Draft Water Theme Discussion Paper
for North Central Regional Catchment Strategy 2021-2027

Preamble
The North Central Regional Catchment Strategy (RCS) is the principle framework for land, water and biodiversity management in north central Victoria. This discussion paper has been written to assist in the development of the North Central RCS for 2021-2027. It provides an overview of the; values, condition, trends, threats, policy context and priorities for the water theme. The information herein will be used; to frame discussions with stakeholders, guide the development of RCS priority directions and outcomes and provide content for the RCS.

Introduction
The North Central CMA region comprises four inland river catchments, the Campaspe, Loddon, Avoca and Avon-Richardson, that rise on the northern slopes of the Great Dividing Range and flow northward emerging onto the wide, flat riverine plains of northern Victoria. The catchments all form part of the Murray-Darling Basin, however average rainfall and subsequent average annual streamflow is greater in the east of the region and declines across the basins moving from east to west. This influences the geomorphology (the shape) of the rivers and their floodplains, and the degree to which each river interacts with the mid-Murray river and its floodplain.

The region's waterways, which encompass over 100,000 km of streams and 1600 wetlands, have economic, environmental, cultural and social importance to First Nations people and regional communities. Waterways and the plants and animals they support provide benefits to communities such as; water for drinking, irrigation and industry, as well as being a focal point for many recreation activities which in turn support tourism. The regions' rivers and wetlands support unique environmental values and have strong cultural and historic significance (NCCMA 2014).

This paper describes each catchment, it considers the current condition and threats facing waterways in the region, relevant policy context and organisations with a role in their management. Questions, strategic directions and outcomes are outlined for discussion.

Catchment descriptions
Campaspe
The Campaspe River catchment lies in the east of the North Central CMA region and is bordered by the Cobaw and Mt Camel Ranges to the east and Mt Alexander to the west. The catchment covers approximately 17 percent of the region with an area of around 400,000 hectares (NCCMA 2005). The Campaspe River is the major waterway, which rises near Woodend and meanders for approximately 245 km to its confluence with the Murray River at Echuca. The Campaspe's major tributary is the Coliban River (which itself has several tributaries and three major potable water storages) enters the Campaspe River at Lake Eppalock. Other significant tributaries include the Axe, Forest, McIvor, Mount Pleasant, Wild Duck and Pipers creeks (NCCMA 2005). Below Lake Eppalock the Campaspe River has a deep channel with a bankfull capacity of between 8,000 ML/day and 14,000 ML/day. It has a narrow floodplain that floods less frequently than the rivers to the west. Wetlands of the Campaspe predominantly comprise stream meander cut-offs.

Loddon
The Loddon River catchment covers around 50% of the North Central CMA region and is home to two-thirds of its population. The catchment is approximately 235 km long and is up to 90 km wide, covering an area of approximately 1,500,000 hectares. The major waterway is the Loddon River that flows for

around 430 km from its source near Trentham to its confluence with Little Murray River, an anabranch of the Murray River, through which Loddon River water enters the Murray River near Swan Hill (NCCMA 2005).

The upper catchment, as seen in other river systems, is a series of tributaries that feed the Loddon River main stem and as the stream flow increases so does the channel size (Jacobs 2015a; LREFSP 2002a). However, unlike the neighbouring Campaspe River, around 200 kilometres from its source (near Serpentine) it emerges onto the wide flat riverine plains and the capacity of the main stem significantly decreases. The bankfull flow of greater than 10,000 ML/day upstream of Loddon Weir reduces to a minimum of 400 ML/day just upstream of Canary Island. The Loddon River ceases to be the primary conduit of flow as the main stem breaks into several anastomosing distributary channels and anabranches that carry water away from the river onto the floodplain and through many wetland systems (including the Boort District Wetlands, Central Murray Wetlands and Kerang Wetlands Ramsar site). Around 350 kilometres from its source (around Kerang), the river channel capacity increases again as anabranches re-join the main channel.

Avoca

The Avoca basin is the fifth largest catchment in Victoria and covers 1,200,000 hectares, though only 690,000 of these lies within the North Central CMA region. The Avoca River is an anabranching river system which conveys the most variable flow of all the Victorian rivers in the Murray-Darling Basin. The river rises at the foot of Mt Lonarch, near Amphitheatre and initially flows within a relatively confined valley. Approximately halfway along its length (near Glenloth), the river splits into a series of anabranching channels across the alluvial plain to eventually terminate in Lake Bael Bael and the Avoca marshes (part of the Kerang Wetlands Ramsar site). In very large floods the Avoca will flow through the marshes and enter the Murray River through Lake Boga and Little Murray River. Tributary upper catchment streams including Glenlogie, Sugarloaf, Cherry Tree and Strathfillan creeks all enter the Avoca from the west. In the lower catchment two ephemeral distributary streams, Lalbert and Tyrell creeks flow west to terminate in Lake Timboran and Lake Tyrell respectively. These lakes, and most of their creek lengths, lie within the Mallee CMA region (NCCMA 2005).

