

North Central Waterway Management Strategy: Indicative Priorities Discussion Paper

1. Preamble

The North Central Waterway Management Strategy (WMS) is the principle framework for waterway and wetland management in North Central Victoria. This discussion paper has been written to assist in the development of the North Central WMS. The discussion paper attempts to articulate our approach to priority setting and provides indicative priorities for the next eight years. Further detailed assessment of works and costs will need to be considered when determining the final priorities and works program outlined in the WMS.

2. Executive Summary

The North Central Waterway Management Strategy (the strategy) will guide investment into prioritised waterway assets within our region over the next eight years. The policies and actions within this strategy have been developed through extensive discussion and collaboration as part of an integrated consultation program. The strategy has been informed by a Steering Committee made up of six key stakeholder representatives meeting monthly over the development of the strategy as well as North Central CMA staff, Natural Resource Management Committee (NRMC) and Board. Additional stakeholders including Traditional Owners, water authorities and public land managers have also been engaged on specific aspects of waterway management.

The strategy replaces the previous River Health Strategy framework and is an integrated management tool for rivers, creeks and wetlands. The development of the strategy is guided by the Victorian Waterway Management Strategy (2013) which describes the Government's policy relating to decision making processes, investment, roles and responsibilities of management agencies and investment into natural resources.

The North Central WMS Indicative Priorities Discussion Paper establishes:

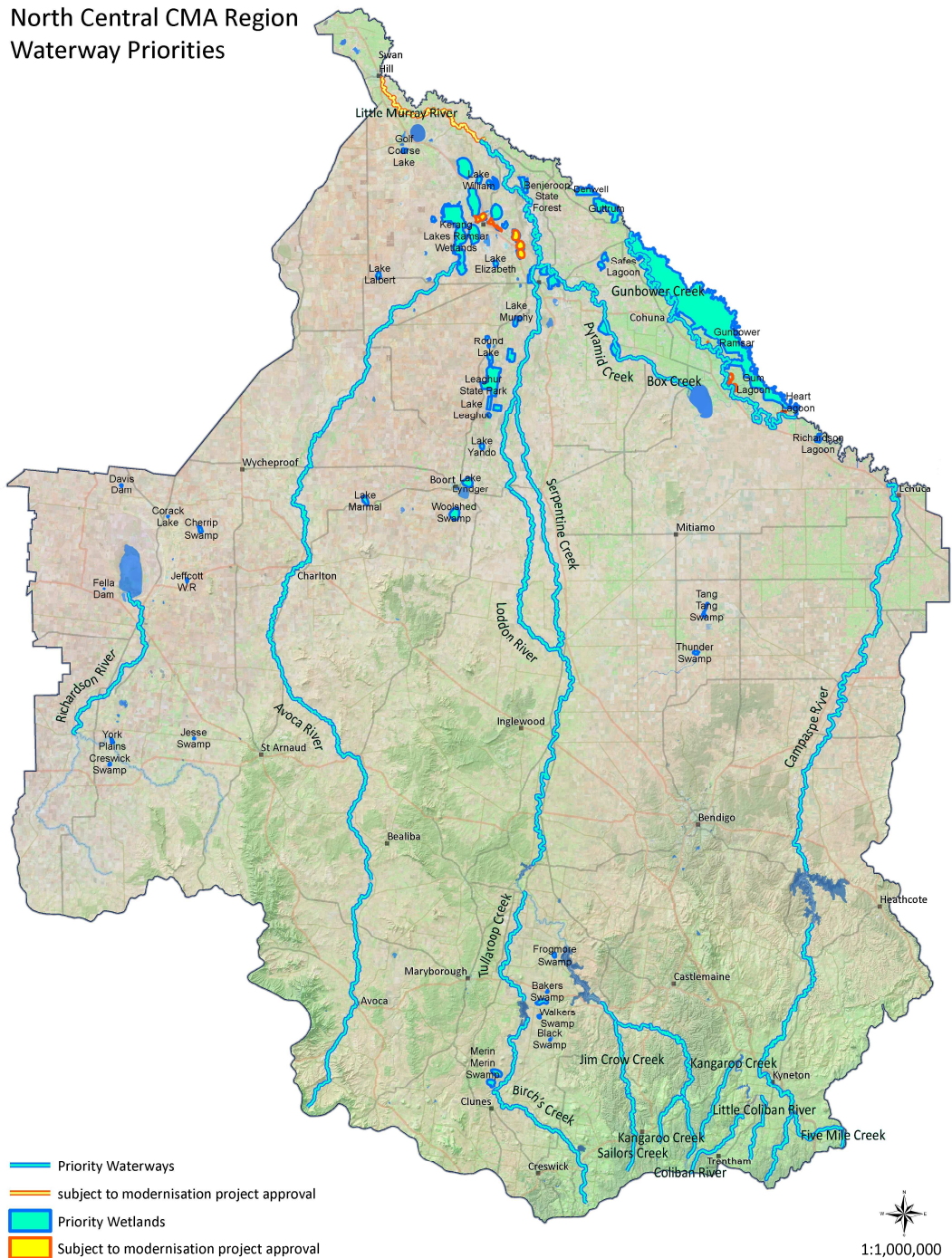
- A transparent asset prioritisation process
- Decision making tools and data management
- An indicative list of waterway asset priorities (streams and wetlands)
- Next steps- development of an eighty year works program

The process, framework and consultation methods used in the development of the indicative regional priorities are detailed in this discussion paper, including a graphic representation of the process undertaken displayed in Figure 1 (pg 4).

The indicative priorities for the North Central WMS are as follows:

Basin	Campaspe	Loddon	Avoca	Avon-Richardson
Priority Streams	Campaspe River, Five Mile Creek, Kangaroo Creek, Coliban River, Little Coliban River	Loddon River, Jim Crow Creek, Sailors Creek, Kangaroo Creek, Tullaroop Creek, Birch's Creek, Box Creek, Pyramid Creek, Serpentine Creek, Little Murray River, Gunbower Creek	Avoca River	Richardson River
Priority Wetlands	-	Frogmore Swamp, Bakers Swamp, Black Swamp, Walkers Swamp, Long Swamp, Middle Swamp, Merin Merin Swamp, Tang Tang Swamp, Thunder Swamp, Richardson's Lagoon, Kerang Lakes (Ramsar), Lake Yando, Cullen Lake, Lake Meran, Leaghur State Park, Johnson Swamp, Little Lake Kelly, Lake Kelly, Lake William, Red Gum Swamp, Lake Lyndger, Lake Leaghur, Lake Elizabeth, Lake Marmal, McDonalds Swamp, Woolshed Swamp, Hird Swamp, Benjeroop State Forest, Lake Tutchewop, Lake Murphy, Great Spectacle, Round Lake, Golf Course Lake, Fosters Swamp, First, Middle, Third Reedy lakes, Little Lake Charm, Racecourse Lake Gunbower Forest (Ramsar), Safe Lagoon, Taylors, Cockatoo, Gum, Heart, unregulated lagoons	First Marsh, Second Marsh, Third Marsh, Lake Bael Bael, Lake Lalbert, Yassom Swamp	York Plains Complex, Wimmera Mallee Pipeline supplied wetlands (Creswick Swamp, Cherrip Swamp, Davis Dam, Corack Lake, Jeffcott Wildlife Reserve, Jesse Swamp, Falla Dam)

North Central CMA Region Waterway Priorities



3. Policy context

The recently released Victorian Waterway Management Strategy (VWMS) provides State-wide direction for waterway management and will be a key guiding document for the development of Regional Waterway Management Strategies. The Department of Environment and Primary Industries (DEPI) have also developed guidelines and guidance notes to support Catchment Management Authorities (CMAs) in developing regional WMS. The recently endorsed North Central Regional Catchment Strategy (RCS) will also guide the development of the WMS.

4. Priority Setting Process

The North Central WMS priority setting process (Figure 1) is guided by the VWMS and DEPI's guidelines. The WMS Steering Committee and internal CMA working groups with technical and local knowledge and experience of waterways and wetlands have also been involved in the priority setting process.

The priority setting process utilises best available information to support priority setting and decision making processes. The following principles have been used to support the priority setting process:

- Existing legislative, funding or community obligations and commitments
- Regional goals that have been set to drive the priority setting process
- Identification of high value waterways and wetlands at risk and where feasible, cost effective actions can be implemented
- Incorporation of local knowledge of regional waterways and wetlands where appropriate.

