



Daylesford & Hepburn Springs, Creswick and Clunes

Integrated Water Management Plan
Community summary

November 2021

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This document

This document summarises the work completed on the *Daylesford & Hepburn Springs, Creswick and Clunes Integrated Water Management (IWM) Plan* including project background, the process undertaken to develop the plan and the opportunities identified.

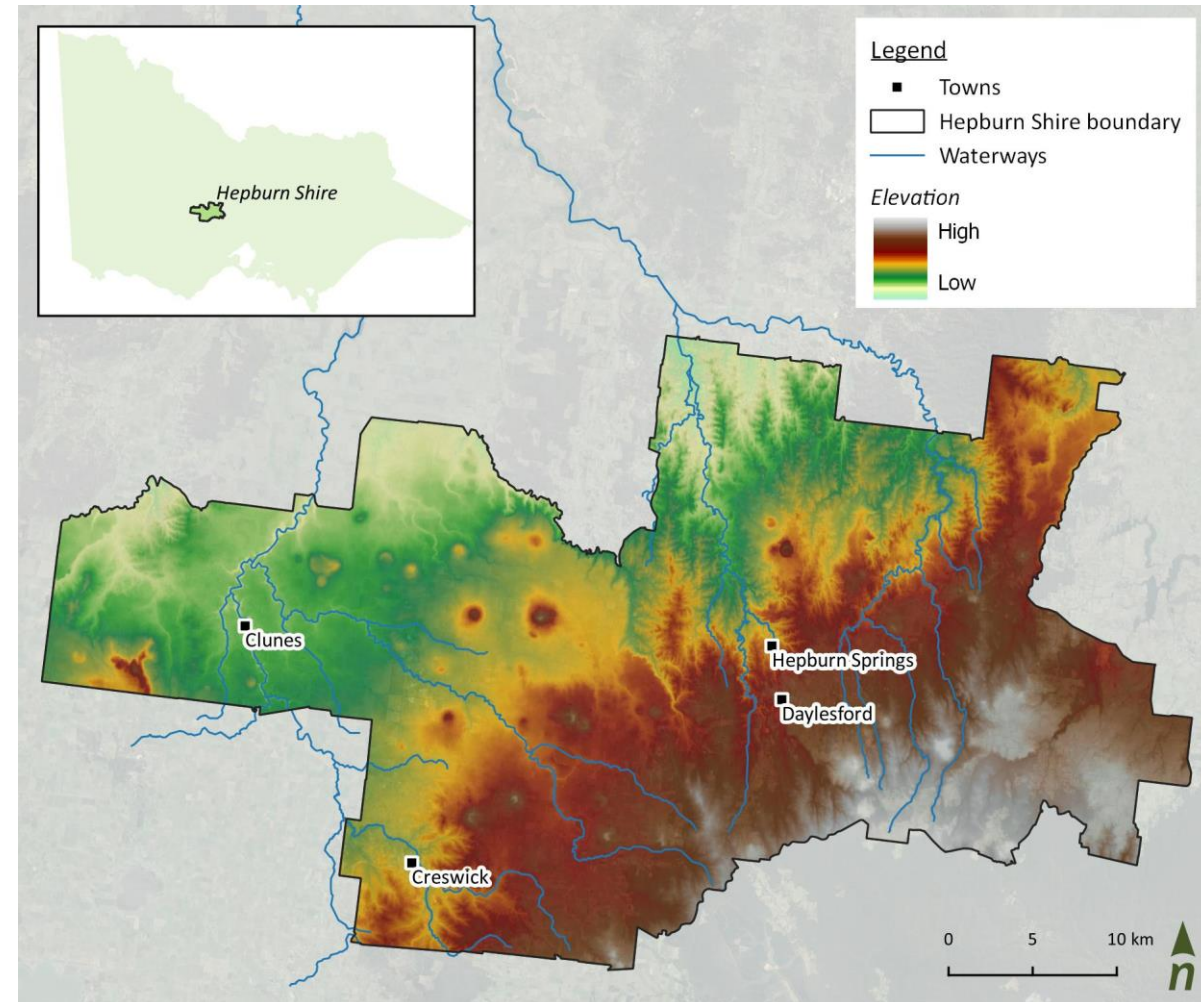
What we want from you?

The project team is seeking your feedback on the prioritised opportunities within the plan.

You can provide your responses at the Participate Hepburn website here:

<https://participate.hepburn.vic.gov.au/integrated-water-management-plan>

Page closes: 1st of December, 2021



Hepburn Shire IWM Plan project locations

What is integrated water management (IWM)?