Avon-Richardson

The Avon-Richardson catchment is a land-locked river system that extends northwards from the Pyrenees foothills southwest of St Arnaud, to Lake Buloke on the margins of the mallee, and covers a total area of approximately 330,000ha. The catchment has relatively little river regulation to modify flows (NCCMA 2005). The two main waterways in the catchment are the Avon River and the Richardson River. The Avon River originates in the sedimentary hills south of Beazleys Bridge, and the Richardson River flows through the flat clay plains near Callawadda and Marnoo. The two rivers meet at Banyena, where the Richardson River continues flowing northward to Lake Buloke. The major tributaries flowing into the Avon River are Sandy, Paradise and Reedy creeks. Those flowing into the Richardson River include Wallaloo and Swedes creeks. There are over 100 lakes and wetlands within the Avon-Richardson catchment, including Lake Batyo Catyo, Lake Cope Cope and the lakes at Avon Plains (NCCMA 2005).

Murray River

Although not part of the North Central CMA region, the Murray River between Echuca and Swan Hill lies on the border of the region, and as described above, the interaction between the region and the Murray River is very significant. Fauna such as native fish move between the Murray and north central region waterways where fish passage has been provided on instream barriers. The Campaspe River system also supports an important breeding population of Murray River system platypus.

The Campaspe, Loddon and Avoca rivers contribute water, salt, nutrients and carbon to the Murray and the Campaspe and Loddon provide refuge for fish from poor water quality events occurring in the larger system, such as the toxic blackwater event that occurred in the Murray in 2016.

The Murray River is the single largest source of water for irrigation in the CMA region. Water enters the region from the Murray to Gunbower Creek at the National Channel headworks from Torrumbarry Weir. At the Gunbower township water is diverted via Taylor's Creek to Kow Swamp and via Pyramid Creek to the Kerang lakes, where is interacts with Loddon River water at Kerang Weir.

Floodplains

More than 780,000 hectares of rural and urban land across the region, under both public and private ownership, are subject to inundation by a 1% Annual Exceedance Probability flood (1–in-100-year average recurrence interval). River regulation works and inappropriate development in the past have had a significant impact on the natural floodplains by changing the flood frequency and flooding patterns, causing deterioration in the natural riverine, floodplain and wetland environments. Often, natural wetlands can remain dry (or at least not fill) in a flood because natural flood runners have been modified or the delivery infrastructure to direct flows is limited (NCCMA, 2018).

The regions' catchments include areas where flooding has historically caused substantial damage to both the natural and the built environment. The region's population is roughly 250,000, with population growth expected to continue in urban areas such Bendigo, Castlemaine, Kyneton and Echuca. Whether floods are caused by high rainfall, inland storms or inadequate drainage, they can severely disrupt communities, causing injury, loss of life, property damage, personal hardship and disruptions to regional economies (NCCMA 2018). Flood mitigation infrastructure is largely concentrated on the lower Loddon, lower Avoca and Murray rivers, where the floodplain is expansive and there is a legacy of undocumented landscape changes that control the distribution of floodwaters.

Flooding is a natural hazard and the region is threatened both from the reduced frequency and duration of minor to moderate floods that are essential for many ecological and cultural values across the landscape, and also from the social and economic impacts when major to extreme flooding occurs (NCCMA 2018).

Water Resources

The region has substantial groundwater and surface water resources and lies within the Murray-Darling Basin. In the south of the region, groundwater is extensively used for irrigation, in addition to mineral springs which support processing industries and tourism. Irrigated agriculture dominates the northern areas of the region whilst urban communities across the region depend on a reliable supply of good quality water for domestic use.

Surface water is managed under both the Murray Darling Basin Plan and Water for Victoria. Groundwater is managed through the Lower Campaspe Valley and Loddon Highlands Water Supply Protection Area and the Central Victorian Mineral Springs and Mid Loddon Groundwater Management areas. The region's major water storages include Cairn Curran, Tullaroop and Laanecoorie Reservoirs on the Loddon River, Lake Eppalock on the Campaspe River and the Upper Coliban storages on the Coliban River (NCCMA 2013).

Water use within the region is subject to policies under the Murray Darling Basin Plan and Victorian Government Legislation and policy. The water resources (both surface and groundwater) within the region are under threat from:

- Reduced rainfall caused by climate change reducing the overall water in the catchment and reduced recharge to groundwater
- Poor water quality including increased blue green algae blooms
- Greater demand on the limited resource (emerging trend for greater demand on groundwater use in non-traditional areas)

