



Integrated Water Management Plan

2019–2024

Summary Document





Our Vision

Managing water holistically across the organisation to contribute to our community vision:

Happy, healthy people sharing prosperity and knowledge from living sustainably and in harmony with our rural identity, thriving villages, productive and inspiring landscapes.

Our Mission

Action today to benefit tomorrow.

What is Integrated Water Management?

IWM is about recognising all elements of the water cycle and leveraging these to provide better economic value and outcomes that benefit community and environment.



Water Supply



Wastewater



Flooding



Healthy Waterways



Healthy Landscapes



Community Values



Jobs, Economy & Innovation

Summary Structure



We have structured this summary document in the following order to share our plan for a future Baw Baw where water is actively managed to aid the delivery of our community's vision;

"Happy, healthy people sharing prosperity and knowledge from living sustainably and in harmony with our rural identity, thriving villages, productive and inspiring landscapes."

People and Place

Baw Baw Shire covers approximately 4,027 square kilometres of high-quality farmland, national parks and residential areas. Water flows from the western quarter of the shire through the Tarago/Bunyip River system into Western Port Bay and rivers in the the remaining east of the shire flow via Tanjil, Latrobe and Thomson rivers to the Gippsland Lakes.



Figure 1: Shire location in relation to Western Port Bay and Gippsland Lakes.

The current population in Baw Baw of 52,000 is expected to rise above 70,000 by 2030. Most of these people are in the towns along the rail and road corridor of Warragul, Drouin, Longwarry, Yarragon and Trafalgar. Drouin alone is set for a 27% population increase.

Population growth increases:

- the area of hard surfaces that intercept water (house roofs, roads, footpaths)
- required volumes of water
- wastewater generation
- requirement for sports and recreation infrastructure

These can negatively impact our landscape in different ways.



Figure 2: Waterford Rise Estate, Warragul

Current role

The work of at least 10 various departments at Baw Baw manage individual components of the water cycle.

Natural Environment

responsible for maintaining wetlands, urban waterways and bushland reserves.

Environment and Sustainability

implementation of the Environment Sustainability Strategy, protection of the natural environment – including waterways.

Infrastructure Planning

responsible for locating and specifications of wetlands, retarding basins, and stormwater drainage.

Stormwater Drainage

reviewing drainage infrastructure being constructed during development, influencing drainage outcomes across the shire.

Urban Operations

maintenance of public places including watering of gardens and turf.

Recreation

planning and management of recreation reserves, including the irrigation of playing surfaces.

Statutory and Strategic Planning

overseeing and influencing development in the immediate and long term, including compliance with State water management requirements.

Roads

managing the impact of water on roads and associated infrastructure.

Public Health

managing septic tank systems and the potential risk to public health and the environment.

Grants and advocacy

assisting with securing external funding to facilitate construction of water management projects.

If each department is managing these components independently, without a longer-term strategy there is danger of;

- not capitalising on all available benefits for our community and
- not using resources as efficiently as possible.

Success Stories

Neerim South Wetland

The community were the driving force behind the development of the wetland. It was recognised that a wetland would treat and harvest stormwater and provide a sustainable water supply for irrigation. Neerim South Recreation Reserve oval and Neerim South Secondary College grounds would be the beneficiaries during dry periods.

The construction of a wetland complex has also provided walking tracks, a place for social and educational events, an attractive landscaped reserve for the town and a range of other community benefits.

Bellbird Park Sustainable Water Use Project

Together with the Bellbird Park Committee of Management, resident sporting clubs and Gippsland Water, Baw Baw Shire Council embarked on a project to utilise treated water from a nearby wastewater treatment plant for sportsground irrigation.

Filtration and UV disinfection technology, pumps and storage infrastructure helped bring treated water to the site.

By repurposing the treated wastewater, Baw Baw Shire helped prevent excess discharge from the treatment plant to local waterways, protecting aquatic environments and improving waterway health in the upper Western Port catchment.

Photographic Timeline (2014-2015)



Aerial Photograph of the Neerim South Wetland



Photograph by Daryl Whittaker

Figure 3: Neerim South Wetland.



Figure 4: Soccer pitch, Bellbird Park (Drouin).

The Baw Baw Shire IWM plan identified future opportunities like Neerim South and Bellbird that can contribute to improved community, economic and environmental outcomes. Having a plan outlining these opportunities places us in a stronger position to secure funding and resources required to achieve these outcomes.