“Integrated water management (IWM) is a collaborative approach to planning that brings together organisations that influence all elements of the water cycle, including waterways and bays, wastewater management, alternative (non-potable) and potable water supply, stormwater management and water treatment. It considers environment, social and economic benefits” (DELWP, 2017).

Why undertake an IWM project in Daylesford / Hepburn, Creswick and Clunes?

Since 2018 water cycle stakeholders have been working together to prepare and implement the *Central Highlands Strategic Directions Statement (SDS)*.

The stakeholders involved include Central Highlands Water, Hepburn Shire Council, North Central Catchment Management Authority (CMA) and Goulburn Murray Water.

The SDS defines seven outcomes for IWM in the Central Highlands region (see right) and specifies projects that align with those objectives. The Central Highlands SDS identified the need for an IWM Plan for Daylesford & Hepburn, Creswick and Clunes.

Note: Trentham township is addressed under the Coliban region Strategic Directions Statement.



Central Highlands Strategic Directions Statements outcomes



Safe, secure and affordable supplies in an uncertain future



Effective and affordable wastewater systems



Avoided or minimised existing and future flood risks



Healthy and valued waterways, wetlands and water bodies



Healthy and valued landscapes



Community values reflected in place-based planning



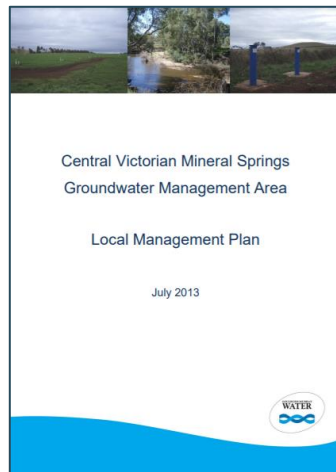
Jobs, economic benefits and innovation

What is integrated water management (IWM)?

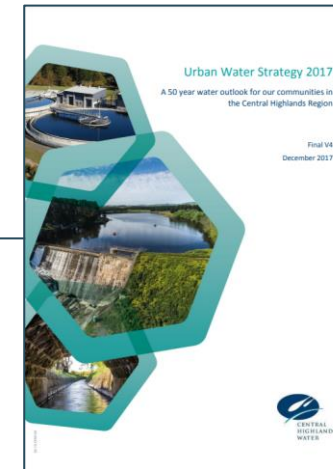
What it is: An IWM plan identifies opportunities that stakeholder organisations can deliver collaboratively to address shared issues.

What it's not: This IWM Plan doesn't focus on projects that are the core business of one organisation. Some examples of this are shown below:

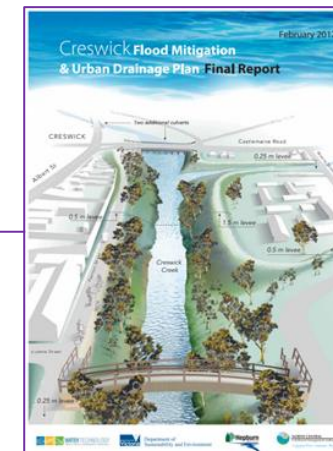
Groundwater: Goulburn Murray Water manages groundwater licenses and allocations through their groundwater management plans that define the sustainable extraction rates for groundwater aquifers



On-site wastewater: Hepburn Shire Council manages septic tank approvals and maintenance requirements via their Domestic Wastewater Management Plan (DWMP)



Water security Central Highlands Water (CHW) prepare urban water strategies every 5 years with a 50-year outlook to examine long term water security taking into account issues like climate change and population growth to define infrastructure requirements



Flooding North Central Catchment Management Authority (NCCMA) manage flooding and direct works through plans like the Creswick Flood Mitigation and Urban Drainage Plan that is being implemented.