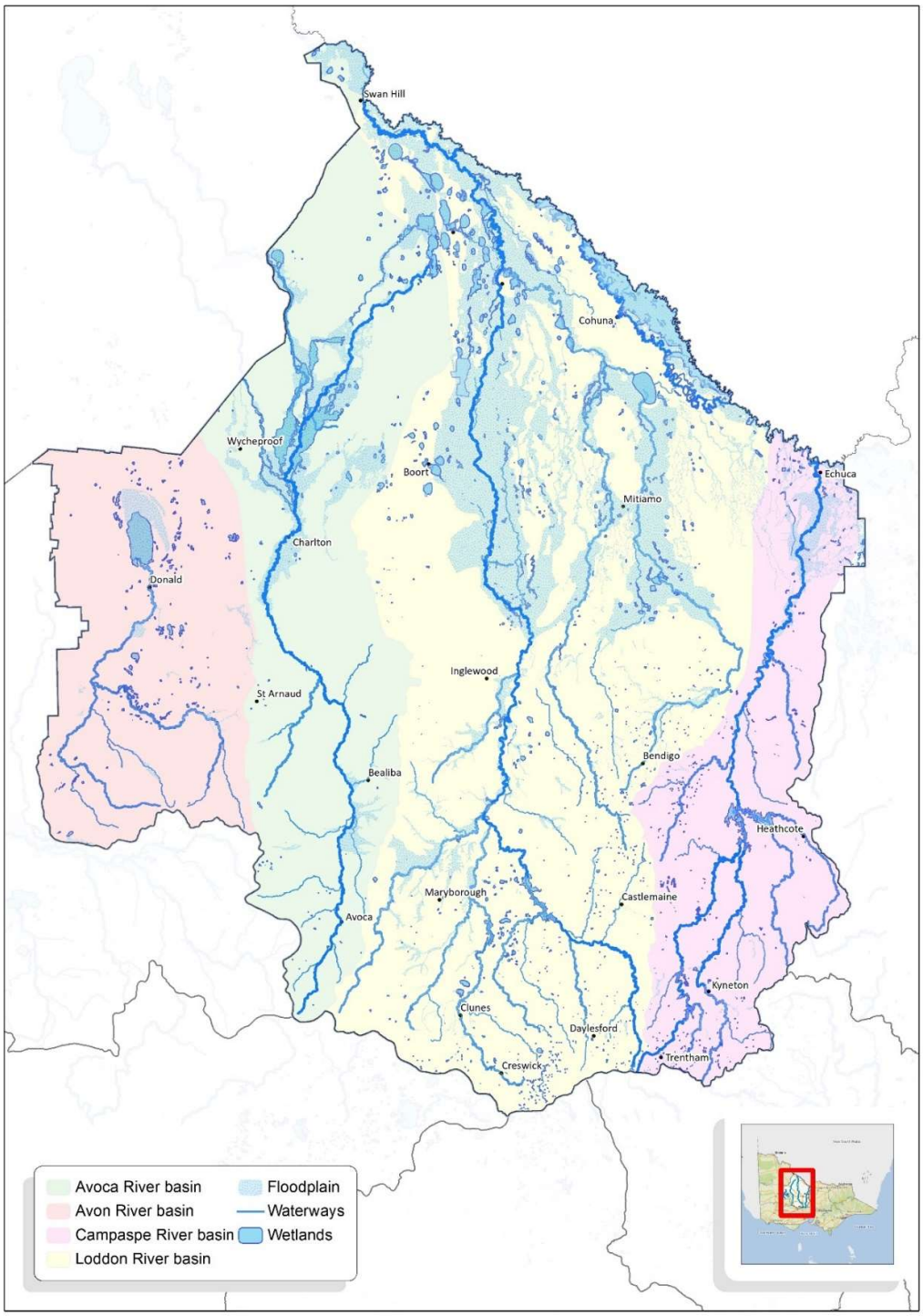

Figure 1 – Waterways and floodplains of the North Central CMA Region

Assessment of current condition and trends

Condition Victoria's state-wide long-term stream condition monitoring programs are the Index of Stream Condition (ISC) was developed in 1999, and since then, three ISC benchmark assessments have been undertaken (1999, 2004, 2010). The Index of Wetland Condition (IWC), which establishes the condition of wetlands against a benchmark (assumed pre-European state) and a single assessment of high value wetlands was completed in 2009-10. There has not been a follow up of either ISC or IWC assessments since 2010, as DELWP has revised their approach which now acknowledges that resource condition is unlikely to change in response to management interventions within a short time frame. Therefore, targets/outcomes and monitoring for this RCS will not use ISC or IWC. However, the 2010 assessments do provide a useful baseline environmental condition of streams at a whole of system scale and high value wetlands in the north central region. Within the North Central CMA region at the time of the 2010 ISC or IWC:

- ISC: the condition of waterways was generally poor to moderate with:
    - 51% of the stream condition classed as poor or very poor,
    - 46% classed as moderate, and
    - only 1% in good condition (in Campaspe basin)
    - In 2010 were no streams classed as excellent in the North Central CMA region (DEPI 2013).
- IWC: the condition of the North Central CMA region Ramsar sites against a range of sub-indices ranged from very poor to good with:
    - Gunbower Forest – 50% the plots assessed within the site were in good condition, 30% were in moderate condition and just over 10% were in excellent condition. Hydrology was generally in moderate condition. The vegetation was in poor or very poor condition in two thirds of plots and the remainder it was in moderate to excellent condition. Vegetation condition assessment includes tree condition assessment where 'healthy' is attributed to a tree with over 50% canopy cover
    - Kerang Wetlands – eighteen of the 23 wetlands were assessed; sixteen wetlands were in moderate condition and two were in poor condition.

