GHD Advisory

Great Tasting Water Business Case

Executive Summary

Prepared for Wannon Water

Contents

Chapter 1

→ Introduction

1.1 Introduction

Wannon Water recognises that the needs and values of its customers and communities should drive service delivery and product development and commits that it's Products and Services should always support or enhance public health and regional prosperity. Strategically, Wannon Water aims to go beyond water for strong communities. This places a focus on delivering value for customers and partnering to help south-west Victoria flourish.

Wannon Water supplies drinking water to Portland, Port Fairy and Heywood. The current water supply meets the health-related parameters in the Australian Drinking Water Guidelines, but not the aesthetic parameters for good taste. Wannon Water has identified that customer perceptions of the poor aesthetic quality (particularly taste) are having negative impacts beyond those normally considered in investment decisions for aesthetic quality upgrades. These negative impacts are discussed in this section.

In addressing the issues, Wannon Water is pursuing the opportunity to demonstrate leadership in the water sector and go beyond the provision of 'just safe' water and in the process improve the quality of life by contributing to positive health and economic outcomes in these three communities.

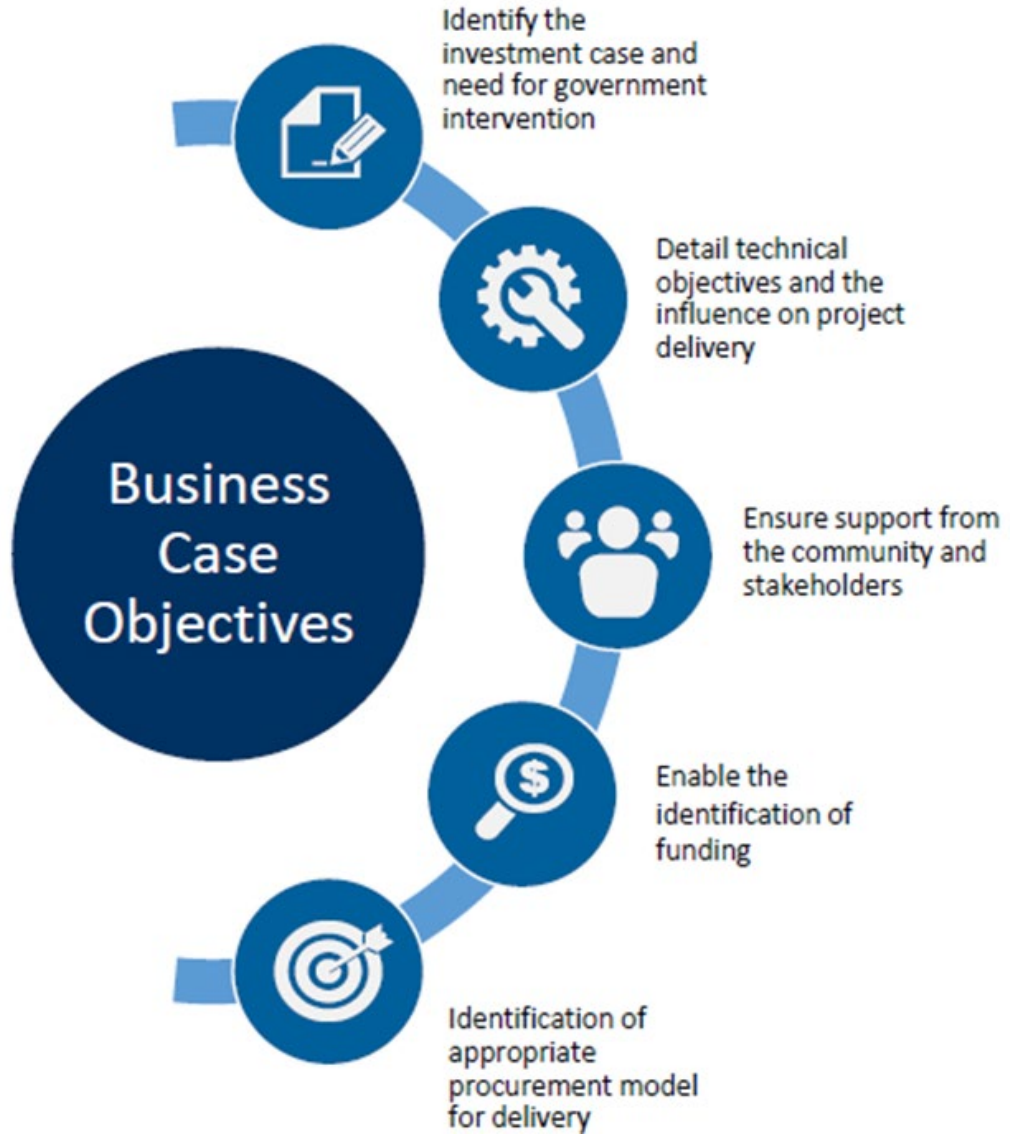
1.2 Purpose of Business Case

The purpose of submitting the business case is to provide confidence to decision-makers that the:

– Strategic justification for the investment is valid
– The right investment option is selected; and
– The agency can deliver the investment as planned

1.3 Objectives

The objective of the business case is to demonstrate the validity to Government and stakeholders, the investment case should be comprehensive and contain the substantial evidence base establishing the case for Government to invest.



1.4 Context

Strategically, Wannon Water aims to go beyond water for strong communities. This places a focus on delivering value for customers and partnering to help south-west Victoria flourish.

Wannon Water supplies drinking (potable) water from 29 water treatment plants to 33 towns across South-West Victoria to a permanent population of around 100,000 people.

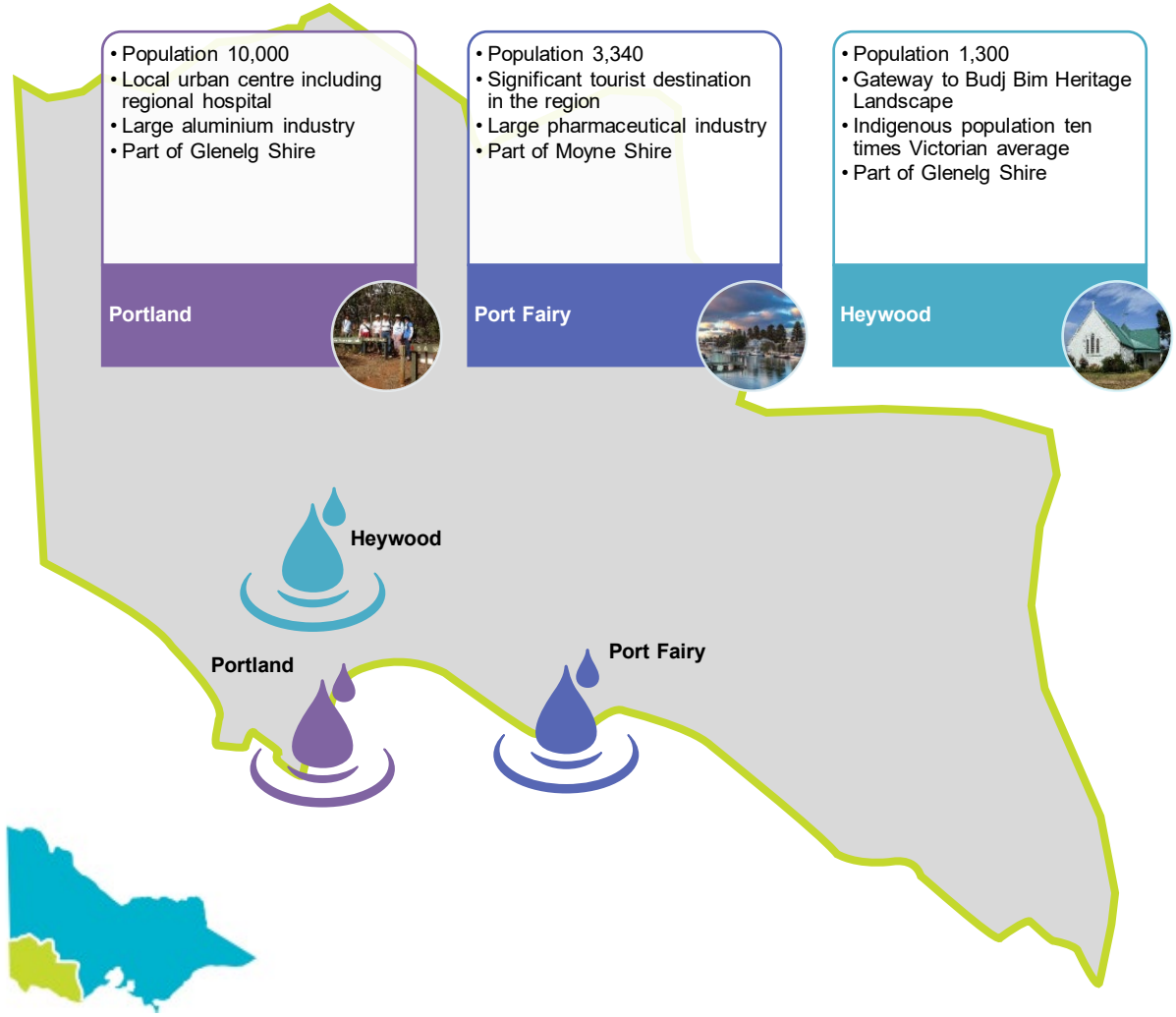
It is Victoria's second largest regional urban water corporation by service area. Wannon Water consistently delivers safe drinking water across the region, exceeding the State average for drinking water compliance over the last five years.