What can IWM do for Baw Baw

Taking an integrated approach means that we consider the water management needs and impacts of one department's actions on other areas of the organisation, environment and community.

The main objective being to combine our resources to ensure positive liveability and economic outcomes for our community while ensuring we use resources efficiently.



Figure 5: Integrated water management diagram showing the interaction of the three 'areas' of water management within a context of urban form and landscapes.

What does this actually translate to at Baw Baw?

With Precinct Structure Planning and Precinct Planning we expect the next 30–50 years for Baw Baw includes

- An additional 50,000 people
- An additional 20,000 new dwellings
- More than 20 new wetlands / retarding basins
- More than 10 new sporting reserves

To avoid

Significantly damaging our waterways, negative impacts to recreation and leisure, not having sufficient water to irrigate sporting reserves, localised flooding, public health risk and not spending money efficiently.

We have to consider all elements of the water cycle before this change is upon us. This IWM Plan is the tool for Baw Baw to proactively benefit rather than suffer from the negative impacts of development.

Political and Strategic Direction

In order to progress IWM, the Victorian State Government have established 5 metropolitan and 7 regional IWM forums. Baw Baw Shire Council is a member of the Western Port (Metro) and Gippsland (Regional) IWM forums. Each forum has developed a Strategic Direction Statement approved by the Minister for Water with several prioritised IWM opportunities.

Developing an IWM Plan for Baw Baw Shire Council was identified as a priority for both forums and as such has been included in both Strategic Direction Statements.

Baw Baw's Neerim South Wetland and Bellbird Park projects were selected by the respective forums to be included in the Strategic Direction Statements as successful examples of IWM in the Gippsland and Western Port catchments.

What are we trying to achieve?

To ensure our objectives are consistent with our neighbours and partners we have adopted the strategic objectives that the Western Port and Gippsland IWM forums defined, those are;

- Safe, secure and affordable supplies in an uncertain future
- Effective and affordable wastewater systems
- Opportunities are sought to manage existing and future flood risks and impacts
- Healthy and valued waterways and marine environments
- Healthy and valued urban, rural, agricultural and green landscapes
- Community values are reflected in place-based planning
- Jobs, economic growth and innovation.

IWM Strategic Outcomes	Council Policy Documents										
	Council Plan 2017-21	Environment Sustainability Strategy 2018-22	Municipal Health and Well Being Plan 2017-21	Flood Mgt Plan for Baw Baw Shire 2018	Domestic Wastewater Mgt Plan 2016	Council Recreation Strategy 2017-22	Public Open Space Strategy 2014	Baw Baw Shire Council Road Mgt Plan 2017	Waterway Mgt Plan Guidelines 2017	Hazel Creek Waterway Mgt Plan 2010	Environmentally Sustainable Development in Regional Victoria 2018
Direct contribution to existing policy	■										
Potential contribution to existing policy	■										
Safe, secure and affordable water supply in an uncertain future	■		■	■		■					■
Effective and affordable wastewater systems	■				■						
Manage existing and future flood risks and impacts	■			■		■			■	■	
Healthy and valued waterways and marine environments	■	■			■		■		■	■	■
Healthy and valued urban, rural, agricultural and green landscapes	■	■	■				■	■	■	■	■
Community values are reflected in place-based planning	■	■	■	■		■	■				■
Jobs, economic growth and innovation	■		■								

Table 1: Alignment of IWM strategic outcomes with existing Council plans

The numbers case for IWM at Baw Baw

Delivered

The Bellbird Park project that utilises advanced treatments of wastewater for irrigation of sporting grounds has resulted in potable water use reductions of 12 Megalitres per year, which means a reduction in water bills from \$30,000p/a to \$6,000p/a. Baw Baw developed a business case and successfully secured approximately one million dollars to complete the Bellbird Park project.

Opportunity

For the 2018/19 year approximately \$29,000 (14.1 Megalitres) was spent on potable water to irrigate Trafalgar recreation reserve and \$33,000 (16.5 Megalitres) at Western Park. The additional senior oval outlined in the Trafalgar Recreation Precinct Plan could result in an annual total water bill in excess of \$50,000 if potable water remains the primary source.