The impact of degraded aquatic ecosystems on aquatic and water dependent flora and fauna has been severe, both for species whose entire life history is met within the region, but also for biota where the region meets part of their life history:

- Decline in waterbird populations across all feeding guilds by up to 90% since the 1980s across south-eastern Australia. Recent research is indicating that the large (100,000s of birds) breeding events in response to inland flooding is not contributing to an increase in waterbird populations because juveniles are not surviving to adulthood (where is the drought refuge/quality food in between large scale floods?)
- Of the 23 native fish species originally present in the North Central CMA region, only 19 species remain, and of those, nine species are listed as threatened under national and/or state legislation. Some of these also only exist as stocked populations (e.g. Macquarie Perch).
- Native frogs, in particular EPBC listed growling grass frog, which require near permanent water, and FFG listed Bibrons toadlet, who breed in floodplain depressions and groundwater soaks, and require hydrological connection between streams and breeding areas, are at risk of becoming locally and/or regionally extinct.
- Significant declines, and local extinctions, in platypus populations, particularly in the unregulated rivers in the west of the CMA region

In the last 20-30 years this has been further exacerbated by reduced average rainfall, with all river basins experiencing a significant decrease in average annual streamflow since the 1980s-90s. This presents the greatest risk in unregulated rivers, the Avoca and Avon-Richardson where rainfall reduction is greater, but also has significantly affected the flow volume, timing, frequency and

duration in the upper reaches of Campaspe and Loddon. Further, the subsequent reduction in the frequency of minor to moderate flooding, meaning some physically connected unregulated floodplain wetlands sites are also experiencing reduced flooding frequency and duration, which will have long-term impacts on vegetation composition.

Figure compares the long term stream flow data to records from 1996 (average daily stream flow by month) at two sites in the North Central CMA region – the headwaters of the Campaspe River at Ashbourne - demonstrating a significant decline in stream flow over the last 25 years.

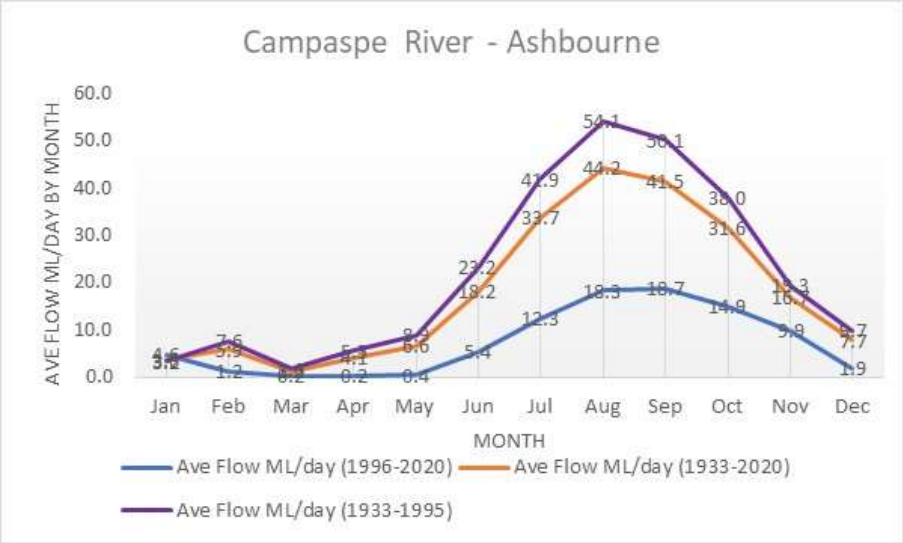

Figure 1: Average daily flow (ML/d) by month in the Campaspe River at Ashbourne - comparison of historic records to post 1996

Major threats and drivers of change

Table 1 describes the threats that have caused, or are contributing to, the degradation of waterways, wetlands and floodplain habitats in the North Central CMA region.

Table 1: Threats to waterway values and their impacts

Values	Threats	Impacts
• Native flora and fauna • Recreation • Water supply for towns, domestic and stock • Water supply for agriculture, industry and environment • Tourism • Cultural heritage • Aesthetic • Lifestyle	• Catchment clearing • Degrading land management practices • legacy of past land use and management activities (e.g. gold rush) • Grazing and clearing of stream banks • Pest plant and animal invasion • Climate change - reduced average rainfall and longer dry spells, increased frequency of extreme weather events including flooding	• Increased input of contaminants such as sediment, salt or nutrient causing deterioration in in-stream habitat • Increased salinity levels impacting freshwater biota and water quality for drinking, irrigation and livestock • Reduced streamflow and aquifer recharge impacting water quality and instream habitat for environmental values and leading to reduced availability for domestic, agricultural and recreational use • Erosion exacerbated by dry spells and extreme weather events, impacting water quality and instream habitat