During comprehensive engagement undertaken to inform Wannon Water's 2018-2023 Pricing Submission, customers said they would value improvements to the taste, smell and appearance of their water. These improvements were identified as one of four key challenges in relation to water services for the five-year period.

Whilst the drinking water supplied to Portland, Port Fairy and Heywood is safe, customers have directly and regularly expressed their dissatisfaction with the aesthetic quality of the water supply. Customers in those towns are Wannon Water's most dissatisfied in terms of taste and overall water quality.

Wannon Water also acknowledges that around a third of customers in those towns still rate their satisfaction with taste as high or very high, demonstrating the subjective nature of taste. The water quality also leads to additional direct costs to major industries (particularly Portland Aluminium and Sun Pharma in Port Fairy).

Wannon Water has been investigating the cause and potential solutions to this issue for over a decade. The cause has been identified as high total dissolved solids, or simply "saltiness". The saltiness is due to the characteristics of the groundwater aquifer from which the water is sourced. A range of mineral salts are present at levels in excess of the Australian Drinking Water Guidelines for 'good' quality drinking water. In all other respects, the water supply is safe and secure and fit for consumption



1.4 Wannon Water Strategic Priorities

The Great Tasting Water project is aligned to Wannon Water's overall program of capital works for the fourth Regulatory Period (RP4) from financial years 2018/19 to 2022/23. The Pricing Submission Plan submitted to the Essential Services Commission (ESC) in September 2017 covers all activities and investments of Wannon Water during RP4 and their impact on customers.

Taste, smell and appearance of drinking water was identified as the first of four key challenges facing Wannon Water for the period 2018-23.

The initiatives slated for this Price Submission period included:

– Planning works that will improve the quality of drinking water for our customers.

– Consult with communities and in partnerships develop investment plans which take into account both economic and social impacts.