5. Supporting Tools

DEPI has provided some supporting tools to assist CMAs in developing WMSs. These include:

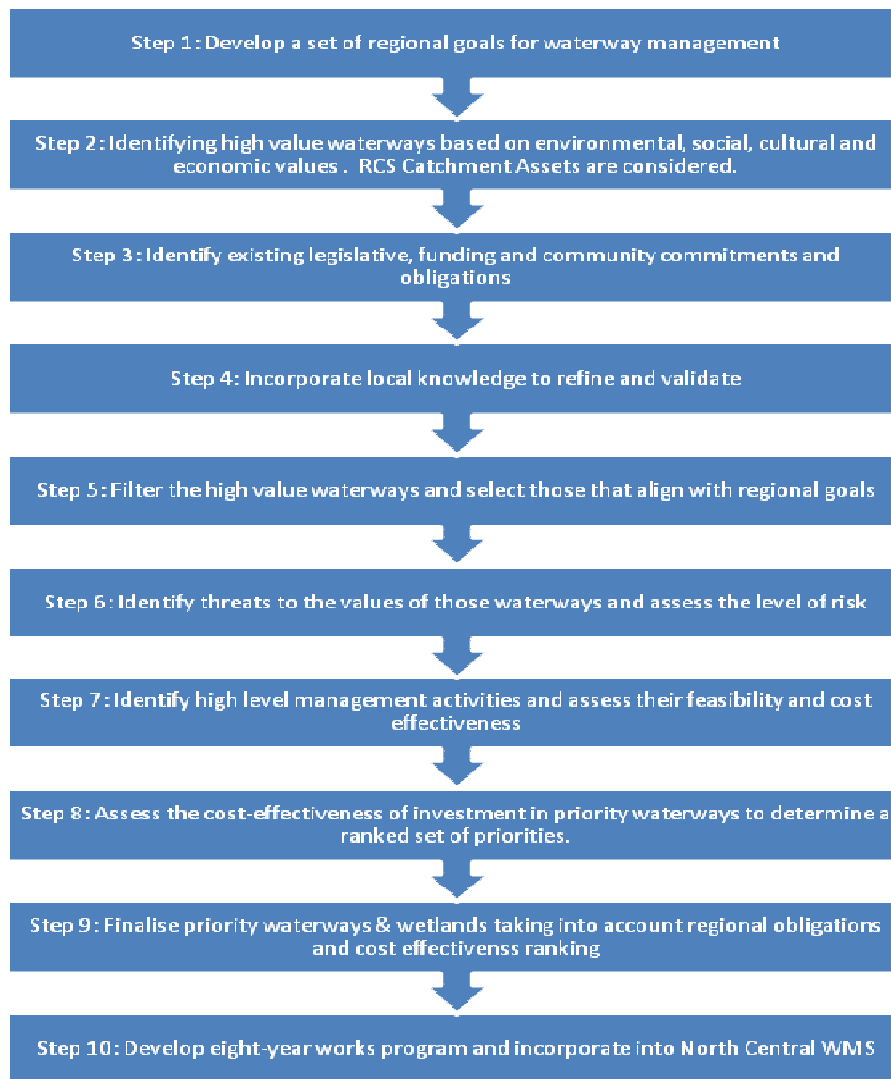
AVIRA

A key foundation tool for the WMS development is the Aquatic Values Identification and Risk Assessment (AVIRA) database. AVIRA highlights the environmental, social and economic values and associated risks to these values for waterways and wetlands across the region. This information has been used to identify high value waterways and has been used to undertake a risk assessment to inform the priority setting process.

Water Benefit:Cost Scoring tool

The Water Benefit: Cost Scoring (WBCS) tool has been developed to support CMAs inform the prioritisation process. The WBCS is a modified version of the Investment Framework for Environmental Resources (INFFER) Benefit: Cost Ratio. It utilises information collected in AVIRA and supporting processes (Natural Decisions, 2013).

Figure 1 – North Central WMS Priority setting process



The following sections details how this process has been implemented to date.

6. North Central WMS Priority Setting

Step 1: Regional Goals

The goals for waterways management in the North Central region are as follows:

- Maintain or improve highly threatened or rare water dependant species and communities within the North Central CMA
- Maintain or improve ecologically healthy or representative rivers
- Protect or improve the ecological character of the Gunbower Forest and Kerang Lakes Ramsar sites
- Maintain or improve wetlands of National or State significance as identified in the RCS
- Maintain or improve waterways within water supply protection areas to support long-term improvement in water quality
- Maximise environmental outcomes by efficiently managing environmental entitlements in partnership with water holders

- Work with local communities to better understand the values of local waterways particularly where there is a high social value (including urban communities).
- Maintain or improve waterways that will provide adaptation under a variable climate

Step 2: High Value Waterways and Wetlands

The Victorian Waterway Management Strategy states that waterways will be considered high value if they have one, or more, of the following characteristics:

- formally recognised significance
- presence of highly threatened or rare species and communities
- high naturalness values (for example, aquatic invertebrate communities and riparian vegetation) or special waterway features (for example, drought refuges and important bird habitat)
- high social, cultural and economic values (for example, recreational fishing, Aboriginal cultural heritage, urban/rural water sources).

For waterway assets in AVIRA, these characteristics can be assessed using specific scoring rules as detailed in Appendix 1. The results from this approach are:

- 112 / 112 waterways are high value
- 67 / 67 wetlands are high value (please note that 24 of these sites are within Gunbower Forest).

The data in AVIRA for wetlands only covers a limited set of wetlands for the region. It is recognised that most wetlands will have some value, therefore all wetlands are assumed to be high value (further consideration of available information will be required prior to completion of the WMS.)

The North Central CMA recently completed the North Central RCS that provides clear direction regarding priority catchment assets. The information developed as part of the RCS has also been considered in identifying high value waterways and wetlands.

In identifying high value waterways and wetlands we recognise that there are a large number of assets in the region requiring prioritisation to develop an achievable eight year works program for the WMS (see Steps 3 - 10).

Step 3: Existing Obligations and Commitments

There are a number of legislative, funding and community obligations and commitments that need to be recognised and used in conjunction with the risk assessment and priority setting process.

Some of these existing obligations and commitments include but are not limited to:

- Protection of the Gunbower Forest and Kerang Lakes Ramsar sites, including:
 - Flooding Enhancement of Gunbower Forest
 - Kerang Lakes CFOC project
- Delivery of environmental water to key waterways and wetlands:
 - Campaspe, Coliban and Loddon rivers, and Birch's and Gunbower creeks.
 - Numerous wetlands within the region including Wimmera Mallee pipeline wetlands and Central Murray wetlands.
- Goulburn-Murray Water (G-MW) Modernisation projects focused on improving environmental assets within the region.
 - Swan Hill Modernisation Project – Little Murray River
 - Gunbower Lagoons Modernisation Project
 - Kerang Lakes By-pass Project
- Current long-term projects already funded
 - Caring for Campaspe

- CFoC funding including Protecting and enhancing priority wetlands and Kerang Lakes and Gunbower Projects

Step 4: Incorporate local knowledge to refine and validate assets considered

The WMS Steering Committee and internal CMA working groups for waterways and wetlands were consulted to ensure the priority setting process utilised the most up-to-date and accurate information. Consultation with CMA, regional DEPI and Parks Victoria staff was undertaken to ensure local knowledge was incorporated into the priority setting process wherever possible.

Wetland information used in AVIRA relied on Index of Wetland Condition (IWC) data. There are a limited number of wetlands within the North Central region where IWC data was available, so information was taken from other sources including past regional wetland planning processes, existing monitoring and local knowledge.

This process identified the following assets as part of the prioritisation process:

- Six additional river reaches
- 50 additional wetlands

Please note: Given the lack of data for some wetlands, there are likely to be additional wetlands that may need to be added to this list. Please let Rohan Hogan from the CMA know if there are other wetlands that should be considered.

Step 5: Filter high values waterways that align with Regional Goals

This step involved identifying which of the high values waterways triggered one or more of the regional goals. A set of rules were developed linking the regional goals to specific values within AVIRA. Appendix 2 outlines the waterways that have triggered one or more of the regional goals.

In summary:

- 65 / 112 waterway reaches triggered at least one goal
- 67 / 67 wetlands triggered at least one goal

The regional goal to 'Maintain or improve waterways within water supply protection areas to support long-term improvement in water quality' was only triggered by 35 of the 65 reaches. Therefore an amendment was made to the priority setting process by only considering water supply protection areas that are at a scale where it is feasible to deal with water quality issues. This refinement meant that large catchments, such as above Lake Eppalock or Cairn Curran Reservoir were considered infeasible to deal with water quality issues. However, water supply protection areas such as the Upper Coliban system were included as it was considered more feasible to deal with water quality issues due to the relatively smaller scale and complexity of issues.

Therefore large water supply protection areas were assumed not to trigger the water supply protection goal reducing the total from 65 to 43 waterway reaches.

It should be noted that goals 7 and 8 have no associated values within AVIRA and therefore have not been used in Step 5. High social values including urban communities will consider as part of the overall action planning stage of the project and be determined with support from the Steering Committee and the Natural Resources Management Committee (community advisory committee to the North central CMA Board).