Values	Threats	Impacts
	• Increased rural residential development leading to proliferation of small dams and groundwater use • Urban and agricultural development • Inappropriate recreational practices • Removal of structural woody habitat • Waterway regulation, water extraction, altered flow regime in rivers and wetlands • In-stream barriers restricting longitudinal connectivity • Inappropriate levees or infrastructure restricting lateral connectivity • Cold water releases from the depths of large water reservoirs (e.g. Eppalock) • Drainage and laser grading of wetlands • Use of wetlands in the irrigation system (threat and benefits • Impacts of culturally significant sites which are often located near streams and wetlands	• Changed vegetation structure and species composition impacting habitat available for biota to complete critical life stages[1] • Reduced regeneration of native vegetation • Reduced input of organic matter and structural woody habitat to rivers leading to limited food availability and impacting habitat available for biota to complete critical life stages • Reduction or loss of floodplain linkages and disrupted longitudinal and lateral linkages to waterways leading to inability for mobile biota to move between systems in response to changing conditions • Cold water releases causing temperature change impacting critical life stages for many native fish species. • Changes in flow patterns leading to loss of biological cues for aquatic species, reduced linkages, changes to habitat availability and changed geomorphic processes. • Land clearing, land use change and management practices such as drainage and laser grading has caused a decline in temporary freshwater meadows

Some encouraging signs

However, the implementation of the RCS a, and sub-strategy, the North Central Waterway Strategy by the North Central CMA, partner organisations and community groups, has seen significant investment in management interventions over the last ten years. The CMA and program partners undertake monitoring, evaluation, reporting and improvement (MERI) activities as part of all NRM programs and projects that, whilst unable to determine the condition of entire river systems or wetland complexes, have demonstrated improvements in condition where works have occurred. Highlights include:

[1] Research is demonstrating for both native fish and waterbirds that increase in population abundance is impacting survival of individuals between juvenile and adulthood. This can be attributed to lack of available or quality food resources, and habitat that provides protection from predation and other mortality threats.

- Integrated management projects in the Campaspe, namely; Caring for the Campaspe riparian works program and the management of water for the environment has resulted in improvements to extent and condition of riparian condition, movement of Silver and Golden Perch and the spawning of Murray Cod.
- Implementation of the Native Fish Recovery Plan, which is an integrated program of works focusing on rehabilitating critical components for native fish recruitment and survival, namely flow, habitat and connectivity, resulting in increase in age cohorts of Murray Cod in Gunbower Creek, movement of native fish through Kerang and Box Creek regulator fishways and increase in resident native fish, including young-of year, around habitat restoration works including reintroduced instream woody habitat (snags) and recreated deep pools in Pyramid Creek and lower Loddon River.
- Completion of the Hipwell Road channel and subsequent watering of 23% of the Gunbower Forest floodplain in 2014 and 2018, and 16% of the forest in 2015. In 2016 the majority of the forest flooded naturally. Monitoring is showing that river red gums tress in areas that have been flooded are 75% healthy with less than half of the trees in unflooded areas being healthy.

Citizen Science

There is a growing focus on the use of citizen science data to demonstrate project outcomes leading to improvements in waterway condition (supported by Water for Victoria Action 3.8). The CMA's Waterwatch program has been working with CMA projects, engaging the local community to monitor project outcomes and delivering cost effective monitoring data. Data is analysed and reported annually.

A good example so far is the Native Fish Recovery Plan (NFRP) project. Demonstrating the contribution of the NFRP project implementation 2016-18 towards its vision for a fully recovered, resilient and self-sustaining native fish population was difficult given the short time frame and inherent complexities. However, teaming up with Waterwatch and using citizen scientists to undertake macroinvertebrate sampling has shown that the instream habitat installed through the project is having desired results, with approximately twice the macroinvertebrate diversity and three times the abundance sampled at habitat reinstatement sites compared with control sites. This is likely a result of increased habitat complexity, organic matter retention and flow diversity, and demonstrates that the reinstated snags would be providing important feeding sites for fish.

The recently released 20 years of Waterwatch Report Card, provides a summary of water quality data collected by citizen scientists from 1996 – 2016 and a snapshot of the current conditions. Results indicate that the upper catchments, (southern end of the region) tend to be in better condition compared to the lower (northern) or western parts. With the Campaspe, Upper and Lower Loddon, Loddon Western Tributaries and Upper Avoca faring better than Gunbower, Loddon Eastern Tributaries and Avon-Richardson. The CMA is committed to growing the citizen science program and utilising the data more widely.

Policy context

Although there are many policies that influence how we mange water, below is a summary of the key policies.