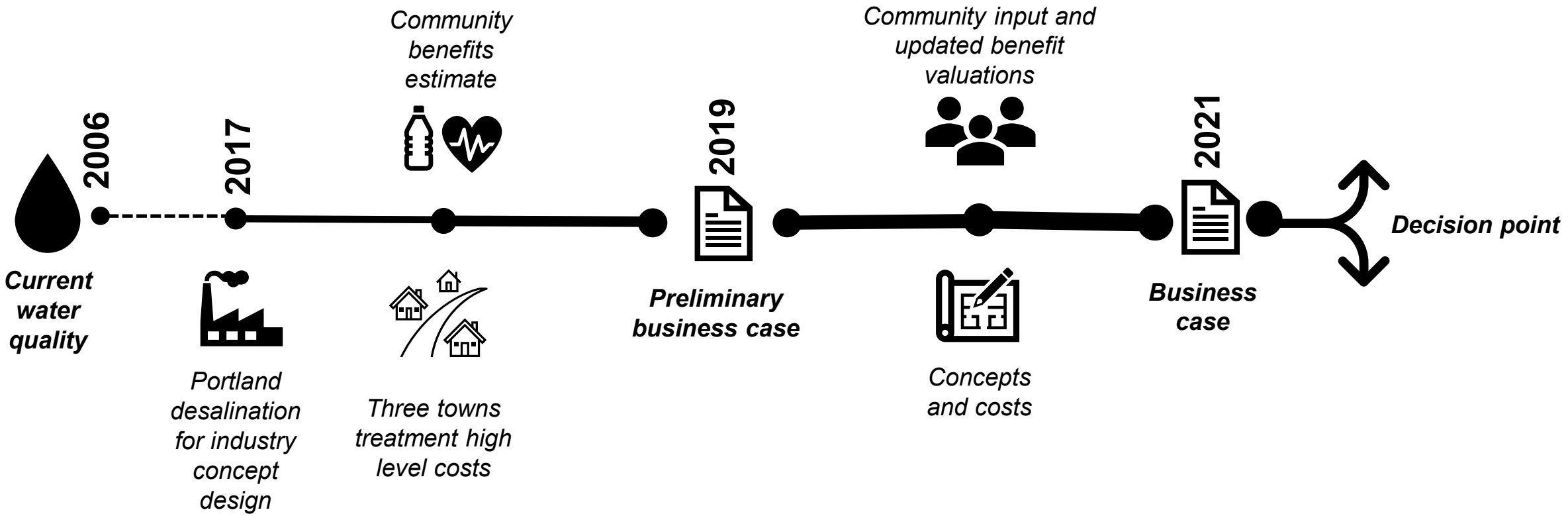
– Scope and design infrastructure solutions.

Partnership with Portland Health District

In 2016 Portland District Health, joined the Department of Health's Healthy Workplaces Achievement Program. CEO's from 13 Western Regional Health Services joined in a commitment to remove sugary drinks from sale at retail and vending outlets at their health services

As part of this project, Wannon Water approach Portland District Health to initiate a pilot project that would supply a blended water with lower salt content and better aesthetic quality than the town supply, supporting the hospitals ambitions to remove sources of sugary drinks for staff and patients

1.5 Timeline of the Project



Chapter 2

→ Case for Change

2.1 Problem Definition

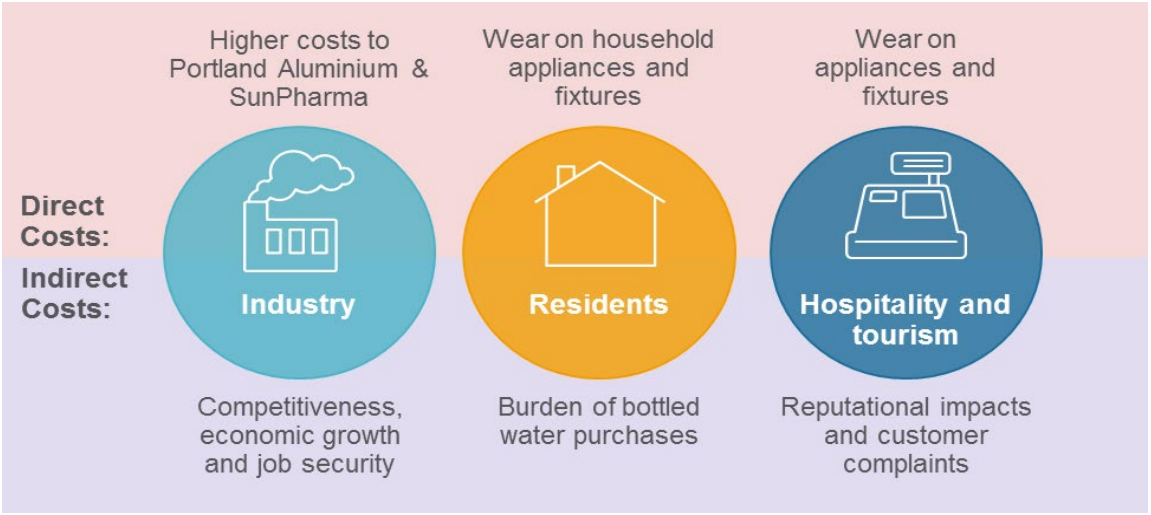
Whilst drinking water supplied to Portland, Port Fairy and Heywood is safe, customers have expressed their dissatisfaction with the aesthetic quality of the water supply. The lower rate of tap drinking water consumption is causing adverse health outcomes for the community and the water quality is creating increased costs to residents, industry, business owners and tourism.