Step 6: Identify Threats to Values

Within AVIRA, a risk assessment is undertaken for each waterway resulting in 836 risk level assessments, e.g. 38 values are assessed against 22 threats for each river reach. To assist with ranking priority waterways, the focus of the risk assessment was further refined to only consider those risks to specific values linked to the regional goals.

All river reaches and wetlands identified in the above process undertook the risk assessment (subject to data availability).

Step 7: Identify high level management activities and assess feasibility

For each identified risk, a ‘first cut’ of the technical feasibility (rated high, medium, low) of reducing each threat was determined. Social and/or economic factors were assessed during the development of the works program.

Calculating a Priority Waterway Score

To calculate the score for a priority waterway, raw scores were calculated for each risk/feasibility combination as follows:

raw score = risk level x feasibility

where: risk to asset = 5–very high, 4-high, 3-moderate, 2-low, 1-very low
feasibility of reducing the threat = 3–high, 2–medium, 1–low

All raw scores for a waterway were then added and the total divided by the number of raw scores calculated. This produced a Priority Waterway Score (ranging from 0 and 15) where 15 indicates an activity with a very high risk to the asset associated with a very high feasibility management activity.

Step 8: Assess the cost effectiveness of investments

Information present below was extracted from Waterway Benefit:Cost Scoring Tool – Use Manual version 4)

The WBCS Tool supports further assessment of waterway assets in a way that integrates information about value, threat and technical feasibility from AVIRA, with a more complete set of information that can be then used to compare the relative cost-effectiveness and ranking of projects to protect these assets.

It is designed to enable a rapid assessment of a large number of assets, for example by an expert group, with sufficient knowledge of both the assets under consideration and a general grasp of the factors required to determine a Waterway Benefit: Cost Score calculated according to the following equation:

$$BCS = \frac{V \times W \times A \times (1-R) \times DF \text{ (based on time lag)}}{C + PV(M)}$$

The variables that feed into the Waterway Benefit: Cost Score are:

V = value of the asset

W = priority waterway score, effectively a surrogate for the impact of works, assuming the required works are fully implemented

A = multiplier for adoption, based on the attractiveness of works by private citizens (if required)

R = all risks, that is the likelihood that the project could fail due to factors such as socio-political, administrative constraints or failure of partner cooperation

DFB = discount factor function for benefits, which depends on L

L = lag until benefits occur (years)

C = short-term cost of project

PV = present value function

M = annual cost of maintaining outcomes from the project in the longer term.

The first steps utilize information from AVIRA. Specifically, V is informed by the asset values compiled in AVIRA and W is the impact of works from the Priority Waterway Score (PWS) calculated from the assessment of risk level and feasibility (See Guidance Note #6). Additional information needed to calculate the WBCS consists of A, R, the time lag to benefits L, C and M.

The priority waterway score (W) is calculated by multiplying the level of risk to the asset value by the technical feasibility of addressing that risk. In performing this calculation it is important to ensure that all other variables are consistent with the project fully dealing with the risk to the asset value. The WBCS Tool also incorporates a consideration of uncertainty through an assessment of the information quality used to estimate variables and identification of the major knowledge gaps.

Process

Workshops involving internal CMA working groups for streams and wetlands provided information to assist the WBCS Tool process. The information used for this process has been documented in Appendix 3. The WBCS is a way of comparing the relative benefits of streams and wetlands and will be used to assist in guiding priority setting Step 9.

Step 9: Finalise priority waterways

Taking into account all the information provided in Steps 1 – 8, a list of indicative priorities was developed. Refer to Appendix 4 for more detail on indicative priorities.

Table 1 – Indicative Priorities for streams

Catchment	Program Areas	Waterway	ISC Reaches	Comments
Campaspe (Basin 6)	Lower Campaspe (Below Lake Eppalock)	Campaspe River	1,2,3,4,5	Key environmental flow site, part of the Caring for the Campaspe project area
	Upper Campaspe (Upstream of Lake Eppalock)	Campaspe River	6, 7	Part of the Caring for the Campaspe project area. Willow lined area between Metcalfe East and Carlsruhe requires further consideration
		Five Mile Creek	24	
	Coliban	Kangaroo Creek	21	Significant works completed 2008-2011. Consider a Maintenance Program
		Coliban River	22	Links to Coliban Water's 'Draft Drinking Water Storages and Land Management Plan' (2013)
		Little Coliban River	20	Links to Coliban Waters 'Draft Drinking Water Storages and Land Management Plan' (2013)
Loddon (Basin 7)	Upper Loddon (Above Cairn Curran Reservoir)	Loddon River	9,10, 48	Significant works completed 2008-2011. Consider a Maintenance Program
		Jim Crow Creek	27	Significant works completed by both North Central CMA and Guildford/Upper Loddon Landcare Group. Consider a Maintenance Program
		Sailors Creek	28	Significant works completed 2008-2011. Consider a Maintenance Program
		Kangaroo Creek	49	Significant works completed 2008-2011. Consider a Maintenance Program
		Tullaroop Creek	18, 19	Environmental flow Management
		Birch's Creek	21	Environmental flow Management
		Box Creek	32	Fishway to be installed, compliment previous works
	Lower Loddon	Loddon River	1, 2, 3, 4, 5, 6, 7	Key environmental flow reaches. Implement maintenance program as significant works completed through Loddon Stressed River program (2003-13).
		Serpentine Creek	11	More detailed assessment required
		Little Murray River	50	Subject to G-MW Modernisation Project approval
	Gunbower	Gunbower Creek	38, 39	Links to The Living Murray Gunbower Forest project
Avoca (Basin 8)	Upper Avoca (upstream of Charlton)	Avoca River	5, 6, 7, 8	Build on Avoca Reach 7 work (2011-2013)
	Lower Avoca (downstream of Charlton)	Avoca River	1, 2, 3, 4	
Wimmera (Basin 15)	Avon-Richardson	Richardson River	77, 78	Including the Rich Avon Weir, potential linkages with WMP

Table 2 – Indicative Priorities for Wetlands

Catchment	Program Areas	Wetland	Comments	
Campaspe (Basin 6)	Lower Campaspe (Below lake Eppalock)	-		
	Upper Campaspe (Upstream of Eppalock)	-		
	Coliban			
Loddon (Basin 7)	Upper Loddon (Above Cairn Curran Reservoir)	Frogmore Swamp	Covenant in place	
		Bakers Swamp		
		Black Swamp		
		Walkers Swamp		
		Long Swamp	Proposal to purchase private land, strong community expectation	
	Loddon (Western Tributaries above Laanecoorie Reservoir)	Middle Swamp		
		Merin Merin Swamp		
		Loddon Eastern tribs		
			Tang Tang Swamp	
			Thunder Swamp	
Richardson's Lagoon				
Lower Loddon		Kerang Lakes Ramsar	All 23 wetlands included, specific wetlands may be included below in their own right	
		Lake Yando		
		Cullen Lake		
		Lake Meran		
		Leaghur State park		
		Johnson Swamp		
		Little Lake Kelly		
		Lake Kelly		
		Lake William		
		Red Gum Swamp		
		Lake Lyndger		
		Lake Leaghur		
		Lake Elizabeth		
		Lake Marmal		
		McDonalds Swamp		
		Woolshed Swamp		
		Hird Swamp		
		Benjeroop State Forest		
		Lake Tutchewop		
		Lake Murphy		
Great Spectacle				
Round Lake				
Golf Course Lake				
Fosters Swamp				
		First, Middle, Third Reedy lakes, Little Lake Charm and Racecourse Lake	Subject to Modernisation project approval	
	Gunbower	Gunbower Forest (Ramsar)		
		Safe Lagoon		

		Taylor's, Cockatoo, Gum, Heart, unregulated lagoons	Subject to Modernisation project approval
Avoca (Basin 8)	Upper Avoca (upstream of Charlton)	-	
	Lower Avoca (downstream of Charlton)		
		First Marsh	
		Second Marsh	
		Third Marsh	
		Lake Bael Bael	
		Lake Lalbert	
		Yassom Swamp	
Wimmera (Basin 15)	Avon-Richardson		
		York Plains	
		Wimmera Mallee Pipeline supplied wetlands	Creswick Swamp, Cherrip Swamp, Davis Dam, Corack Lake, Jeffcott Wildlife Reserve, Jesse Swamp, Falla Dam

Water Storages

Water storages within the North Central region hold significant economic, recreational and environmental value to the community. Although the management of these storages is vested in water authorities such as Goulburn-Murray Water, Coliban Water and Central Highlands Water, there is a need to consider how actions in the WMS may support the overall management of the storages. G-MW and Coliban Water are currently in the process of developing management plans for their key storages. The CMA through the WMS will work with the relevant water authorities to ensure synergies between the WMS and Storage Management Planning processes.

