC Inquiry
	Updated to 1991
Impacts	
	Lough Calvert Drainage Trust to acquire land below 112.90
	Improvements to flow forecasting
Outcomes/Recommendations	
	Revised operating rules
	Limits on Barwon River Salinities (at Winchelsea)
	Scheme closed for 2 weeks each year
	Improvements to flow and salinity monitoring
Other comments	
	Operational Review Committee oversees operation

Review of the Operation of the CCMA Regional Drainage Schemes

Literature Review - Record Sheet

ID	5
Title	Lake Corangamite Project - A Study of the Physical Effects of Altering the Operating Rules of the Woody Yaloak Diversion Scheme (Report No. 1991/5)
Author	Rural Water Commission of Victoria , Pamminer, F.
Published	Feb-91
Prepared for	RWC Woody Yaloak Review Committee

Subjects	Modelling
	Hydrologic
	Water Balance
Areas of Focus (streams, storages etc)	
	Lake Corangamite
	WY Diversion Scheme
	Barwon River
Objectives/Purpose	
	Assess impacts on key indicator to changing alternative operating option
	5 scenarios modelled using trigger levels
Methodology/Data	
	Formulation of options
	Computer model of WY Div Scheme
	(Type: Mass Balance Model, Daily Time Step) Developed in previous study - 20 No. 100 year data s
	Data generation
	Simulation and analysis
Impacts	
Outcomes/Recommendations	
	How often would proportion be flooded
	For how long would various levels be flooded
	How much would the lake level rise
	Does the risk of uncontrolled spill change
	How much would lake salinity change
	How much would Barwon River salinity change
Other comments	
	Extension of 1988 Report
	Inputs Daily streamflow, monthly net evap.
	12 years of daily data available
	33 years monthly data
	66 years of yearly data

Review of the Operation of the CCMA Regional Drainage Schemes

Litereature Review - Record Sheet

ID	6
Title	Breifing Note - Lake Corangamite Project
Author	Rural Water Commission of Victoria , Forsyth, D.
Published	Jun-92
Prepared for	Prepared for the Minister for Conservation and Environment

Subjects
Areas of Focus (streams, storages etc)
Woody Yalock Diversion Scheme
Objectives/Purpose
To update the Minister on Lake Corangamite and to provide
a summary report on the recommended change to the operation
of the Woody Yaloak Diversion Scheme.
Methodology/Data
Impacts
Commitment to improvement of environmental value
Outcomes/Recommendations
Change target level of late to 116.0 m (increase 1.3 m)
Acquire 480 ha of freehold land (50 properties)
Total cost \$3.0 million (1992)
Other comments
Possible source of funding: Sale of crown land above 116.4 m
Federal Government (RAMSAR obligation)
Contribution from intended lobbying groups

Review of the Operation of the CCMA Regional Drainage Schemes

Literature Review - Record Sheet

ID	9
Title	Draft State Environment Protection Policy or The Waters of Lake Colac and Catchment
Author	Environment Protection Authority ,
Published	Jan-80
Prepared for	Environment Protection Authority

Subjects	Water quality
	Environment
Areas of Focus (streams, storages etc)	
	Waters of Lake Colac & catchment
Objectives/Purpose	
	Basic framework for future management of water quality
Methodology/Data	
	Boundaries of area affected
	Beneficial users to be protected
	Costs-qualitative assessments
	Water Quality indication and objection
	Attainment Programme
Impacts	
Outcomes/Recommendations	
	Draft Env. Protection Policy
	Comments on costs and benefits of implementing the Policy
	Defines water quality indication and objection
Other comments	
	Boundaries defined

Review of the Operation of the CCMA Regional Drainage Schemes

Literature Review - Record Sheet

ID	10
Title	Lake Colac–Lough Calvert Flood Mitigation Report
Author	State Rivers and Water Supply Commission, Victoria ,
Published	Jul-79
Prepared for	State Rivers and Water Supply Commission Victoria