Wannon Water supplies drinking water to Portland, Port Fairy and Heywood. The current water supply meets the health-related parameters in the Australian Drinking Water Guidelines, but not the aesthetic parameters for taste. Wannon Water has identified that customer perceptions of the taste are having negative impacts beyond those normally considered in investment decisions for aesthetic quality upgrades. As the initial point of the business case, GHD worked with Wannon Water to distill the primary problems that were affecting the local region in order to be able to realise the appropriate benefits. To do this, an Investment Logic Mapping Workshop (ILM) was held, to find the problems, benefits, and the KPI's required to measure these.

Following the ILM, two problem statements were derived:

Problem 1 – Reduced water consumption due to elevated saltiness negatively impacts public health outcomes in the three communities

Problem 2 – Elevated saltiness of water supply increases costs to the local economy



2.2 Benefits

Four key benefits were identified, that would improve health outcomes of the community, improve equity for communities and customers, and lowering costs for both local industry and for local communities.

After the ILM process, the benefits were identified and further defined to include the following:

Benefit 1

Reduction in poor dental health: Poor water quality often results in consumers switching to non-fluoridated sources of water including rainwater and bottled water. By offering an improved water quality, fluoridated tap water would become a more attractive alternative leading to improved dental health outcomes in communities.

Reduction in obesity related illnesses: Poor water quality often results in consumers choosing more palatable alternatives, such as soft-drink, and other SSB's. By offering an improved level of water quality, tap water would become a more attractive alternative to SSB's and in doing so help to stem the influx of obesity and obesity-related diseases.

Benefit 2

Improvements to the quality of water will ensure all Wannon water customers receive the same level of service across the entire region, subsequently increasing customer satisfaction. Improving the quality of water will also significantly reduce the number of customer complaints received by Wannon Water.

Benefit 3

Alcoa's Portland Aluminium smelter experiences multiple problems with the existing water supply. Supplying improved water quality would result in significant savings for them, and in doing so allow them to be more competitive within their sector. Additionally, Sun Pharma at Port Fairy have identified maintenance and process efficiencies and a reduced demand for water could be achieved with a low-salt water supply, improving their competitiveness.