Table 3 – Indicative Priorities for Storages

Catchment	Program Areas	Storage	Comments
Campaspe (Basin 6)	Lower Campaspe (Below lake Eppalock)	-	
	Upper Campaspe (Upstream of Eppalock)	Lake Eppalock	G-MW in the process of developing a Land and On water Management Plan for Lake Eppalock
	Coliban	Lauriston, Malmsbury and Upper Coliban reservoirs –	Coliban Water in the process of developing a Drinking Water Storages and Land Management Plan
Loddon (Basin 7)	Upper Loddon (Above Cairn Curran Reservoir)		
	Loddon (Western Tributaries above Laanecoorie Reservoir)	Tullaroop, Newlyn, Hepburn lagoon	G-MW in the process of developing a Land and On water Management Plan for all Storages
		Evansford Reservoir	Central Highlands Water
	Mid Loddon	Kow Swamp	G-MW in the process of developing a Land and On water Management Plan for all Storages
	Lower Loddon	Cairn Curran, Laanecoorie	G-MW in the process of developing a Land and On water Management Plan for all Storages
Avoca (Basin 8)	Upper Avoca (upstream of Charlton)	-	
	Lower Avoca (downstream of Charlton)	-	
Wimmera (Basin 15)	Avon-Richardson	-	

Step 10: Develop eight Year works program

Decisions regarding how many priorities and the total cost of the eight year works program are to be made in consultation with WMS Steering Committee, NRMC, Board and DEPI.

Secondary priorities will also be identified subject to future investment opportunities.

In setting the eight year works program the following will be considered:

- Total cost of eight year works program (to be determined in discussion with DEPI, Board, NRMC and CMA Steering Committee)
- Current and past investment
- Existing obligations
- Indicative priorities from Step 9
- Feasible and cost effective actions.

Feedback

This discussion paper has been developed so that key stakeholders can provide initial feedback on the priority setting process. Could you please read the Paper and provide any feedback to:

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Appendix 1 – High value rivers and wetlands AVIRA Criteria

Table 1 below provides the triggers used to determine high values waterways using AVIRA.

Table 1 - AVIRA Metrics/Categories Used to Identify High Value Waterways

Value Type	High Value Category	AVIRA Scoring Rule
Environmental Values		
Formally Recognised – International Significance	Ramsar Sites (wetlands only)	Yes
	East Asian-Australasian Flyway sites (wetlands and estuaries only)	Yes
Formally Recognised – National or State Significance	Nationally Important Wetlands	Yes
	Living Murray Icon Sites	Yes
	National Heritage Sites	Yes
	Heritage Rivers	Yes
	Icon Rivers	Yes
	Essentially Natural Catchments	Yes
	Victorian Parks and Reserves	Yes
	Victorian Heritage Sites	Yes
Representativeness	Representative Rivers	Yes
Rare or Threatened Species/Communities	Significant fish	4-5
	Significant birds	4-5
	Significant amphibians (rivers and wetlands only)	4-5
	Significant invertebrates (rivers and wetlands only)	4-5
	Significant reptiles	4-5
	Significant mammals (rivers and wetlands only)	4-5
	Significant flora	4-5
	Significant riparian EVCs (rivers only)	5

	Significant wetland EVCs (wetlands only)	4-5
Rare or Threatened Species/Communities	Significant estuarine EVCs (estuaries only)	4-5
Naturalness	Aquatic invertebrate community condition (rivers and wetlands only)	4-5
	Native fish communities (rivers only)	4-5
	Riparian vegetation condition (rivers only)	4-5
	Wetland vegetation condition (wetlands only)	4-5
	Drought refuges	3,5
	Important bird habitat	5
	Biosphere Reserves	Yes
Social Values		
Activity	Recreational fishing	5
	Non-motor boating	4-5
	Motor boating	4-5
	Camping	4-5
	Swimming	5

Appendix 2 -

Reach No.	Name	Maintain and improve waterways of high community value	Maintain or improve waterways within water supply protection areas to support long term improvement in water quality	Maintain or improve the resilience of known populations of threatened fish species.	Maintain or improve the resilience of known populations of threatened bird species.	Maintain or improve the resilience of known populations of other significant waterway dependent species.	Protect all environmental values of near ecologically healthy rivers.	Protect all environmental values of representative rivers.	Maximise environmental outcomes by efficiently managing environmental entitlements in partnership with waterholders	Priority Waterway	Number of Goals met
6~21	Kangaroo Creek		x				x			x	2
7~52	Loddon River			x						x	1
8~2	Avoca River							x		x	1
8~3	Avoca River							x		x	1
7~32	Box Creek			x						x	1
6~22	Coliban River		x				x			x	2
8~5	Avoca River							x		x	1
7~50	Little Murray River	x	x	x	x					x	4
8~1	Avoca River	x				x		x		x	3
7~4	Loddon River								x	x	1
7~1	Loddon River								x	x	1
8~4	Avoca River	x						x		x	2
7~6	Loddon River	x							x	x	2
6~4	Campaspe River	x	x	x					x	x	4
6~3	Campaspe River	x							x	x	2
7~21	Birch Creek					x				x	1
6~2	Campaspe River	x	x						x	x	3
7~39	Gunbower Creek	x	x		x					x	3
6~19	Coliban River			x						x	1
7~12	Bullabul Creek					x				x	1
7~38	Gunbower Creek	x			x					x	2
6~20	Little Coliban River		x							x	1
7~48	Loddon River	x								x	1
6~5	Campaspe River		x	x					x	x	3
7~51	Pyramid Creek			x	x	x				x	3
15~78	Richardson River					x				x	1
7~44	Bendigo Creek				x					x	1
7~30	Barkers Creek	x								x	1
8~7	Avoca River	x						x		x	2
7~7	Loddon River	x	x	x					x	x	4
7~33	Bullock Creek				x					x	1

15~77	Richardson River			x		x				x	2
6~12	Axe Creek						x			x	1
6~16	Wild Duck Creek					x				x	1
6~1	Campaspe River	x		x					x	x	3
7~8	Loddon River	x		x					x	x	3
7~10	Loddon River	x					x			x	2
8~8	Avoca River							x		x	1
7~2	Loddon River	x		x					x	x	3
7~28	Sailors Creek	x					x			x	2
7~20	Creswick Creek					x				x	1
6~6	Campaspe River	x					x			x	2
8~6	Avoca River							x		x	1
15~79	Richardson River										0
15~80	Avon River										0
15~81	Avon River										0
15~82	Avon River										0
15~83	Sandy Creek										0
15~84	Wallaloo Creek										0
15~85	Andersons Creek										0
15~86	Dog Trap Creek										0
6~10	Forest Creek										0
6~11	Forest Creek										0
6~13	Sheepwash Creek										0
6~14	Mclvor Creek										0
6~15	Mclvor Creek										0
6~17	Myrtle Creek										0
6~18	Coliban River										0
6~23	Pipers Creek										0
6~24	Five Mile Creek										0
6~25	Jews Harp Creek										0
6~7	Campaspe River										0
6~8	Mount Pleasant Creek										0
6~9	Mount Pleasant Creek										0
7~11	Serpentine Creek										0
7~13	Bradford Creek										0
7~14	Bet Bet Creek										0
7~15	Bet Bet Creek										0
7~16	Bet Bet Creek										0
7~17	Burnt Creek										0
7~18	Tullaroop Creek										0
7~19	Tullaroop Creek										0

7~22	McCallum Creek									0
7~23	McCallum Creek									0
7~24	Middle Creek									0
7~25	Joyces Creek									0
7~26	Muckleford Creek									0
7~27	Jim Crow Creek									0
7~29	Campbells Creek									0
7~3	Loddon River									0
7~31	Barr Creek									0
7~34	Bullock Creek									0
7~35	Bullock Creek									0
7~36	Bullock Creek									0
7~37	Spring Creek									0
7~40	Bendigo Creek									0
7~41	Bendigo Creek									0
7~42	Bendigo Creek									0
7~43	Bendigo Creek									0
7~45	Myers Creek									0
7~46	Myers Creek									0
7~47	Back Creek									0
7~49	Kangaroo Creek									0
7~5	Loddon River									0
7~53	Gunbower Creek									0
7~54	Gunbower Creek									0
7~9	Loddon River									0
8~10	Campbell Creek									0
8~11	Campbell Creek									0
8~12	St Arnaud Creek									0
8~13	Fentons Creek									0
8~14	Fentons Creek									0
8~15	Cherry Tree Creek									0
8~16	Homebush Creek									0
8~17	Middle Creek									0
8~18	Number Two Creek									0
8~19	Rutherford Creek									0
8~20	Glenlogie Creek									0
8~27	Greenhill Creek									0
8~28										0
8~29	Cochranes Creek									0
8~9	Mosquito Creek									0