Subjects	Hydrology, Capital Works, Strategy
	Hydraulics, Operations
	Water balance
Areas of Focus (streams, storages etc)	
	Lake Colac
	Lough Calvert (lower, middle, upper)
Objectives/Purpose	
	Follows interim report in 1977 (outlines cause of 1975 flooding)
	identify cause of flooding from 1975 flooding
	propose structural /non-structural measure to mitigate flooding
Methodology/Data	
	Water balance Lake Colac (monthly basis)
	Rainfall trend analysis
	Concentration on operation given system `generally' has sufficient capacity
	LC stage discharge curve, target filling curve
	LL stage discharge curve
Impacts	
Outcomes/Recommendations	
	Existing works to be upgraded to improve operational control and land acquisition (1)
	Better water flow management \$95K
	Replace crossing across Burregurra Creek with clear span bridges
	Replace Warrowic Outlet Structure, Privatisation of expenditure
Other comments	
	Works (1) completed in 1975/80
	Lake Colac - Cai Area 217 km ²
	Area (Water) 2968 ha
	MWL 117.3
	No references List

Review of the Operation of the CCMA Regional Drainage Schemes

Literature Review - Record Sheet

ID	11
Title	Examination of Issues as Identified in the Johnson Report Review of Operating Rules of the Lake Colac Scheme
Author	Hamilton Partners Consulting ,
Published	Jun-98
Prepared for	Prepared for Lake Colac Lough Calvert Operational Committee

Subjects	Review
	Operating Rules
Areas of Focus (streams, storages etc)	
	Lake Colac Scheme 1, 2
Objectives/Purpose	
	Assess issued raised in 1992 Johnson Report
Methodology/Data	
Impacts	
	Alternative Operating Rules
Outcomes/Recommendations	
Other comments	

Review of the Operation of the CCMA Regional Drainage Schemes

Literature Review - Record Sheet

ID	12
Title	Operating Instructions for the Woody Yaloak River (Lake Corangamite) Diversion Scheme
Author	Rural Water Commission of Victoria ,
Published	Jun-87
Prepared for	Rural Water Commission

Subjects	Operation Salinity
	Hydraulics
	Flooding
Areas of Focus (streams, storages etc)	
	Lake Corangamite
	Woody Yaloak DC & River
	Cundare Pool
Objectives/Purpose	
	To remove as much water as possible from Lake Corangamite and thereby reduce effects of flooding or freehold land around the Lake
	Supply farming land adjacent to channel
Methodology/Data	
	Limitation on salinity - dilution effects
	Discussion of flooding in Barwon River @ Geelong and impacts
Impacts	Flooding in Geelong
	Manage salt loads in Barwon River to acceptable levels
Outcomes/Recommendations	
	Operation roles for:
	Cundare Regulator (CP to LC)
	Black ridge Regulator (BRP to CP)
	Channel Regulator
Other comments	
	NY channel design capacity 490 ML/d
	Overflows at 2 points Barvnah Creek & Mt. Hesse. Dam

Review of the Operation of the CCMA Regional Drainage Schemes

Literature Review - Record Sheet

ID	13
Title	Water Resources of South-Western Victoria - A Management Strategy
Author	Department of Conservation and Environment ,
Published	Nov-89
Prepared for	Department of Conservation and Environment - Victoria

Subjects

Areas of Focus (streams, storages etc)

Objectives/Purpose

Methodology/Data

Impacts

Outcomes/Recommendations

Other comments

Review of the Operation of the CCMA Regional Drainage Schemes

Literature Review - Record Sheet

ID	13.1
Title	South-Western Region Water Management Strategy
Author	Natural Resources and Environment Committee ,
Published	Jan-90
Prepared for	State Government Senate Inquiry

Subjects
Areas of Focus (streams, storages etc)
Objectives/Purpose
Methodology/Data
Impacts
Outcomes/Recommendations
Other comments

Review of the Operation of the CCMA Regional Drainage Schemes

Litereature Review - Record Sheet

ID	14
Title	Lake Corangamite, Australia, a Permanent Saline Lake: Conservation and Management Issues
Author	University of Adelaide (Department of Zoology) , Williams, W.D.
Published	Dec-94
Prepared for	Lakes & Reservoirs: Research and Management 1995 1:55-64 publication.