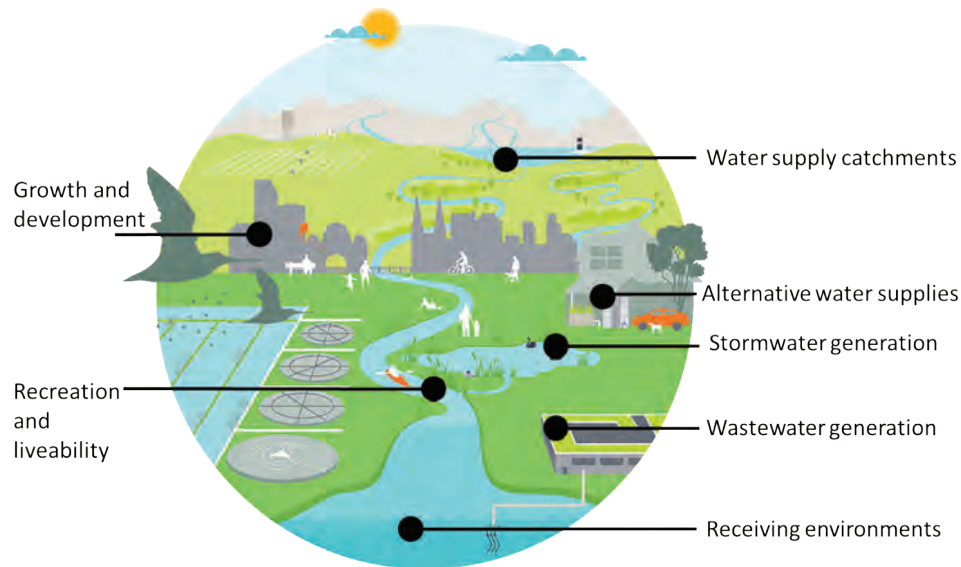


Figure 6: IWM drivers across Baw Baw Shire

Think what our future water bill may be when 10 new sporting reserves are built as part of the development of Warragul and Drouin.

Environment

The Bellbird Park project also has significant environmental benefit. At current irrigation rates approximately 15 Megalitres of wastewater is no longer being released into waterways.

Including planned development, 36,000 Megalitres is the predicted volume of stormwater generation across the shire and is expected to release;

- 7,600 tonnes of sediment per year
- 13,000kg of Nitrogen and 17,000kg of Phosphorus per year (which is about 73,000 10kg bags of NPK fertiliser) Into our waterways and bays.

The predicted total volume of stormwater produced well exceeds our shire's forecast total demand for potable water (including households), which is 12,800 Megalitres per year.

Opportunities and Threats

Threat and opportunity mapping for individual townships was completed to allow the development and assessment of IWM opportunities. Threats and opportunities have been identified across seven thematic action areas related to the IWM strategic outcomes for the region.

Threats

- Stormwater impacts on water quality and quantity. Including existing and future growth;
- Drought resilience of community open space and reserves;
- Wastewater effluent discharging into local waterways; and
- Domestic wastewater management impacts on public health and local waterways.

Opportunities

- Modifying planned wetlands to include stormwater harvesting for irrigation of recreation reserves;
- Restoration of local waterways; and
- Promotion of economic development by supplying secure, alternative water sources.



Figure 7: Example Opportunities Map- Trafalgar.

Priority Infrastructure projects

Project Options

Baw Baw Shire Council, Melbourne Water, Gippsland Water, West Gippsland CMA and BBSC Environmental Voice Advisory Committee came together to workshop infrastructure projects to utilise the opportunities previously highlighted. 14 project opportunities were identified from this work.

A cost benefit analysis was completed for each project opportunity to compare the merit and value that each represents.

After analysing the results of the cost benefit analysis, environmental outcomes and timeframe to capitalise on growth, three opportunities were chosen for progression to concept design stage.

The remaining projects can be incorporated into longer term infrastructure planning and budgeting.