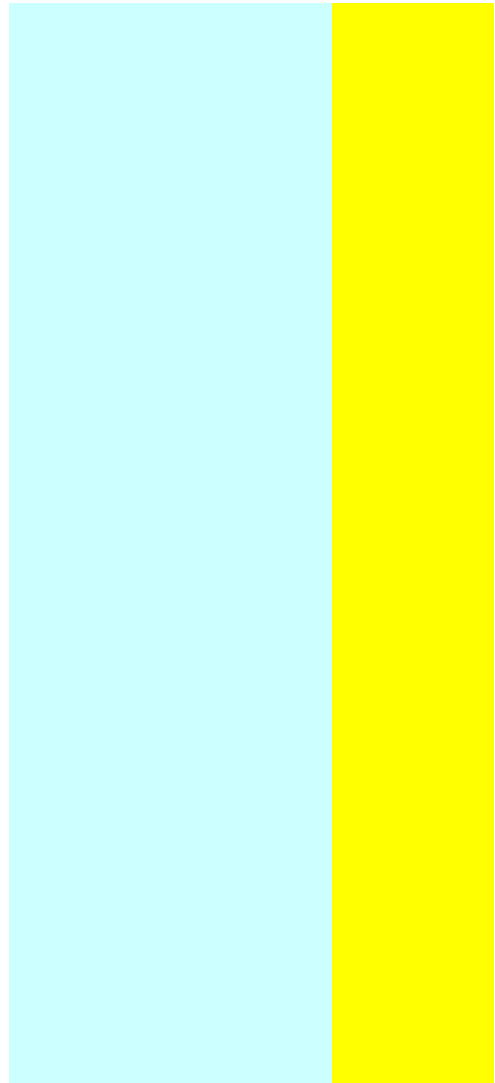
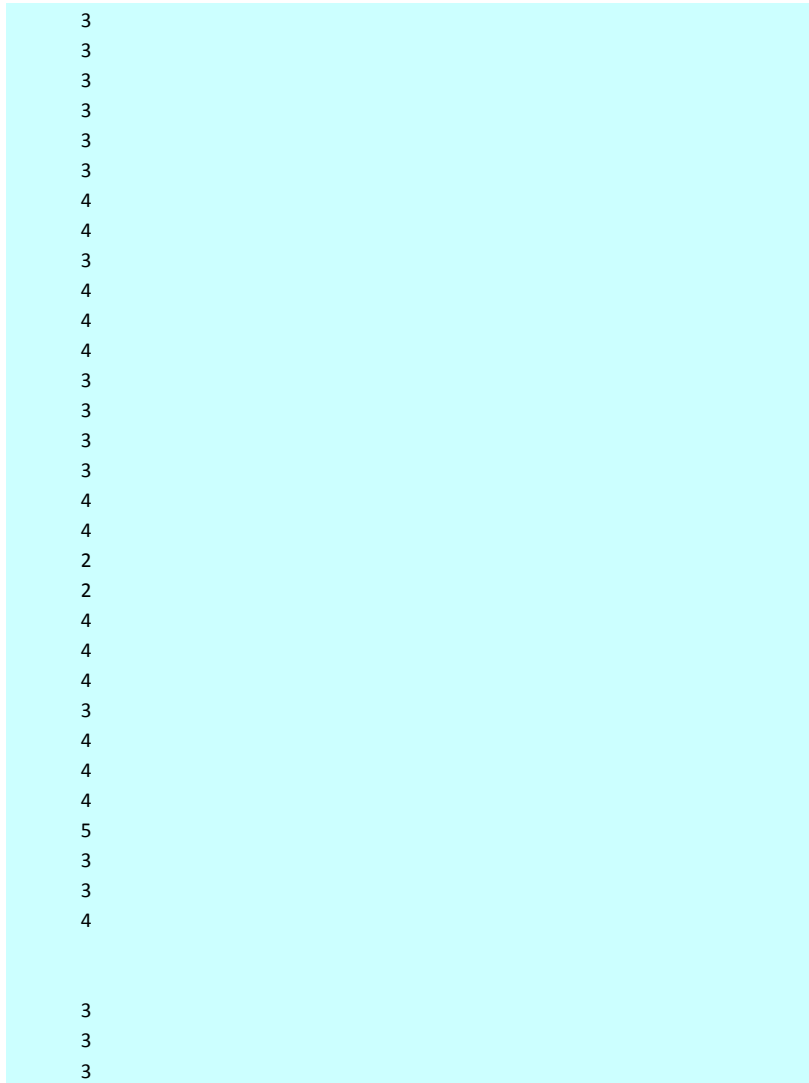
Appendix 3 – Waterway Benefit:Cost Scoring Tool

Rivers

	Waterway Benefit: Cost Score calculator v1	Value (V)	Impact of works (W)	Adoption (A)	All risks (R)	Lag (L)	Discount factor (DFb)	Up-front cost (C)	Maintenance cost (M)	Benefit: Cost Score	Information quality
7~49	Loddon River	15	9.0	1	0.85	3	0.86	0.07	0.04	199.0	Very Good
7~49	Kangaroo Creek	15	6	1	0.85	3	0.86	0.2	0.04	105.2	Medium
6~21	Kangaroo Creek	9	12.0	0.9	0.85	5	0.78	0.3	0.06	68.7	Very Good
7~38	Gunbower Creek	11	9.6	0.6	0.85	8	0.68	0.21	0.03	68.4	Good
8~03	Avoca River	8	11.3	0.6	0.85	8	0.68	0.25	0.02	67.5	Good
7~04	Loddon River	9	9.6	0.5	0.85	8	0.68	0.1	0.03	59.0	Good
6~01	Campaspe River	7	8.5	1	0.85	5	0.78	0.6	0.01	56.0	Very Good
6~22	Coliban River	14	10.3	0.5	0.85	5	0.78	0.5	0.04	51.9	Good
8~07	Avoca River	8	8.6	0.5	0.85	8	0.68	0.15	0.03	42.0	Good
8~02	Avoca River	8	10.0	0.6	0.85	8	0.68	0.5	0.02	38.7	Good
7~01	Loddon River	7	9.9	0.5	0.85	8	0.68	0.35	0.03	29.6	Good
15~77	Richardson River	6	7.3	0.6	0.85	10	0.61	0.2	0.03	26.3	Medium
8~01	Avoca River	7	11.0	0.6	0.85	8	0.68	0.8	0.02	26.2	Good
7~5	Loddon River	7	8	0.5	0.85	8	0.68	0.1	0.05	25.4	Medium
7~9	Loddon River	8	8	0.5	0.85	8	0.68	0.21	0.05	24.7	Medium
15~78	Richardson River	5	8.0	0.6	0.85	10	0.61	0.2	0.03	24.0	Medium
7~28	Sailors Creek	10	8.1	1	0.62	5	0.78	0.6	0.1	23.7	Medium
7~06	Loddon River	9	9.4	0.5	0.85	8	0.68	0.5	0.05	23.6	Medium
7~02	Loddon River	7	8.3	0.5	0.85	8	0.68	0.4	0.03	23.2	Medium
7~07	Loddon River	7	8.4	0.5	0.85	8	0.68	0.32	0.04	22.6	Medium
7~18	Tullaroop Creek	7	8	0.6	0.85	8	0.68	0.4	0.05	20.7	Medium
6~04	Campaspe River	8	10.0	0.8	0.85	8	0.68	1.2	0.06	20.0	Very Good
6~06	Campaspe River	9	8.0	0.8	0.85	6	0.75	1	0.08	19.7	Good
7~27	Jin Crow Creek	7	8	0.6	0.85	8	0.68	0.5	0.05	18.7	low
6~05	Campaspe River	9	9.5	0.8	0.85	8	0.68	1.4	0.07	18.4	Good
8~04	Avoca River	8	9.9	0.7	0.85	12	0.56	1	0.05	17.2	Good
7~08	Loddon River	7	8.7	0.5	0.85	8	0.68	0.5	0.05	16.9	Poor
7~3	Loddon River	6	8	0.5	0.85	8	0.68	0.575	0.03	15.4	Medium