Subjects	Ecology, Environmental
Areas of Focus (streams, storages etc)	
	Lake Corangamite
Objectives/Purpose	
Methodology/Data	
Impacts	
Outcomes/Recommendations	
Other comments	
	Research Papers on Report Ref (1)

Review of the Operation of the CCMA Regional Drainage Schemes

Literature Review - Record Sheet

ID	15
Title	Impact of Raised levels in Cundare Pool on surrounding aquifers.
Author	HydroTechnology (Rural Water Commission of Victoria) ,
Published	May-95
Prepared for	Southern Water

Subjects	
Groundwater	
	8, 7
Areas of Focus (streams, storages etc)	
Lake Martin Cundare Pool	
Objectives/Purpose	
Construct hydrogeologic framework for Cundare Pool	
Assess bore hydrograph and Lakes level fluctuation data	
Identify area at risk of salinisation covered by rises of local g/w	
Methodology/Data	
Statistical analysis	
Bore location	
Groundwater database	Focus 1990-1994
Impacts	
Outcomes/Recommendations	
Failure of WYDS caused a temporary rise in groundwater level	
Groundwater mounds north of Cundare Pool indication inflow from these areas	
Other comments	

Review of the Operation of the CCMA Regional Drainage Schemes

Literature Review - Record Sheet

ID	16
Title	Corangamite Basin Drainage Schemes Review – An Economic Assessment
Author	ACIL Australia Pty Ltd ,
Published	Mar-88
Prepared for	Prepared for the Rural Water Commission

Subjects	Economics
Areas of Focus (streams, storages etc)	
Barwon River	
Lake Corangamite	
Lake Colac	
Objectives/Purpose	
Establish relationships b/t water quality and economic effects	
Establish relationships b/t water levels and economic effects of inundation	
Methodology/Data	
Assessment of salinity on Barwon River users (domestic, livestock, irrigation)	
Financial Impact of Inundation	
Management of drainage schemes	
Rural Water Commission simulation model	
Impacts	
Outcomes/Recommendations	
Annual costs of salinity and inundation	
Other comments	

Review of the Operation of the CCMA Regional Drainage Schemes

Literature Review - Record Sheet

ID	18
Title	Salt Loads Generated by Lough Culvert Drainage Scheme and Woody Yallock Diversion Scheme, and their Contribution to Barwon River Salinity - Short Version (Report No. 1991/29)
Author	Rural Water Commission of Victoria , Hooke, D.
Published	Sep-91
Prepared for	0

Subjects	Salinity
	Salt loads
Areas of Focus (streams, storages etc)	
	Lough Culvert Drainage Scheme
	Woody Yallock Diversion Scheme
Objectives/Purpose	
	Present compacted salt loads for the full period of data availability
Methodology/Data	
	Flow gauging records 1959-1990 (continuous)
	Salinity Data 1973-1990 (sporadic)
	Comp of salt loads
Impacts	
Outcomes/Recommendations	
	Salt loads 5 year period between 1986-1990
	Lough Cal. 22 000 t/ann. 14%
	WY Div. Sch. 28 000 t/ann 17%
	Other 110 000 t/ann 69%
	Upper Barwon 100%
Other comments	
	Technical report - no recommendation
	No major floods in 5 year period or droughts

Review of the Operation of the CCMA Regional Drainage Schemes

Literature Review - Record Sheet

ID	19
Title	Lake Corangamite Salinity Survey
Author	Rural Water Commission of Victoria ,
Published	Jan-89
Prepared for	0

Subjects
Salinity Monitoring
Areas of Focus (streams, storages etc)
Lake Corangamite
Objectives/Purpose
Understood the spatial variability in salinity of Lake Corangamite
Design of salinity monitoring program
Methodology/Data
Salinity measured fortnightly since 1960 (at northern end)
Survey on 1000 m grid (depth 0.1m, 1m, 2 m etc)
Impacts
Outcomes/Recommendations
Salinity generally increasing from the south to the north
Monitoring (salination) from a single position is not adequate to accurately determine the salt load
Salinity contours 12/1988
Other comments
Actual survey undertake in Nov//Dec 1988

Review of the Operation of the CCMA Regional Drainage Schemes

Literature Review - Record Sheet

ID	20
Title	Lake Corangamite April 1989 Salinity Survey
Author	Rural Water Commission of Victoria , Dickenson, C.
Published	Jun-89
Prepared for	0