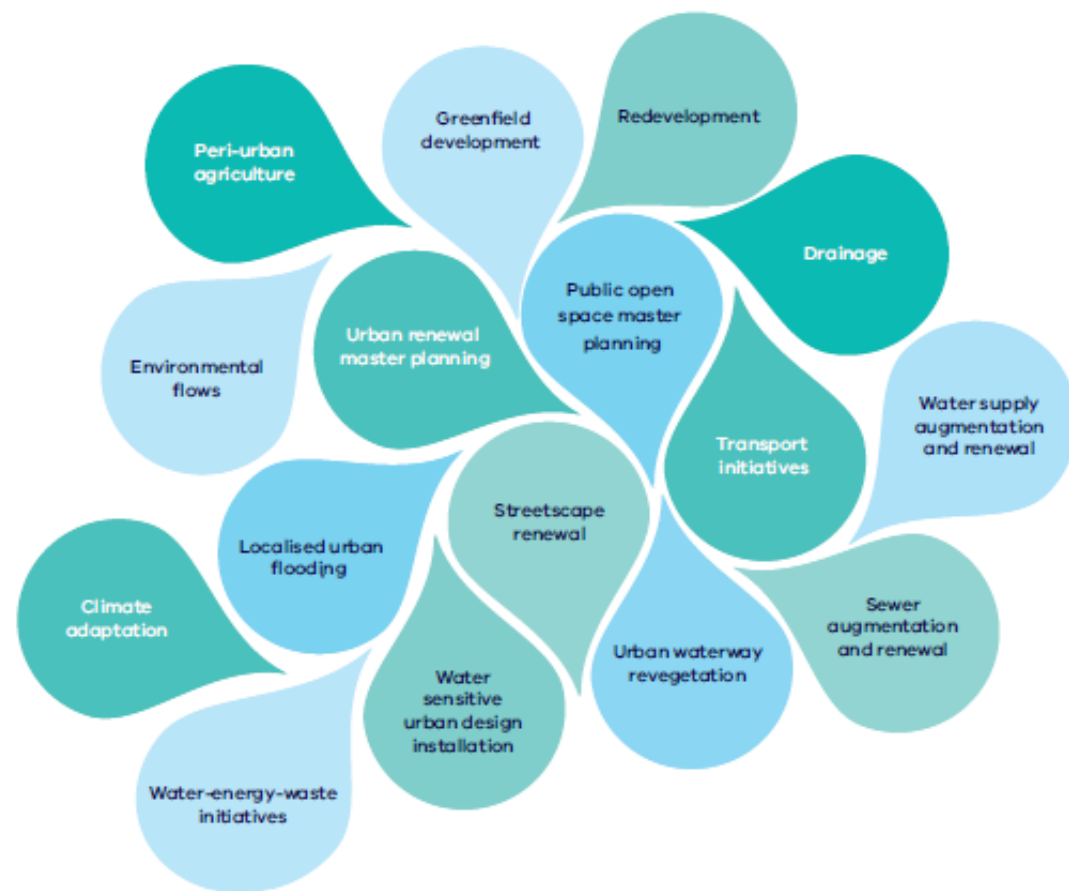
What is an IWM opportunity?

The seven IWM outcomes shown above provide guidance as to what constitutes an IWM opportunity.

An IWM opportunity can be applied in a range of contexts, with the aim of improving the liveability of our towns and enhancing our environment through collaborative water management.

The image on the right provides some examples of opportunities that have and can be investigated through IWM Plans.

For the Daylesford & Hepburn Springs, Creswick and Clunes IWM Plan, it is also important that opportunities align with the character of each town and are economically feasible.



Who is involved in IWM?

A number of organisations are involved in IWM across Daylesford & Hepburn, Creswick and Clunes.
The table below sets out each agency and their responsibilities.

Central Highlands
Water

Headworks
management

Urban water supply

Wastewater
management

Recycled water

Hepburn Shire Council

Urban stormwater
management

Parks & gardens

On-site domestic
wastewater

Urban planning and
approvals

Goulburn Murray
Water

Rural water

Irrigation services

Groundwater
management and
licenses

North Central
Catchment
Management
Authority

Waterway health

Floodplain
management

Environmental water
(e.g. for waterways)

Dept of Environment,
Land, Water Planning
(DELWP)

Legislation, policy and
regulation

IWM policy
development

Land use planning and
development
approvals at the state
level

Dja Dja Wurrung





Cultural practices and
heritage

Policy development

Decision making
support in relation to
waterways

Water cycle summary

Characteristics and features of each town's water cycle are summarised below.