6~24	Five Mile Creek	5	6	0.7	0.85	5	0.78	0.4	0.05	15.0	Poor
7~19	Tullaroop Creek	5	8	0.6	0.85	8	0.68	0.4	0.05	14.8	
6~02	Campaspe River	9	9.7	0.7	0.85	8	0.68	1.6	0.08	14.3	Good
6~03	Campaspe River	8	9.3	0.8	0.85	8	0.68	1.6	0.08	14.0	Very Good
7~11	Serpentine Creek	7	8	0.7	0.85	8	0.68	1.1	0.05	13.8	medium
8~06	Avoca River	7	8.0	0.7	0.85	8	0.68	1.2	0.05	13.0	Medium
6~20	Little Coliban River	4	12.0	0.8	0.85	5	0.78	1	0.1	12.4	Medium
7~39	Gunbower Creek	12	9.8	0.6	0.62	8	0.68	1.1	0.13	11.9	Good
7~32	Box Creek	5	11.2	0.5	0.62	15	0.48	0.3	0.04	11.5	Medium
7~10	Loddon River	10	8.1	0.5	0.85	8	0.68	1	0.1	11.3	Medium
6~18	Coliban River	10	8	0.6	0.85	8	0.68	1.5	0.1	10.7	Low
7~21	Birch's Creek	9	9.0	0.6	0.85	5	0.78	2	0.1	10.5	medium
6~7	Campaspe River	5	8	0.8	0.85	6	0.75	1.2	0.08	9.9	Good
8~05	Avoca River	6	9.0	0.7	0.85	12	0.56	1.4	0.05	9.2	Medium
8~08	Avoca River	6	8.0	0.7	0.62	5	0.78	1	0.075	9.1	Medium
7~33	Bullock Creek	5	9.7	0.6	0.85	12	0.56	1	0.05	9.0	Poor
6~19	Coliban River	7	9.2	0.6	0.85	8	0.68	1.5	0.1	8.6	Poor
7~51	Pyramid Creek	6	9.6	0.5	0.62	15	0.48	0.6	0.05	7.5	Medium
6~16	Creek	4	8.0	0.6	0.85	8	0.68	1	0.05	7.2	Medium
6~12	Axe Creek	5	8.8	0.7	0.85	8	0.68	1.5	0.1	6.9	Medium
7~12	Bullabul Creek	3	7.8	0.7	0.62	8	0.68	0.5	0.05	6.6	Poor
6~23	Pipers Creek	5	6	0.7	0.85	8	0.68	1.5	0.05	5.9	Medium
7~20	Creswick Creek	4	6.8	0.6	0.85	5	0.78	1	0.1	5.2	medium
7~30	Barkers Creek	4	8.5	0.5	0.62	8	0.68	1	0.075	4.0	Medium
7~50	Little Murray River	7	10.3	0.6	0.62	15	0.48	3	0.05	3.7	Good
7~44	Bendigo Creek	3	8.8	1	0.37	15	0.48	2	0.2	1.1	Medium
15~79	Richardson River	3									
15~80	Avon River	3									
15~81	Avon River	3									
15~82	Avon River	3									
15~83	Sandy Creek	2									
15~84	Wallaloo Creek	2									
15~85	Andersons Creek	2									
15~86	Dog Trap Creek	2									
6~10	Forest Creek	3									

6~11	Forest Creek	3
6~13	Sheepwash Creek	3
6~14	Mclvor Creek	3
6~15	Mclvor Creek	3
6~17	Myrtle Creek	3
6~25	Jews Harp Creek	3
6~8	Mount Pleasant Creek	4
6~9	Mount Pleasant Creek	4
7~13	Bradford Creek	3
7~14	Bet Bet Creek	4
7~15	Bet Bet Creek	4
7~16	Bet Bet Creek	4
7~17	Burnt Creek	3
7~22	McCallum Creek	3
7~23	McCallum Creek	3
7~24	Middle Creek	3
7~25	Joyces Creek	4
7~26	Muckleford Creek	4
7~29	Campbells Creek	2
7~31	Barr Creek	2
7~34	Bullock Creek	4
7~35	Bullock Creek	4
7~36	Bullock Creek	4
7~37	Spring Creek	3
7~40	Bendigo Creek	4
7~41	Bendigo Creek	4
7~42	Bendigo Creek	4
7~43	Bendigo Creek	5
7~45	Myers Creek	3
7~46	Myers Creek	3
7~47	Back Creek	4
7~53	Gunbower Creek	
7~54	Gunbower Creek	
8~10	Campbell Creek	3
8~11	Campbell Creek	3
8~12	St Arnaud Creek	3



8~13	Fentons Creek
8~14	Fentons Creek
8~15	Cherry Tree Creek
8~16	Homebush Creek
8~17	Middle Creek
8~18	Number Two Creek
8~19	Rutherford Creek
8~20	Glenlogie Creek
8~27	Greenhill Creek
8~28	Unnamed Creek
8~29	Cochranes Creek
8~9	Mosquito Creek

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Wetlands

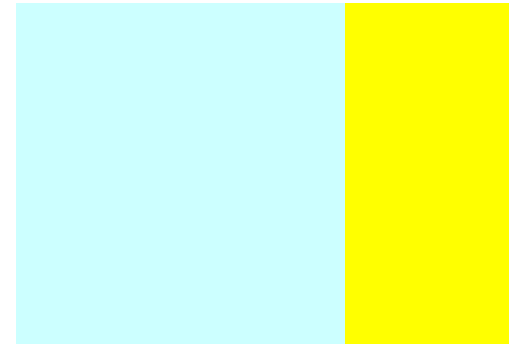
Waterway Benefit: Cost Score calculator v1	Value (V)	Impact of works (W)	Adoption (A)	All risks (R)	Lag (L)	Discount factor (DFb)	Up-front cost (C)	Maintenance cost (M)	Benefit: Cost Score	Information quality
Frogmore Swamp	6	8	1	0.85	5	0.78	0.03	0.03	91.1	Medium
First Marsh (Avoca)	20	9.1	0.6	0.62	5	0.78	0.05	0.05	90.7	Medium
Third Marsh (Avoca)	20	8.5	0.6	0.62	5	0.78	0.05	0.05	84.7	Medium
Bakers Swamp - Moolort	5	8	1	0.85	5	0.78	0.03	0.03	75.9	Medium
Safe Lagoon	10	4.0	1	0.85	5	0.78	0.03	0.03	75.9	Medium
Lake Yando	10	9	1	0.62	5	0.78	0.05	0.05	74.7	Medium
Cullens Lake	20	9	1	0.37	5	0.78	0.06	0.06	74.3	Medium
Second Marsh (Avoca)	20	8.5	0.6	0.62	5	0.78	0.06	0.06	70.6	Medium
Lake Bael Bael	20	7.8	0.6	0.62	5	0.78	0.06	0.06	64.8	Medium
Lake Meering	8	9	0.7	0.37	5	0.78	0.02	0.02	62.4	Medium
Middle Swamp near Clunes	9	9.0	0.8	0.62	7	0.71	0.15	0.03	60.6	Medium
Merin Merin Swamp	15	6.0	1	0.62	10	0.61	0.25	0.03	60.0	Medium
Black Swamp - Moolort	5	8	0.7	0.37	10	0.61	0.01	0.01	54.4	Medium
Walker's Swamp - Moolort	5	8	0.7	0.37	10	0.61	0.01	0.01	54.4	Medium
Leaghur State Park	20	9	0.7	0.37	5	0.78	0.15	0.05	53.3	Low

Lake Lalbert	9	8	0.8	0.62	8	0.68	0.04	0.04	51.6	Medium
Johnson Swamp	20	9	0.7	0.37	10	0.61	0.1	0.05	45.1	Medium
Little Lake Kelly	5	7.9	0.7	0.62	5	0.78	0.1	0.02	42.8	Medium
Lake William	8	8	0.7	0.62	5	0.78	0.2	0.03	41.8	Medium
Lake Kelly	8	8	0.6	0.62	5	0.78	0.15	0.03	39.6	Medium
Red Gum Swamp	5	8	0.8	0.62	5	0.78	0.2	0.02	37.5	Medium
York Plains	10	6.0	0.7	0.85	10	0.61	0.05	0.05	37.5	Medium
Lake Lyndger	8	9	1	0.37	5	0.78	0.15	0.04	36.1	Medium
Lake Leaghur	8	9	1	0.37	5	0.78	0.05	0.05	35.7	Medium
Lake Elizabeth	12	11.4	1	0.37	3	0.86	0.7	0.05	35.4	Good
Lake Marmal	8	8	0.8	0.62	8	0.68	0.2	0.04	34.2	low
Richardsons Lagoon	10	12	0.6	0.62	10	0.61	0.2	0.06	32.5	Medium
McDonalds Swamp	8	8	0.8	0.37	8	0.68	0.1	0.03	30.5	Medium
Woolshed Swamp	8	8	0.8	0.62	8	0.68	0.2	0.05	29.2	low
Hird Swamp	20	10.9	0.7	0.37	10	0.61	0.7	0.05	28.1	Medium
Benjeroop State Forest	10	6.0	0.7	0.62	5	0.78	0.2	0.05	27.8	Low
Tang Tang Swamp	10	9.4	0.7	0.62	10	0.61	0.4	0.05	26.8	Medium
Lake Tutchewop	10	4.0	0.7	0.85	5	0.78	0.06	0.06	26.6	Medium
Yassom Swamp	3	8	0.7	0.62	5	0.78	0.1	0.02	26.0	Medium
Lake Murphy	8	8	1	0.37	5	0.78	0.2	0.05	25.2	Medium
Great Spectacle	8	8	0.8	0.37	8	0.68	0.1	0.04	24.3	low
Golf Course Lake	5	6	0.8	0.62	8	0.68	0.1	0.03	23.9	Medium
Fosters Swamp	5	7.5	0.8	0.62	5	0.78	0.1	0.05	23.0	medium
Middle Reedy Lake	20	8.3	0.7	0.12	3	0.86	0.1	0.04	22.8	Medium
Thunder Swamp	6	6	0.7	0.62	10	0.61	0.1	0.03	22.8	Medium
Round Lake	15	6.0	0.6	0.37	5	0.78	0.25	0.05	19.9	Medium
Middle Reedy Lake	20	8.3	0.7	0.12	3	0.86	0.2	0.04	19.2	Medium
Little Lake Meering	5	8	0.8	0.62	8	0.68	0.2	0.05	18.3	low
Sandhill Lake	6	6	0.7	0.62	5	0.78	0.2	0.05	16.7	Medium
Long Swamp	10	8.0	1	0.62	15	0.48	1	0.05	15.5	Medium
Taylors Lagoon	5	12.0	1	0.62	10	0.61	1	0.05	14.9	Medium
Lake Boort	20	3.0	1	0.37	15	0.48	0.2	0.05	14.5	Medium
Tragowel Swamp	9	9.6	1	0.37	10	0.61	1	0.04	13.7	low
Gunbower Forest	50	11.0	1	0.85	5	0.78	25	0.5	12.1	Good
Turner / Phyland Lagoon	8	4.0	0.8	0.85	5	0.78	1.1	0.04	11.2	Medium
Cockatoo Lagoon	7	12.0	1	0.62	10	0.61	2.4	0.05	10.9	Medium