Subjects
Salinity Measurement
Areas of Focus (streams, storages etc)
Lake Corangamite
Objectives/Purpose
Follow up survey to Jan 89 salinity survey to measure variability over time
Methodology/Data
Similar methodology to Ref 19
Impacts
Min sal. 4/89 69000 TDS
Max sal. 4/89 79000 TDS
Outcomes/Recommendations
Volume decrease salinity increase in accordance with estimates
Salinity changes are dependent on salt inflows, volume changes, surface and groundwater inflows
Other comments
Survey undertaken in April 1989

Review of the Operation of the CCMA Regional Drainage Schemes

Literature Review - Record Sheet

ID	23
Title	A Report on the Effects of Salinity Upon the Biota of a Number of Lakes in the Western District of Victoria, Including an Investigation of Groundwater – Wetland Relationships
Author	Department of Conservation and Environment , Camerson, M.
Published	Aug-91
Prepared for	0

Subjects	Salinity
	Environment 4, 8
	Groundwater
Areas of Focus (streams, storages etc)	
	Western District
	Glenelg Strategy (Salinity Region)
Objectives/Purpose	
	Biota Studies
	Wetland Vegetation
	Groundwater Investigation
Methodology/Data	
Impacts	
Outcomes/Recommendations	
Groundwater inflow is a significant source of salt to Lakes	
Other comments	
Technical report on western region outside Corangamite area.	

Review of the Operation of the CCMA Regional Drainage Schemes

Literature Review - Record Sheet

ID	25
Title	Modelling Groundwater – Lake Interactions: A Literature Review
Author	University of Ballarat , Dickenson, C.
Published	Jul-95
Prepared for	0

Subjects	Groundwater Modelling
Areas of Focus (streams, storages etc)	Not specific to this area
Objectives/Purpose	
Methodology/Data	
Impacts	
Outcomes/Recommendations	
Other comments	General background document on modelling

Review of the Operation of the CCMA Regional Drainage Schemes

Literature Review - Record Sheet

ID	36
Title	Legal opinions on the closure/ operation of the Woody Yaloak DS
Author	, Meagher, D.R (QC)
Published	Apr-91
Prepared for	RWC of Victoria

Subjects
Legislation
Legal
Areas of Focus (streams, storages etc)
Water Act 1989, 1958
River Improvement Act 1948
Objectives/Purpose
Advice regarding liability for payment of compaction closure of WY Div scheme
Methodology/Data
Impacts
Outcomes/Recommendations
Commission lacks power to close the WY Drainage Scheme
Commission would be liable for the loss that is suffered from Closure without
legislative protection/changes
Other comments
vb

3

Litereature Review - Record Sheet

ID	37
Title	Water Acts and the Woody Yaloak Diversion Scheme
Author	Victorian Government , Finkelstein, R.A. (Solicitor General)
Published	Oct-92
Prepared for	Minister for Water Resources

Subjects	Legal
Areas of Focus (streams, storages etc)	
Woody Yaloak Div. Scheme	
Objectives/Purpose	
Advice sought:	
- whether the closure or partial closure of the div. Scheme is possible	
- whether compensation must be paid to landholders who are adversely affected	
Methodology/Data	
Review of legislation and Acts	
Impacts	
Outcomes/Recommendations	
RWC obliged to operate and maintain works	
Partial closure of the scheme is not permissible	
Compensation is payable	
Other comments	
Slightly different advice to Ref 36	

Review of the Operation of the CCMA Regional Drainage Schemes

Literature Review - Record Sheet

ID	39
Title	Lake Corangamite Salinity Survey Feb - March 1993
Author	Hydro Technology RWC (Aug 1993)
Published	Aug-93
Prepared for	DCNR, Colac Region

Subjects

Areas of Focus (streams, storages etc)

Objectives/Purpose

Methodology/Data

Impacts

Outcomes/Recommendations

Other comments



GHD Pty Ltd ABN 39 008 488 373

20 Business Park Drive

Notting Hill VIC 3168

T: (03) 9558 8333 F: (03) 9558 8444 E: nghmail@ghd.com.au

© **GHD Pty Ltd 2002**

This document is and shall remain the property of GHD Pty Ltd. The document may only be used for the purposes for which it was commissioned and in accordance with the Terms of Engagement for the commission. Unauthorised use of this document in any form whatsoever is prohibited.

Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	S Roach	P Priebbenow	***** PDP	P Priebbenow	***** PDP	3/12/02

* denotes signature on original document