	Water supply  <p>Safe, secure and affordable supplies in an uncertain future</p>	Wastewater  <p>Effective and affordable wastewater systems</p>	Waterways (and stormwater)  <p>Healthy and valued waterway: wetlands and water bodies</p>	Flooding  <p>Avoided or minimised existing and future flood risks</p>
Daylesford	Daylesford relies on winter rainfall to replenish its reservoirs including Wombat Reservoir and Bullarto Reservoir. The town is potentially vulnerable to extended dry periods.	The Shepherds Flat wastewater treatment plant (WWTP) is about 6-7 kms north of Daylesford. It produces recycled water that is used to irrigate 25 hectares of local farmland.	Hepburn Shire is located high in the Loddon River catchment.	<p>The townships of Creswick and Clunes are particularly susceptible to flooding with the most recent major flood event in 2010/11.</p> <p>Flood risk in Daylesford is relatively low by comparison.</p> <p>Sections of the drainage network within each town are also susceptible to nuisance or localized flooding</p>
Creswick	Creswick is supplied from White Swan Reservoir which is part of the Ballarat water supply system.	Wastewater from Creswick is piped to Ballarat North WWTP for treatment, about 10 km away.	<p>Creswick Creek runs through Creswick and Clunes. Lakes such as Lake Daylesford, Lake Jubilee, St Georges Lake and Lake Calembeen are highly valued community assets.</p> <p>Urbanisation can impact waterways by generating stormwater that can be of poor quality (particularly during construction)</p>	
Clunes	Clunes is supplied from groundwater bores about 6km south of Clunes. Water is treated at the Clunes Water Treatment Plant (WTP) and pumped to a storage tank at Two Mile Hill where it is gravity fed to town.	The Clunes WWTP produces recycled water for local farm irrigation. Winter storages on site are often at capacity and there is typically elevated salinity in the recycled water.	The local stormwater networks of each town are not well mapped making stormwater planning challenging.	

Water cycle summary

Groundwater and mineral springs

Groundwater is an important and unique aspect of water management in this region. Groundwater is managed by Goulburn-Murray Water.

Groundwater: Daylesford is within the Loddon Zone of the Central Victorian Mineral Springs Groundwater Management Area (GMA) that is characterized by five main aquifers.

Creswick and Clunes are within the Ullina and Ascot Zones respectively, within the Loddon Highlands Water Supply Protection Area (WSPA), characterised by two main aquifers.

The GMA and WSPA are divided into management zones based on their hydrogeological characteristics. Management zones are then defined to respond to these characteristics and to ensure appropriate and sustainable management of groundwater resources.

Mineral Springs: Hepburn Shire contains over 80% of Victoria’s mineral springs. The springs that discharge from the Ordovician sedimentary bedrock aquifer around Daylesford & Hepburn is unique to Australia.

Any potential impact on mineral springs is considered by Goulburn-Murray Water as part of the groundwater license application process under Section 40 of the Victorian Water Act 1989.

The table below summarises the number of groundwater licenses, volume of entitlements and proportion of the entitlement that is typically used. It shows that typically less than 50% of entitlement volumes around Daylesford, and 30-40% of entitlements in Clunes and Creswick are extracted.

	Management zone	Relevant town	Number of licences	Licence volume (GL/ year)	Proportion of licence entitlement used (%)
Central Victorian Mineral Springs GMA	Loddon	Daylesford	71	2.7	< 50%
Loddon Highlands WSPA	Ascot	Clunes	68	7.0	30 – 40%
	Ullina	Creswick	19	2.4	

IWM Issues

As part of developing the plan existing community plans and social research was reviewed, interviews were undertaken with Hepburn Shire Councillors and feedback was received from community members via the Participate Hepburn website. What we heard is summarized below.

Water Security

“Ensuring water security into the future”

“More people and businesses having rainwater tanks”

“Climate change will impact water availability. It will become more precious and expensive”

“Less plastic bottles and more water fountains”

Community water literacy

“Water literacy (for locals and tourists)”

Groundwater and mineral springs

“Management of groundwater needs to be more transparent”

“We need to manage the number of groundwater licenses and unsustainable water using activities”

“hugely concerned about the (ground)water mine on Wheeler’s Hill Rd”

“The mineral springs advisory is no longer active. There is no body looking after this”

“An overall assessment of bore water and its availability now and in the future”.

“We need to maintain our mineral springs”

New development

“Water tanks should be mandatory for all new homes / developments”

“continued sub-division of land without residential infrastructure.... and the impact on our natural waterways”.