Gum Lagoon	7	4.0	0.6	0.85	8	0.68	0.6	0.04	9.4	Medium
Bell's Swamp	10	6.0	0.7	0.37	10	0.61	0.5	0.05	9.2	Medium
Stephenson Swamp	3	6.5	0.7	0.62	5	0.78	0.2	0.05	9.0	Low
Benwell / Guttrum State Forest	10	12	0.8	0.85	10	0.61	5.24	0.04	8.8	high
Reedy Lake	7	8.7	0.7	0.12	3	0.86	0.1	0.04	8.4	Medium
Reedy Lake	7	8.7	0.7	0.12	3	0.86	0.1	0.04	8.4	Medium
Lake Lookout	3	4	1	0.37	5	0.78	0.1	0.03	8.3	Medium
Black Swamp/ Town Swamp	3	8.6	1	0.37	15	0.48	0.05	0.05	7.8	Medium
Cope Cope Lakes	5	8	0.8	0.37	15	0.48	0.3	0.04	7.8	Medium
Heart Lagoon	6	12.0	0.6	0.62	15	0.48	1.5	0.02	7.5	Medium
Cemetery Swamp	3	9.3	1	0.37	15	0.48	0.2	0.05	6.8	Medium
Brandy Lake/Lake Wandella?	4	9	0.8	0.37	5	0.78	1.03	0.02	6.7	Medium
Unregulated Lagoon	4	12.0	0.6	0.62	15	0.48	1	0.03	6.5	Medium
Bunguluke wetlands	15	6	0.8	0.37	10	0.61	2	0.05	6.5	Low
Splatts Lagoon	6	4.0	0.6	0.85	8	0.68	1.2	0.04	5.1	Medium
Kangaroo Lake	7	7.8	0.7	0.37	3	0.86	1.5	0.1	4.8	Low
Longmore Lagoon	5	4.0	0.6	0.85	8	0.68	1	0.07	3.9	Medium
Upper Gunbower Lagoon	7	4.0	0.4	0.85	8	0.68	1	0.07	3.7	Medium
Lake Charm	5	7.2	0.7	0.37	15	0.48	1	0.05	2.9	Medium
Third Lake	10	11.5	1	0.37	15	0.48	5	0.2	2.9	Medium
Heppell Lagoon	4	12.0	0.4	0.85	10	0.61	3.2	0.03	2.8	Medium
Lake Charm	5	7.2	0.7	0.37	15	0.48	1	0.1	2.2	Low
Racecourse Lake	10	10.4	1	0.37	15	0.48	10	0.2	1.5	Good
Lake Buloke	20	5.0	0.5	0.37	30	0.23	5	0.2	0.6	Medium
Lake Boga	5									
Kow Swamp	10									
Creswick Swamp	2									
Hollands Lake	3									
Lake Hancock	2									
Lake Batyo Catyo	4									
Wooroonook Lake - Main	4									
Woorinen Central Lake	3									
Bradshaw Swamp	2									
Saligari Swamp	3									
Lignum Swamp	3									
Bartlett Swamp North	3									

Little Lake Boort
Griffith Lagoon
Little Lake Charm
Two Mile Swamp
Dry Lake
Round Lake
Long Lake
Lake Mannaor
Govetts Swamp
Dartagook Forest
Spectacle

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Appendix 4 – Overall Priorities for the WMS

River and Creeks

		High Value Waterway	Existing Obligation			Regional Goal Triggered	Local Knowledge	Feasible and Cost Effective	Subject to Modernisation	Priority Waterway	Inclusion in 8 Year Works Program
			Legislative	Funding	CMA Commitment to Community						
7~49	Loddon River	✓				✓		✓		✓	TBC
7~49	Kangaroo Creek	✓				☐	✓	✓		✓	TBC
6~21	Kangaroo Creek	✓				✓		✓		✓	TBC
7~38	Gunbower Creek	✓	✓	✓	✓	✓		✓	☐	✓	TBC
8~03	Avoca River	✓				✓		✓		✓	TBC
7~04	Loddon River	✓	✓			✓		✓		✓	TBC
6~01	Campaspe River	✓	✓	✓	✓	✓		✓		✓	TBC
6~22	Coliban River	✓				✓		✓		✓	TBC
8~07	Avoca River	✓				✓		✓		✓	TBC
8~02	Avoca River	✓				✓		✓		✓	TBC
7~01	Loddon River	✓	✓			✓		✓		✓	TBC
15~77	Richardson River	✓				✓		✓		✓	TBC
8~01	Avoca River	✓				✓		✓		✓	TBC
7~5	Loddon River	✓	✓			✓		✓		✓	TBC
7~9	Loddon River	✓				✓		✓		✓	TBC
15~78	Richardson River	✓				✓		✓		✓	TBC
7~28	Sailors Creek	✓				✓		✓		✓	TBC
7~06	Loddon River	✓	✓			✓		✓		✓	TBC
7~02	Loddon River	✓	✓			✓		✓		✓	TBC

7~07	Loddon River	✓	✓			✓		✓		✓	TBC
7~18	Tullaroop Creek	✓	✓				✓	✓		✓	TBC
6~04	Campaspe River	✓	✓	✓	✓	✓		✓		✓	TBC
6~06	Campaspe River	✓	✓	✓	✓	✓		✓		✓	TBC
7~27	Jin Crow Creek	✓					✓	✓		✓	TBC
6~05	Campaspe River	✓	✓	✓	✓	✓		✓		✓	TBC
8~04	Avoca River	✓				✓		✓		✓	TBC
7~08	Loddon River	✓	✓			✓		✓		✓	TBC
7~3	Loddon River	✓	✓			□	✓	✓		✓	TBC
6~24	Five Mile Creek	✓				□	✓	✓		✓	TBC
7~19	Tullaroop Creek	✓	✓			□	✓	✓		✓	TBC
6~02	Campaspe River	✓	✓	✓	✓	✓		✓		✓	TBC
6~03	Campaspe River	✓	✓			✓		✓		✓	TBC
7~11	Serpentine Creek	✓	✓			□	✓	✓		✓	TBC
8~06	Avoca River	✓				✓		✓		✓	TBC
6~20	Little Coliban River	✓				✓		✓		✓	TBC
7~39	Gunbower Creek	✓	✓	✓	✓	✓		✓		✓	TBC
7~32	Box Creek	✓				✓		✓		✓	TBC
7~10	Loddon River	✓				✓		✓		✓	TBC
6~18	Coliban River	✓	✓			□	✓	✓		✓	TBC
7~21	Birch's Creek	✓	✓			✓		✓		✓	TBC
6~7	Campaspe River	✓		✓	✓	✓		✓		✓	TBC
8~05	Avoca River	✓				✓				✓	TBC
8~08	Avoca River	✓				✓					TBC
7~50	Little Murray River	✓							✓	✓	TBC
6~19	Coliban River	✓	✓			✓					TBC
7~51	Pyramid Creek	✓				✓					TBC
6~23	Pipers Creek	✓					✓				TBC
6~16	Pohlman Creek/ Wild Duck Creek	✓									No
7~33	Bullock Creek	✓									No