- *Water for Victoria* is a plan for a future with less water as Victoria responds to the impact of climate change and a growing population. The actions set out in the plan support a healthy environment, a prosperous economy with growing agricultural production and thriving communities. Some of the key actions relevant to the RCS are:
    - Embedding climate change considerations in all operational decisions (Action 2.2)
    - Invest in Integrated Catchment Management (Action 3.3)

    - Provide long-term investment to improve waterway health (Action 3.4)
    - Managing waterways for shared benefits – social, cultural, economic and environmental (Action 3.6)
    - Supporting community partnerships and citizen science (Action 3.8)
    - Improving the recording of progress and how the information is reported back to communities, implementing new Rivers 2040 framework (Action 3.9)
    - Dealing with the impacts of population growth, including resilient, cities and towns (Action 5.6)
- *Victorian Waterway Management Strategy* provides the framework for government - in partnership with the community to maintain or improve the condition of rivers, estuaries and wetlands so they can continue to provide environmental, social, cultural and economic values for all Victorians.
- *Our Catchments Our Communities* aims to provide healthy, sustainable and productive land, water and biodiversity maintained through integrated catchment management that is strongly community based, regionally focused and collaborative.
- *Murray Darling Basin Plan* aims to bring the Basin back to a healthier and sustainable level, while continuing to support farming and other industries for the benefit of the Australian community. It does this by setting the amount of water that can be taken from the Basin each year, while leaving enough for our rivers, lakes and wetlands and the plants and animals that depend on them.
- *Integrated Water Management Framework for Victoria* **-** Designed to help regional stakeholders to work together, ensuring the water cycle contributes to the liveability of towns and cities in Victoria, with communities at the centre of decision making. To facilitate this, IWM Forums have been established across the state to identify, prioritise and oversee the implementation of critical collaborative opportunities, led by water authorities - in the north central region, this is Coliban Water.
- *Coliban Water Strategy 2030* establishes the following four strategic directions to meet future challenges and opportunities providing essential water supply and treatment services, which remain affordable and meet high quality standards, to a fast growing urban population, to valuable community assets and to businesses and rural enterprises contributing to our regional economy:
    - Water security and zero carbon
    - Healthy people and environment
    - Prosperous economies
    - Green and active communities
- *North Central Waterway Strategy* sets out priorities to protect and enhance the regions rivers and wetlands and deliver on actions set out in the Victorian Waterway Strategy.
- *Victorian Rural Drainage Strategy* supports landholders to make choices about how they want to manage rural drainage.
- *Water Resource Plans* all Murray-Darling Basin states were required to prepare water resource plans those relevant to the north central region are:
    - Wimmera–Mallee (groundwater & surface water)
    - Northern Victoria (surface water)
    - Goulburn–Murray (groundwater)
- *Parks Victoria Land Management Plan (LMS)* sets out the general long-term directions, strategies and priorities for the protection, management and use of Parks Victoria managed land.

Partners and community

There are many partners and community groups that have a role in water management in the north central region. Provided below is a summary of some of the key groups.

Traditional Owners

- The north central region includes the traditional land of the Barapa Barapa, Dja Dja Wurrung, Taungurung, Wadi Wadi, Wamba Wemba, Wotjobaluk represented by the Barengi Gadjin Land Council and Yorta Yorta. All Traditional Owners are being engaged in the development of the RCS with the aim to reflect their aspirations in the RCS, including around water.

Partner organisations

- Department of Environment, Land, Water and Planning (DELWP) – Sets State water policy and is a significant funder of CMA and partner programs, and land manager of crown land water frontage.
- Victorian Environmental Water Holder (VEWH) – Manages Victoria's water for the environment and works with CMAs, Water Corporations and Australian Government agencies such as the Commonwealth Environmental Water Holder and the Murray Darling Basin Authority
- Water Corporations (Goulburn Murray Water, Coliban Water, Western Water, Central Highlands Water, Grampians Wimmera Mallee Water and Lower Murray Water) – Provide services to urban and rural customers including irrigation, domestic and stock, bulk water supply and urban water and wastewater services. As storage managers, they also deliver environmental water and there is also an obligation on them to enhance environmental outcomes and minimise harm wherever possible, for example when delivering water for consumptive purposes to look for opportunities to meet environmental outcomes at the same time.
- Environment Protection Authority (EPA) - Provides regulation to protect Victoria environment including water and waterways.
- Parks Victoria (PV) – Manage parks and conservation reserves in which many waterways are located. Dja Dja Wurrung Clans Aboriginal Corporation (DDWCAC) is also joint manager of several PV estates on DDW Country.
- Murray Darling Basin Authority (MDBA) – Oversee the implementation of the Murray Darling Basin Plan and work with States and other authorities to deliver the Plan.
- Local Government - Local Government have many roles relating to water including responsibility for planning, managers of stormwater drainage and onsite domestic wastewater systems, users of integrated water systems, land managers, emergency management bodies, and supporters of community groups.

Community and community groups

Community groups such as Landcare, Waterwatch, 'Friends of' groups, Birdlife Australia, Victorian Recreational Fishing Body (VRFish), and Field and Game Australia participate in regional planning, priority setting and the implementation of regional works programs, monitor waterway condition and undertake projects in priority areas.