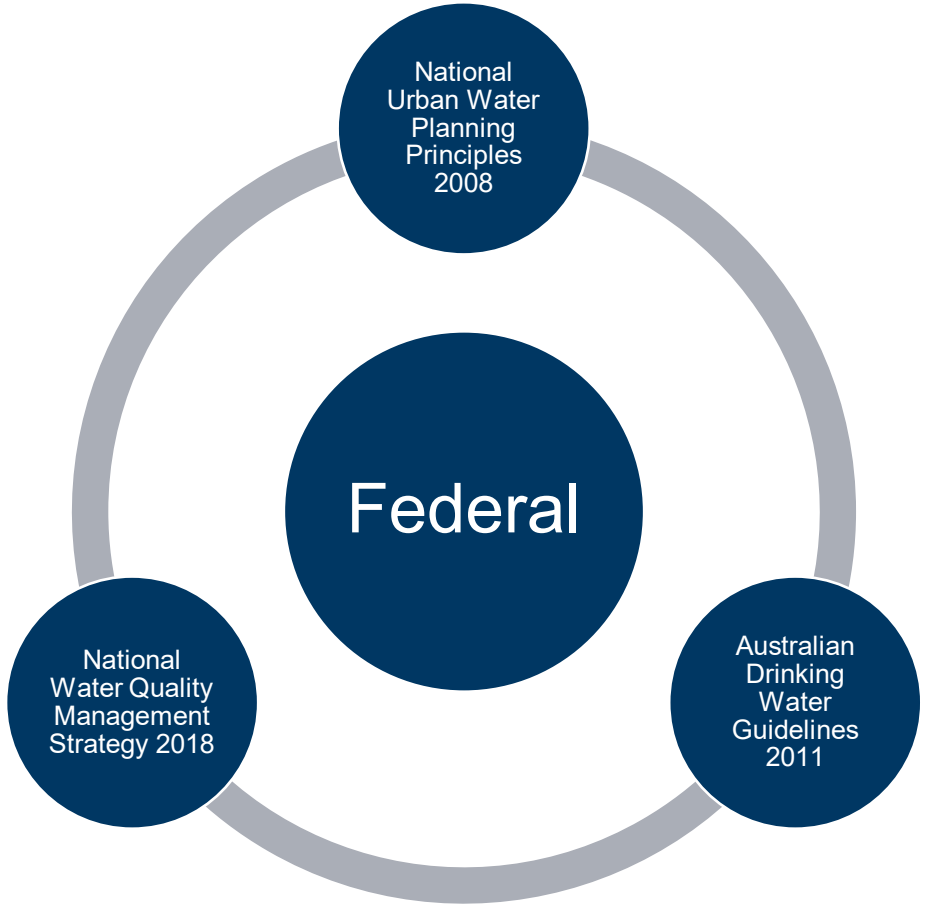
Benefit 4

Reduced household maintenance costs on appliances and fixtures: Household appliances in the three towns suffer from higher incidence of scaling and require more frequent replacement due to the elevated mineral salt content of the water supply. Therefore, there is potential for individuals to save on maintenance costs as a result of an improvement to the quality of water supplied.

Cost savings from reduced bottled water purchases: Bottled water consumption in the three townships is up to double the Australian average as a result of the poor water quality. Increasing the quality of water will subsequently reduce the need for bottled water consumption, decreasing the cost of living.

2.1 Importance of benefits to government

The aims of the Great Tasting Water project will align to a number of relevant Victorian Government strategic directions and policies, aimed at improving health outcomes for citizens of the state and ensuring the large burden of avoidable health costs can be minimised to the benefit of those directly affected, and the community more widely.



Chapter 3

→ Options Development

3.1 Strategic Responses

Promoting drinking water consumption with better aesthetic tap water quality was identified as the preferred method of improving the health outcomes of the community.

Strategic options were constructed to achieve internally consistent combinations of interventions. The strategic analysis investigated opportunities to substantially change the way things are done in future rather than defaulting to managing water supply the way it has always been managed. A total of six strategic options were developed for review, listed in Table 1.

These strategic responses were then assessed against their ability to respond to the following criteria:

– Ability to respond to the cause of the problem

– Ability to deliver benefits

– Feasibility of implementation to clients and stakeholders

Review of the strategic options and the strategic options assessment confirmed Option 3 as the most appropriate option to be delivered.

Strategic Option 3 – ***Promote water consumption with better aesthetic tap water quality*** was recommended on the bases that if offers the greatest project benefits. This option will deliver the ability to:

– Improve community health outcomes through better aesthetic quality of tap water, coupled with behaviour change programs highlighting the change.

– Improve community economic outcomes through lower household expenditure

– Improve competitiveness and reduce costs for industry by avoiding extra treatment and water consumption costs

– Contribute to broad improvements in quality of life and economic prosperity of the region

The preferred strategic option involves improving the quality of water supplied to customers by reducing the salinity (TDS) of the water supply, and highlighting the health benefits of water consumption and reduced SSB consumption to the community through behaviour change programs using a partnership approach.

Table 1: Recognised strategic responses

Option	Strategic Option	Description
1	Business as Usual (Do nothing)	No action taken and health and economic outcomes for the community may remain below the Victorian averages.
2	Behaviour change and investment programs targeting obesity in the community	Wannon Water in partnership with other public health bodies could aim to shift community consumption of sugary beverage and water consumption through behaviour change programs and investment strategies.
3	Promote water consumption with better aesthetic tap water quality	Wannon Water could improve the aesthetic water quality provided to its customers from its centralised water treatment and supply systems in the three townships. Improved customer water quality would be coupled with behaviour change programs developed in partnership with relevant local agencies to raise awareness of the change and possible health benefits from changing behaviours.
4	Interventionist approach to reduce consumption of sugary beverages by the community	Wannon Water in partnership with other public health and regulatory bodies could severely restrict or eliminate the availability of sugary beverages in the townships (e.g. blanket bans or imposition of a 'sugar tax' or equivalent).
5	Supply of subsidised and fluoridated bottled water or bubblers	Wannon Water in partnership with local stores and businesses could provide a supply of high aesthetic-quality water that is not supplied through customer taps. For example, Wannon Water could invest in providing subsidised or free bottled water available in local stores, or could install small-scale systems to dispense high-quality water in schools and the town centre where residents and visitors can fill up. This water supply could be fluoridated to achieve dental benefits. Water supply to major industrial customers would not be changed.
6	Invest in dedicated systems that reduce salt in supply to major industrial customers	Wannon Water could invest in salt-removal systems dedicated to improving the water quality for major industrial customers Portland Aluminium and Sun Pharma. It would not produce any change in the water quality supplied to residential and commercial customers.