6~12	Axe Creek	✓								No
7~12	Bullabul Creek	✓								No
7~20	Creswick Creek	✓								No
7~30	Barkers Creek	✓								No
7~44	Bendigo Creek	✓								No
15~79	Richardson River	✓								No
15~80	Avon River	✓								No
15~81	Avon River	✓								No
15~82	Avon River	✓								No
15~83	Sandy Creek	✓								No
15~84	Wallaloo Creek	✓								No
15~85	Andersons Creek	✓								No
15~86	Dog Trap Creek	✓								No
6~10	Forest Creek	✓								No
6~11	Forest Creek	✓								No
6~13	Sheepwash Creek	✓								No
6~14	Mclvor Creek	✓								No
6~15	Mclvor Creek	✓								No
6~17	Myrtle Creek	✓								No
6~25	Jews Harp Creek	✓								No
6~8	Mount Pleasant Creek	✓								No
6~9	Mount Pleasant Creek	✓								No
7~13	Bradford Creek	✓								No
7~14	Bet Bet Creek	✓								No
7~15	Bet Bet Creek	✓								No
7~16	Bet Bet Creek	✓								No
7~17	Burnt Creek	✓								No
7~22	McCallum Creek	✓								No
7~23	McCallum Creek	✓								No
7~24	Middle Creek	✓								No

7~25	Joyces Creek	✓									No
7~26	Muckleford Creek	✓									No
7~29	Campbells Creek	✓									No
7~31	Barr Creek	✓									No
7~34	Bullock Creek	✓									No
7~35	Bullock Creek	✓									No
7~36	Bullock Creek	✓									No
7~37	Spring Creek	✓									No
7~40	Bendigo Creek	✓									No
7~41	Bendigo Creek	✓									No
7~42	Bendigo Creek	✓									No
7~43	Bendigo Creek	✓									No
7~45	Myers Creek	✓									No
7~46	Myers Creek	✓									No
7~47	Back Creek	✓									No
7~53	Gunbower Creek	✓									No
7~54	Gunbower Creek	✓									No
8~10	Campbell Creek	✓									No
8~11	Campbell Creek	✓									No
8~12	St Arnaud Creek	✓									No
8~13	Fentons Creek	✓									No
8~14	Fentons Creek	✓									No
8~15	Cherry Tree Creek	✓									No
8~16	Homebush Creek	✓									No
8~17	Middle Creek	✓									No
8~18	Number Two Creek	✓									No
8~19	Rutherford Creek	✓									No
8~20	Glenlogie Creek	✓									No
8~27	Greenhill Creek	✓									No
8~28	Unnamed Creek	✓									No
8~29	Cochranes Creek	✓									No

8~9	Mosquito Creek	✓								No
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Wetlands

	High Value Waterway (Limited Data, assumed at high value)	Existing Obligation	Funding	Community	Regional Goal Triggered (Limited AVIRA Data)	Local Knowledge	Feasible and Cost Effective	Subject to Modernisation	Priority Waterway	Inclusion in 8 Year Works Program
		Legislative	Funding	Community						
Frogmore Swamp	✓				<input type="checkbox"/>	✓	✓		✓	TBC
First Marsh (Avoca)	✓	✓	✓		✓		✓		✓	TBC
Third Marsh (Avoca)	✓	✓	✓		✓		✓		✓	TBC
Bakers Swamp - Moolort	✓				<input type="checkbox"/>		✓		✓	TBC
Safe Lagoon	✓				<input type="checkbox"/>		✓		✓	TBC
Lake Yando	✓				<input type="checkbox"/>	✓	✓		✓	TBC
Cullens Lake	✓	✓	✓		<input type="checkbox"/>	✓	✓		✓	TBC
Second Marsh (Avoca)	✓	✓	✓		✓		✓		✓	TBC
Lake Bael Bael	✓	✓	✓		✓		✓		✓	TBC
Lake Meering (Merin)	✓				<input type="checkbox"/>	✓	✓		✓	TBC
Middle Swamp near Clunes	✓				✓		✓		✓	TBC
Merin Merin Swamp	✓				<input type="checkbox"/>	✓	✓		✓	TBC
Black Swamp - Moolort	✓				<input type="checkbox"/>		✓		✓	TBC
Walker's Swamp - Moolort	✓				<input type="checkbox"/>		✓		✓	TBC
Leaghur State Park	✓				<input type="checkbox"/>		✓		✓	TBC
Lake Lalbert	✓				<input type="checkbox"/>		✓		✓	TBC
Johnson Swamp	✓	✓	✓		<input type="checkbox"/>		✓		✓	TBC
Little Lake Kelly	✓	✓			✓		✓		✓	TBC
Lake William	✓	✓			✓	<input type="checkbox"/>	✓		✓	TBC
Lake Kelly	✓	✓			<input type="checkbox"/>		✓		✓	TBC

Red Gum Swamp	✓				☐		✓		✓	TBC
York Plains	✓		✓	✓	☐	✓	✓		✓	TBC
Lake Lyndger	✓				☐	✓	✓		✓	TBC
Lake Leaghur	✓				☐	✓	✓		✓	TBC
Lake Elizabeth	✓			✓	✓		✓		✓	TBC
Lake Marmal	✓				☐	✓	✓		✓	TBC
Richardsons Lagoon	✓	✓		✓	☐		✓		✓	TBC
McDonalds Swamp	✓	✓		✓	☐	✓	✓		✓	TBC
Woolshed Swamp	✓				✓		✓		✓	TBC
Hird Swamp	✓	✓		✓	✓		✓		✓	TBC
Benjeroop State Forest	✓				☐		✓		✓	TBC
Tang Tang Swamp	✓				✓		✓		✓	TBC
Lake Tutchewop	✓	✓			☐	✓	✓		✓	TBC
Yassom Swamp	✓				☐	✓	✓		✓	TBC
Lake Murphy	✓	✓			☐	✓	✓		✓	TBC
Great Spectacle	✓				☐		✓		✓	TBC
Golf Course Lake	✓				☐	✓	✓		✓	TBC
Fosters Swamp	✓				✓		✓		✓	TBC
Middle Reedy Lake	✓	✓		✓	☐		✓		✓	TBC
Thunder Swamp	✓				✓		✓		✓	TBC
Round Lake	✓	✓			☐				✓	TBC
Little Lake Meering	✓				☐	✓				No
Sandhill Lake	✓				☐	✓				No
Long Swamp	✓			✓	☐	✓			✓	TBC
Taylor's Lagoon	✓				☐			✓		No
Lake Boort	✓	✓		✓	☐	✓			✓	TBC
Tragowel Swamp	✓				✓					No
Gunbower Forest	✓	✓	✓	✓	✓				✓	TBC
Turner / Phyland Lagoon	✓				☐			✓		No
Cockatoo Lagoon	✓				☐			✓		No
Gum Lagoon	✓				☐			✓		No

Bell's Swamp	✓				☐					No
Stephenson Swamp	✓	✓			✓				✓	TBC
Benwell / Guttrum State Forest	✓		✓		☐	✓			✓	TBC
Lake Lookout	✓				☐	✓				No
Black Swamp/ Town Swamp	✓				✓				✓	TBC
Cope Cope Lakes	✓				☐					No
Heart Lagoon	✓				☐			✓	✓	TBC
Cemetery Swamp	✓	✓			✓				✓	TBC
Brandy Lake/Lake Wandella?	✓				☐	✓				No
Unregulated Lagoon	✓				☐			✓	✓	TBC
Bunguluke wetlands	✓				☐					No
Splatts Lagoon	✓				☐					No
Longmore Lagoon	✓				☐					No
Upper Gunbower Lagoon	✓				☐					No
Lake Charm	✓	✓			☐				✓	TBC
Heppell Lagoon	✓				☐					No
Lake Buloke	✓					✓				No
Middle Reedy Lake	✓					☐		✓	✓	TBC
Reedy Lake	✓					☐		✓	✓	TBC
Third Lake	✓					☐		✓	✓	TBC
Racecourse Lake	✓					☐		✓	✓	TBC
Kangaroo Lake	✓					☐				No
Lake Charm	✓					☐				No
Lake Boga	✓					☐				No
Kow Swamp	✓					☐				No
Creswick Swamp	✓					✓				No
Hollands Lake	✓					✓				No
Lake Hancock	✓					✓				No
Lake Batyo Catyo	✓				✓	☐				No
Wooroonook Lake - Main	✓					✓				No

Woorinen Central Lake	✓					✓				No
Bradshaw Swamp	✓				✓	☐				No
Saligari Swamp	✓					✓				No
Lignum Swamp	✓					✓				No
Bartlett Swamp North	✓					✓				No
Little Lake Boort	✓					✓				No
Griffith Lagoon	✓				✓	☐				No
Little Lake Charm	✓	✓				✓		✓		TBC
Two Mile Swamp	✓					✓				No
Dry Lake	✓					✓				No
Round Lake	✓					✓				No
Long Lake	✓					✓				No
Lake Mannaor	✓					✓				No
Govetts Swamp	✓					✓				No
Dartagook Forest	✓					☐				No
Spectacle	✓					☐				No