Concept Designs:

Greening Western Park Sporting Grounds

Greening Trafalgar Recreation Reserve

Protecting Crater Lake (Rawson)

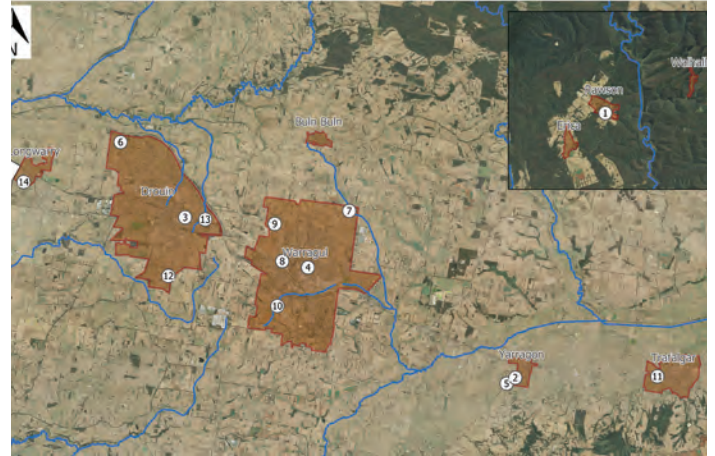
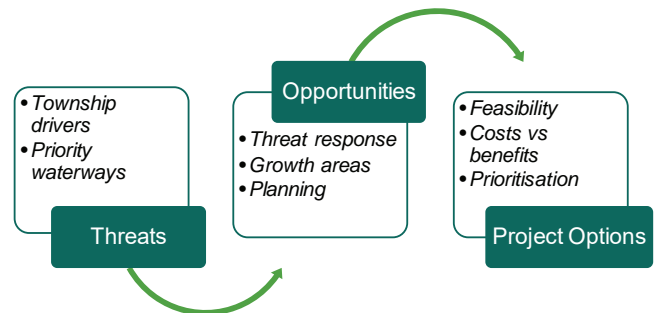


Figure 8: Location of project options across Baw Baw Shire.



Concept Design	Rationale
Greening Western Park Sporting Grounds	Provides example of retrofitting an existing wetland. Two sporting ovals within proximity. Potable water cost in the order of \$30,000 per annum.
Greening Trafalgar Recreation Reserve	Development is imminent. Reduced capital cost as wetland is a requirement of housing development. Planned second sporting oval could see potable water costs in excess of \$50,000 per annum.
Protecting Crater Lake (Rawson)	Securing water supply for community asset (Crater Lake). Alternative water supply for Recreation Reserve.

Concept Designs

Greening Western Park Sporting Grounds

An existing wetland located adjacent to the Western Park Ovals in Warragul treats runoff from upstream urban development before discharging to Hazel Creek. The project is to capture and treat stormwater to irrigate both ovals.

Project benefits include; potential potable water savings of 20ML per year, cost savings of \$40,000 per year, add value to an existing asset, and protect Hazel Creek from the impacts of urban development.

Capital expenditure in the order of \$500,000 (including minor modification to existing wetland, transfer pump, 600kL storage tanks, UV treatment, irrigation pump, transfer pipework and electrical). Operational expenditure in the order of \$2,000 per year.

Greening Trafalgar Recreation Reserve

This project involves the inclusion of stormwater harvesting system in the wetland required with the planned residential development. To supply the growing irrigation demands at Trafalgar Recreation Reserve.

Project benefits include; potential potable water savings in the order of 20ML per year, cost savings of \$40,000 per year, provision of high quality sporting surfaces, and contribution to more natural flow regime in surrounding creeks.

Capital expenditure in the order of \$700,000 (including minor modifications to the planned wetland, transfer pump, 600kL storage tanks, UV treatment, irrigation pump, transfer pipework and electrical). Operational expenditure in the order of \$4,000 per year.



Figure 9: Drone photograph of Western Park (Warragul), with treatment wetland in background.

Protecting Crater Lake (Rawson)