“New developments need more stringent requirements around water use, wastewater management and stormwater treatment”

Flooding

“There was significant flooding in Creswick and Clunes in 2010/11”

Stormwater and waterways

“There is poor mapping of drains, waterways and springs”

“Run off into the surrounding creek and river systems”

“Need stormwater treatment between Clunes main street and the waterway”

“Runoff that goes into creeks during construction stage is poor”

“Ongoing creek management, and protecting biodiversity”

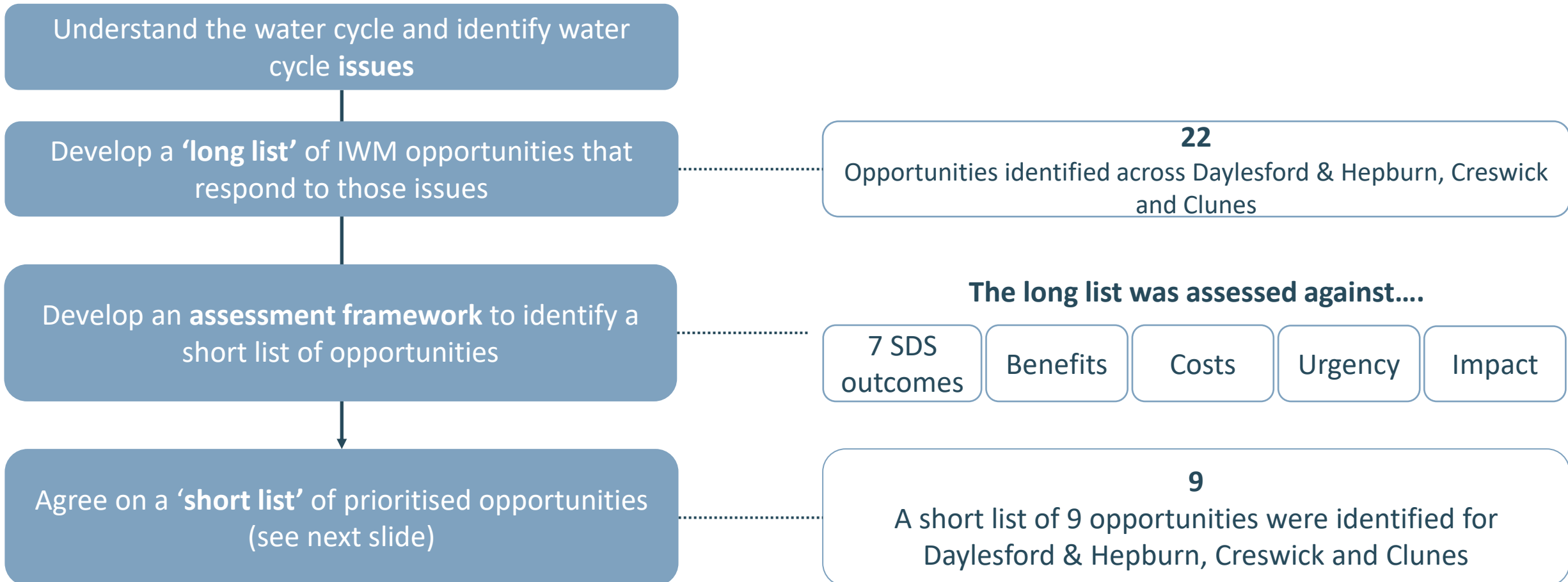
IWM Issues

In addition to the above, the project group worked closely with stakeholder organisations within workshop situations to identify IWM issues for reach town. What we heard is summarized below.

	Water supply	Wastewater	Waterways, wetlands and water bodies	Flooding	Groundwater
Daylesford	<p>Water supply vulnerability due to reliance on seasonal rainfall</p> <p>Hepburn Shire is the highest water user (due to aquatic facilities, open space irrigation etc.)</p>	<p>Recycled water is used to irrigate pasture at the treatment plant. Are there better uses for that water?</p> <p>On site septic tanks can impact waterway health and neighbourhood amenity</p>	<p>Infill land development impacts stormwater volume and quality, potable water demand and wastewater management</p> <p>There are opportunities for greater connection between community and natural assets like lakes and waterways</p> <p>There is limited detail on Councils stormwater assets (e.g. location, alignment and size, age and condition). This can limit the ability to identify opportunities.</p>	<p>Flooding risk is less in Daylesford than Creswick and Clunes.</p> <p>Recent, serious flood events have impacted these communities and their relationship with the waterway.</p> <p>Waterway maintenance (e.g. weed removal) is required to ensure appropriate flow conveyance during large flow events</p>	<p>There is community concern regarding</p> <ul style="list-style-type: none"> the sustainable use of groundwater and the use of groundwater for bottling understanding how sustainable groundwater yields are determined. The impact of land development on the quality and uses of groundwater
Creswick	<p>Creswick and Clunes have a relatively high level of water security</p>	<p>Wastewater is pumped to Ballarat with limited scope for recycled water use in Creswick</p>			
Clunes	<p>The long-term sustainability and use of groundwater resources is of interest to the community.</p>	<p>There is a recycled water resource in Clunes, however salinity limits its range of uses.</p>			

IWM Opportunities

The general process for identifying IWM opportunities is set out on the left, with specific numbers of opportunities identified across Daylesford & Hepburn, Creswick and Clunes shown on the right.