Individual landholders own/manage waterways, riparian frontages, half of the region's wetlands including priority assets, are located on private land and managing them generally relies on collaboration with the landholders.

Community members have an important role in protecting waterway health by avoiding and reporting pollution, reducing resource consumption and contributing to environmental management processes and programs. Community members can play a key role in undertaking citizen science programs that capture useful information for water programs also engaging and building community capacity to better understand water management issues.

Industry can assist in the protection and improvement of waterways by managing its activities in accordance with the principles of ecologically sustainable development and minimising impact on the environment by the implementation of best practices, in accordance with 'duty of care' responsibilities and good corporate citizenship.

Regional priority setting

Assets

The current RCS, North Central Waterway Strategy and the North Central Floodplain Strategy highlight priority assets for investment.

This priority setting was based on sound information and a rigorous process which involved:

- Community and partner driven asset identification
- Consideration of;
    - Environmental significance and threat to asset
    - Feasibility of action
    - Technical and socio economic risks

Further details of the process are outlined in current RCS, North Central Waterway Strategy and North Central Floodplain Strategy - http://www.nccma.vic.gov.au/publications

This time, we plan to review and build on what we have, considering new knowledge, policy and strategy.

The current draft water theme priorities for the RCS are shown in the map overleaf and include:

- All 2013-19 RCS waterway and wetland assets
- Additional waterway and wetland assets from the North Central Waterway Strategy

New Information / Policy Direction

Several Integrated Water Management (IWM) urban waterway renewal projects are being completed across the region. With the renewed policy and interest from regional partners, IWM with an urban focus will be included as a focus in the renewed RCS. A strategic direction has been included to cover all IWM project and this will be driven by priorities from each integrated water forum and partner support.

The Bendigo Creek has been identified as a priority waterway through consultation with Traditional Owners (Dja Dja Wurrung and Yorta Yorta) and is the focus of significant work through the Reimagining Bendigo Creek and Wanyarram Dhelk projects. Given the high significant placed on Bendigo Creek by Traditional Owners, it is proposed to include as a priority RCS asset.

Some initial feedback from Wamba Wemba Traditional Owners is that Lake Boga has significant cultural values. Further discussions will be held with Wamba Wemba to confirm if this is included as a priority in the RCS.

Do you agree with the priority assets identified?
Are there additional priorities?
If so, please identify and justify why should they be included.