3.2 Project Options

The option of Centralised Reverse Osmosis treatment plants has been identified as suitable to deliver the desired benefits (Option 1).

A number of other options have been considered but are discounted based on additional cost for no benefit or significant uncertainty with respect to viability.

The preferred strategic option involves improving the quality of water supplied to customers by reducing the salinity (TDS) of the water supply and highlighting the health benefits of water consumption and reduced SSB consumption to the community through behaviour change programs using a partnership approach.

There are no viable alternative water sources in the region that would provide a secure and naturally lower-salt raw water feed. Therefore, the preferred approach is to reduce the salt concentrations in the existing groundwater feed from the Dilwyn Aquifer.

3.2.1 Base Case

In order to assess how well any option addresses the identified opportunities and service needs, it is necessary to establish a base case – or a 'do nothing scenario'.

The base case for this project provides a baseline against which to compare potential options and assumes minimal intervention or new capital infrastructure investment will be delivered in the region to address poor tasting water issues for Wannon Water.

The base case for the Great Tasting Water Business Case is defined as: *Existing infrastructure to deliver water remains as they are, with Portland, Port Fairy and Heywood serviced by these existing infrastructure.*

3.2.2 Option 1: Centralised Reverse Osmosis (RO) treatment plants

Reverse Osmosis Upgrades to the existing water treatment plants to include reverse osmosis (RO) is a membrane process that removes dissolved salt. The desalinated (permeate) water stream is blended with a saline sidestream to achieve the desired final TDS.

This blended water is post treated to adjust pH and improve chemical stability, fluoridate for dental health benefits, and chlorinated for final disinfection prior to supply to customers.

Pretreatment washwater (from filter backwashing) and RO brine (reject containing salts) are discharged to as brine to sewer and (in the case of Portland and Port Fairy) ocean outfalls respectively.

The volume and composition of the brine produced varies with feedwater quality and process recovery. Design has adopted a recovery in the 75% to 85% range, typical for brackish water. By further treatment (increased complexity and cost) this can be increased with reduced brine volumes achieved.

This approach relies on proven technology and is expected to provide the required benefits for all customers in each town.

This option is the basis for the business case.

3.2.3 Option 2: Point of Use (POU) RO systems

Point of Use (POU) Systems provide a domestic sized reverse osmosis system that are typically mounted under the kitchen sink or nearby location close to the point of use.

These systems are unproven at a RO Plantsystem scale, and there are multiple unresolved regulatory and operational considerations relating to asset ownership, heavy metals responsibility for safe and chloride efficient operation, access for inspection and maintenance, assurance of water quality etc.

This approach does not deliver the full range of benefits, with reduced health benefits (limited dedicated drinking taps), no dental benefits (will remove fluoride from the source water) and no household economic benefits.

3.2.4 Option 3: Seawater Desalination

The POU System typically consists coastal location of Portland and Port Fairy makes this a potential option. Seawater desalination provides a series of filter cartridgestruly independent water source, RO membrane and storage tank uses RO technology to provide desalinated water.

Compared with Option 1 it has a number of drawbacks including the need for on demand supplyadditional marine infrastructure (e.g. The unit produces seawater intake), large plant sizing (due to low recover for seawater desalination as opposed to brackish water automatically desalination) and significant need for additional technical and environmental studies to assess feasibility and shuts off when the storage tank is fullgain approvals. Water is accessed from a separate faucet that

This option is installed at also an order of magnitude more expensive to build, and has significantly higher operating costs and energy requirements than the same timealternatives.

3.2.5 Option 4: Pipelines from Elsewhere

Pipelines from other systems have been considered for Heywood and Port Fairy.