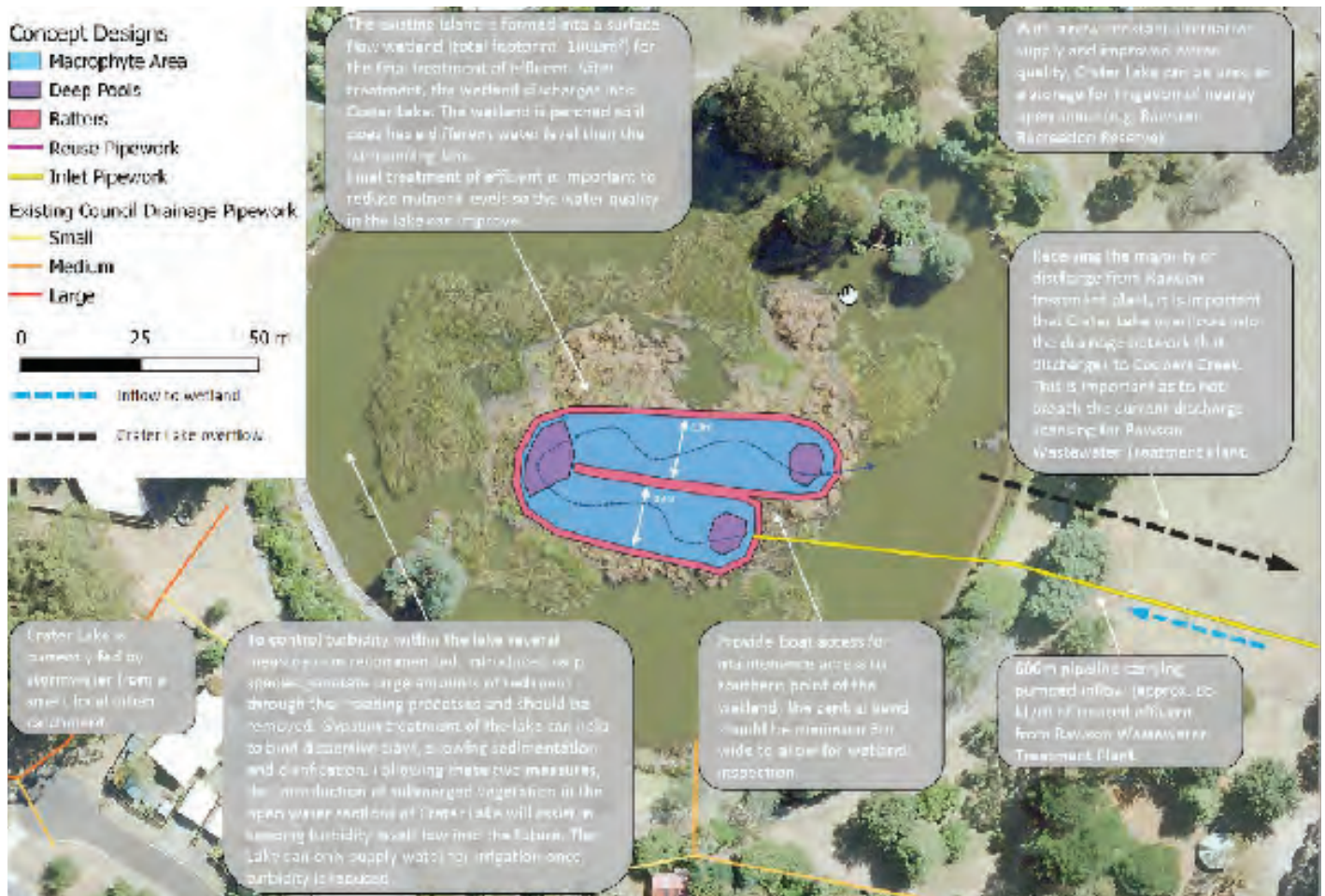
After drying out in Autumn 2019, water security of Crater Lake was identified as a key IWM project opportunity.

The concept design involves the construction of an enclosed surface flow wetland on the island of Crater Lake to receive and treat effluent from the Rawson Wastewater Treatment Plant.

Project benefits include; providing a secure water supply for a community asset, improved liveability and recreation, improved capacity to irrigate the Rawson Recreation Reserve.

Capital expenditure in the order of \$1,000,000 (including wastewater treatment plant upgrade works, transfer main to wetland, pumps within the wetland, construction of the wetland, electrical connection costs, transfer main to the recreation reserve, irrigation tanks and UV treatment for oval irrigation). Operational cost in the order of \$10,000 per annum.

Figure 10: Protecting Crater Lake concept design.



5 Year Action Plan

IWM projects often deliver multiple outcomes and accordingly require collaboration between council departments and in some instances with broader stakeholders. To support the implementation of the recommended projects, the 5-year action plan sets out key tasks, timelines and lead area of council to drive the initiative.

Completing the following actions will embed integrated water management into Baw Baw Shire Council practice into the long term. The actions are themed into;

1. Governance and delivery
2. Building technical capacity
3. System, processes and guidelines
4. Stakeholder communication
5. Monitoring and reporting

Key actions over the next 12 months

Formalise the Integrated Water Management project team. This team will annually review and report progress back to Environmental Voice.