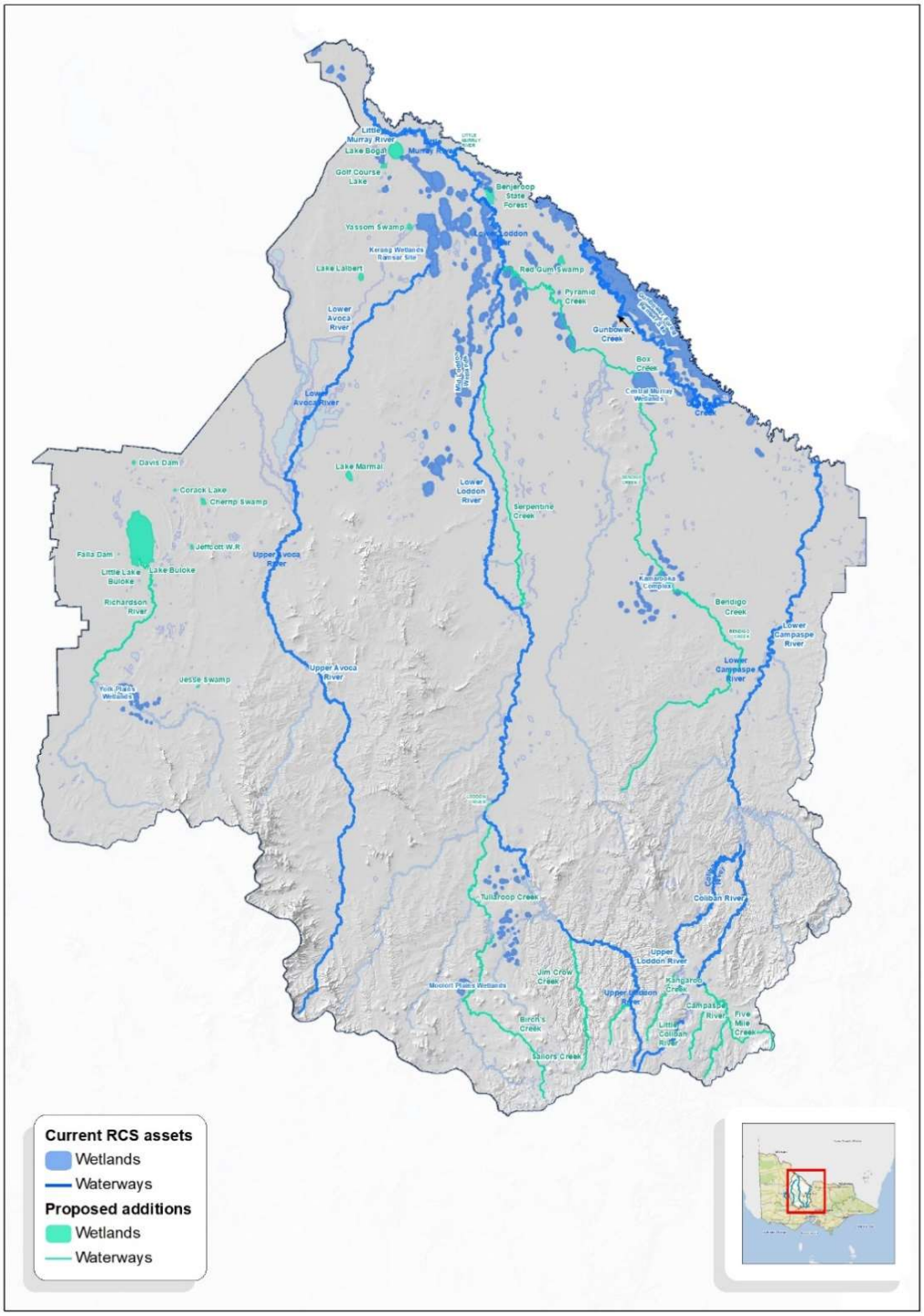

Figure 2 Draft RCS Waterway Priority Assets

Priority Directions

An analysis of current policy, strategies and engagement outcomes to date has informed the following draft RCS strategic directions related to water for discussion.

Climate Change

- Improve our understanding of the predicted impacts of climate change on water resources and aquatic ecosystems in the region and share this information to inform mitigation and adaptation approaches
- Include consideration of climate change impacts and scenarios in strategic and operational planning for water resources and waterways. Prioritise and implement urgent climate change mitigation and adaptation actions
- Improve current monitoring of water resources and waterways to detect changes due to climate change and enable timely adaptation.

Community

- Deliver an educational program to address polarisation in the community around water, in the context of increasing demands and reduced availability, by improving 'water literacy', including to improve understanding of water for the environment and manage expectations of rural residential landholders.

Recognising and managing for Aboriginal values

- Continue to work with Traditional Owners to understand cultural values and meet their aspirations regarding water management [this action to be discussed and confirmed with TO groups].

Integrated Catchment Management (ICM) and Integrated Water Management (IWM)

- Continue to support the collaborative development and implementation of Integrated Catchment Management and Integrated Water Management projects.

Floodplain management, reconnection and restoration

- Identify priority floodplain connectivity sites and trial management actions to achieve hydrological connectivity and improve ecological function, between wetlands, floodplain streams and major waterways, and within the vicinity of permanent water or drought refuges.
- Avoid, reduce and manage flood risk to community, through continued implementation of the North Central Regional Floodplain Management Strategy 2018-28

Water for the Environment

- Initiate a targeted monitoring program that will inform adaptive management and better tell the story of the environmental and socio-economic outcomes of environmental watering
- Coordinate an integrated approach to the planning and delivery of water for the environment, undertaking complementary works and where possible using consumptive water, to achieve landscape scale outcomes.

Waterway Management

- Maintain and improve the health of priority waterways through continued implementation of the *North Central Waterway Strategy 2014-2022*, renewing this strategy by 2023.

- Continue to implement Flagship Waterway projects including the mid-Murray Native Fish Recovery project and update the Native Fish Recovery Plan to include Kerang Wetlands Ramsar site and the mid-Loddon, Pennyroyal/Bannacher Creek floodplain.

We welcome your comments on the draft priority directions. What would you change, add/remove and why?

Outcomes

The RCS Guidelines provide a standard outcomes framework which will be used to monitor and assess the effectiveness of the RCS. In response to the policy directions and standard indicators in this framework, a set of RCS outcomes related to the water theme have been drafted as outlined below.

Overall vision for Water

Waterways and floodplains will be managed sustainably to protect and enhance their diversity and ecological function while also supporting the regional community's economic, social and cultural benefits

Long-term (20+ years) regional outcomes for water:

- *Improved condition of RCS priority waterways (rivers and wetlands), by 2041*
- *Improved floodplain connectivity for ecological function, considering social and economic risks to communities, by 2041*

Medium-term (6 year) SMART regional outcomes for Water:

- *Increase the extent of protected or improved riparian land, on priority RCS waterway assets, by 700km, by 2027*
- *Improved stream connectivity by 240km and improved instream habitat by 75km by 2027*
- *Increase protection and improved management of 17,000 ha of priority RCS wetland assets, by 2027*
- *Deliver on 80% of water for environmental watering actions at planned sites based on the annual Seasonal Water Plans by 2027.*

Do you agree with the Regional Outcomes identified? Are there additional Outcomes we should consider? If so, what are they and why should they be included?

Overall, do you have any additional comments or issues you would like to raise regarding this discussion paper?

References

DEPI, 2013 - Index of Stream Condition. The Third Benchmark of Victorian River Condition ISC3, Department of Environment and Primary Industries, Melbourne.

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