IWM Opportunities

The following is the short list of IWM opportunities that performed best against the assessment.
The long list is provided in Attachment A.

Daylesford	Creswick	Clunes
Alternative water sources for open space irrigation: Identify alternative (or non-potable) water sources for the irrigation of open spaces within Daylesford to reduce potable water demand.	Doug Lindsay Reserve alternative water supply project: Develop stormwater and rainwater harvesting concepts for the irrigation of open space and other non-potable demands (e.g. toilet flushing) to reduce potable water demand.	Reduce potable water use: Identification of alternative water sources to reduce potable water demands for large water users including open spaces, campus’ and clubs.
Recycled water use strategy: Development of a Shepherds Flat recycled water use strategy to identify higher value uses for Daylesford’s recycled water.	Creswick Creek stormwater improvements: Develop a stormwater management plan that shows how stormwater enters the creek and how waterway health can be improved through better stormwater management.	
Shire wide....		
Street and building scale IWM opportunity investigations : Identification of small scale IWM opportunities with the streets and buildings of each town. This would identify where things like rainwater tanks, passive street tree irrigation and stormwater treatment (e.g. using biofiltration or grassed swales) could reduce potable water use, improve stormwater quality and waterway health.		
Community water education and awareness campaign : Development of an education and communication program focusing on IWM and sustainable water use. This could include information for resident community and tourists and could also include an indigenous engagement element to lead to projects like Indigenous Waterway Assessments.		
IWM planning conditions for infill and greenfield developments: Develop planning conditions for new developments that guide sustainable water use, wastewater management implementation of water sensitive urban design (WSUD) and IWM principles like improved local amenity, urban greening and cooling and onsite stormwater management to reduce potential stormwater impacts on waterway health.		
Connecting natural spaces for recreation: Daylesford, Creswick and Clunes are surrounded by beautiful natural assets like waterways and spaces that are highly valued by communities for a range of recreational activities. There is an opportunity to promote improved waterway conditions and community connection to natural spaces through the preparation of an overarching masterplan that highlights opportunities for improving access, site facilities and water quality going into waterways.		

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Where to from here?

Your feedback:

- The IWM Plan has identified **9 priority projects** from a long list of 22.
- We are seeking your feedback on these priority projects
- Provide your responses at the Participate Hepburn website:

<https://participate.hepburn.vic.gov.au/integrated-water-management-plan>

Page closes: 1st of December, 2021



An aerial photograph of a river delta, likely the Amazon, showing a complex network of waterways and lush green vegetation. A semi-transparent dark grey rectangle is positioned in the bottom left corner, containing the company logo and a mission statement.

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We are passionate about the protection and restoration of waterways, catchments and water resources. We strive to make a positive difference to the world we live in.

Attachment A: IWM Opportunity long list

Daylesford	Creswick	Clunes
<ol style="list-style-type: none"> 1. Alternative water sources for open space irrigation 2. Shepherds Flat recycled water use strategy 3. Wombat Hill mini hydro scheme 4. Daylesford Lake water quality investigation 5. Urban forestry and street tree canopy cover strategy 	<ol style="list-style-type: none"> 1. Doug Lindsay Reserve alternative water supply 2. Park Lake Gardens - tennis courts alternative water supply 3. Creswick Creek stormwater condition improvements 4. RACV resort alternative water supply from Russells Reservoir 5. O'Reilly's dredge hole ecological investigation 6. Ecological and social assessment of the old wastewater treatment plant (WWTP) land 7. Mitigating known areas of nuisance flooding 	<ol style="list-style-type: none"> 1. Reducing potable water usage in Clunes 2. Clunes historical water supply network repurposing 3. Two Mile Tank beautification 4. Clunes urban forest strategy 5. Lothair Reserve wetland assessment
For all towns...		
<ol style="list-style-type: none"> 1. Street and building scale IWM 2. Community education and awareness 3. Planning conditions for infill and greenfield developments 4. Connecting natural spaces for recreation 5. Creswick Creek urban waterway management strategy 		