Business case for design and construct alternative water supply at Western Park – Warragul.

Review planned actions for Hazel Creek in terms of IWM – communicate, coordinate and implement with key stakeholders.

Training for Statutory Planning team in relation to new State Government water management regulations.

Business case for 50:50 funding application for an Integrated Water Management officer. To continue momentum and utilise support from external agencies.



Figure 11: McNeilly Wetlands (Drouin)

Table: Complete List – 5 Year Action Plan

Action	Action Summary	Year 1	Year 2-3	Year 4-6	Priority	Resources	Lead	Role for IWM Officer
1-A	Formalise Integrated Water Management (IWM) project team	✓			HIGH	In-Kind	IWM Project Team	Yes
1-E	Business case for IWM Officer	✓			HIGH	\$70k	Community Infrastructure	No
1-B	Business case for securing the water supply at Crater Lake - Rawson	✓			HIGH	In-Kind	Community Infrastructure	Yes
1-K	Review planned actions for Hazel Creek in terms of IWM - communicate, coordinate and implement with key stakeholders	✓			HIGH	In-Kind	Community Infrastructure	Yes
2-E	Training for Statutory Planning team in relation to new State water management regulations	✓			HIGH	\$5k	Planning and Development	Yes
3-A	Sediment monitoring on construction works	✓	✓	✓	HIGH	In-Kind	Community Infrastructure	Yes
1-C	Business case for securing an alternative water supply at Western Park - Warragul	✓			HIGH	In-Kind	Community Infrastructure	Yes
1-G	Business case for alternative water supply to promote economic development in Longwarry	✓			HIGH	\$40k	Economic Development	Yes
2-A	Establish rainfall modelling templates to enable better investigation of stormwater harvesting opportunities	✓			HIGH	\$15k	Planning and Development	Yes
2-B	Training in water modelling to allow better identification of harvesting opportunities	✓			HIGH	\$5k	Planning and Development	Yes
2-C	Training in the assessment of Water Sensitive Urban Design to provide more rigour when assessing developer applications	✓			HIGH	\$10k	Planning and Development	Yes
1-F	Continue implementation of the Domestic Wastewater Management Plan	✓	✓	✓	HIGH	Current	Planning and Development	No
5-A	IWM Project Team to review and report progress against plan annually, including feedback and comment from Environmental Voice	✓	✓	✓	HIGH	In-Kind	IWM Project Team	Yes
1-D	Business case for securing an alternative water supply at Trafalgar Recreation Reserve		✓		MEDIUM	In-Kind	Community Infrastructure	Yes
1-H	IWM opportunities in master planning of smaller towns ie. Trafalgar and Longwarry		✓		MEDIUM	\$20k	Planning and Development	Yes
1-I	Design and construction of at least one major stormwater harvesting project to secure an alternative water supply for a sporting precinct			✓	MEDIUM	\$350k - 1MIL	Planning and Development	Yes
1-J	Greening waterway corridors to increase biodiversity	✓	✓	✓	MEDIUM	In-Kind	Community Infrastructure	Yes
3-B	Continuous improvement of wetland handover process to ensure Council inherit high quality assets	✓			MEDIUM	In-Kind	Planning and Development	Yes
3-C	Developers providing costed maintenance plans for wetlands and retarding basins	✓			MEDIUM	In-Kind	Planning and Development	Yes
3-D	Mapping register and database of Council owned IWM assets		✓		MEDIUM	In-Kind	Community Infrastructure	Yes
3-E	Audit existing Council owned IWM assets to understand current performance and future maintenance requirements		✓		MEDIUM	\$25k	Community Infrastructure	Yes
3-F	Investigate options for an off-setting scheme for stormwater management		✓		MEDIUM	\$20k	Community Infrastructure	Yes
4-B	Advocate for Gippsland Water to undertake community water literacy program		✓		MEDIUM	In-Kind	Community Infrastructure	Yes
2-D	Review Neerim South stormwater harvesting scheme to inform future harvesting projects	✓			MEDIUM	In-Kind	IWM Officer	Yes
4-A	Provide a central location for IWM information and resources for land developers			✓	LOW	\$10k	IWM Officer	Yes
4-C	Develop IWM component of BBSC website for the community			✓	LOW	\$15k	IWM Officer	Yes

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