For Port Fairy, consideration has been made of supply from Warrnambool via Koroit. It has been identified that there is insufficient capacity in the existing connection to Koroit, and so a new pipeline is required all the way to Warrnambool. This adds significant cost, and coupled with the additional demand on the Otways resource (which is becoming stressed), is not seen as advantageous over Option 1 for the purpose of the Business Case.

For Heywood, two options were considered. A connection to Hamilton to supply treated Grampians water requires about 50 km of new pipeline, and the cost is significantly higher than alternatives. A connection to an upgraded Portland system requires a shorter and less expensive pipeline, plus results in no net decrease in Wannon Water's water resource position. The costs for this pipeline are still in excess of the alternative to upgrade the Heywood WTP, even taking operational cost savings into account.

Portland

Option 1 – Groundwater Desalination

A brackish water desalination plant that reduces the TDS of the existing bore water sourced at Bald Hill and discharges brine to Portland WRP.

Option 2 – Point of Use Treatment

Treatment of existing potable water at each individual household with systems that are installed under sinks.

Port Fairy

Option 1 – Groundwater Desalination

A brackish water desalination plant that lowers the TDS of potable water sourced at Port Fairy WTP, with brine discharged to Port Fairy WRP.

Option 2 – Point of Use Treatment

Treatment of existing potable water at each individual household with systems that are installed under sinks.

Heywood

Option 1 – Groundwater Desalination

A brackish water desalination plant that lowers the TDS of the existing bore water at Heywood WTP, with brine discharged to Heywood WWTP.

Option 2 – Point of Use Treatment

Treatment of existing potable water at each individual household with systems that are installed under sinks.

Portland

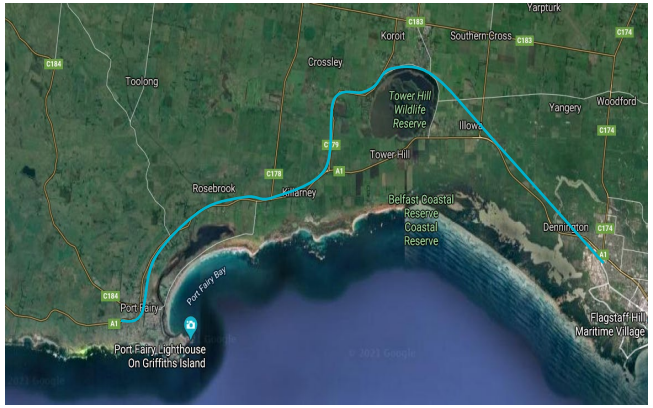
Option 3 – Seawater Desalination

New seawater desalination plant drawing from Bass Strait. Existing groundwater supply redundant.

Port Fairy

Option 3 – Seawater Desalination

New seawater desalination plant drawing from Bass Strait. Existing groundwater supply redundant.

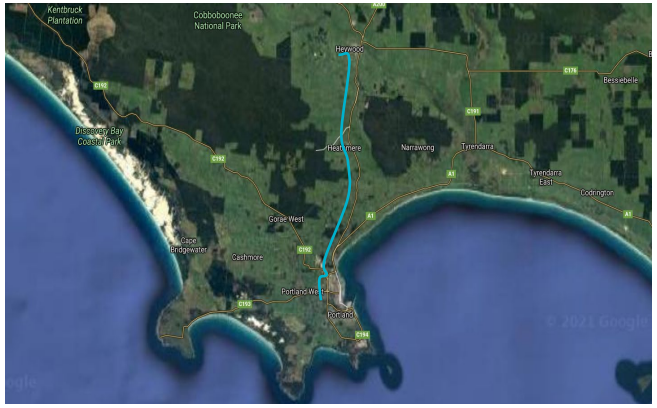


Option 4 – Pipeline from Koroit (Warrnambool)
New pipeline bringing treated Otways water from Warrnambool via Koroit.

Heywood

Option 4 – Pipeline from Hamilton

Pipeline to bring treated Grampians water from Hamilton.



Option 4 – Pipeline from Portland

Pipeline to bring water from an upgraded Portland system.

Chapter 4

→ Options Assessment

4.1 Introduction

A variety of social and environmental impacts were identified, social impacts were minor and focused on increasing user utility, whilst environmental impacts were minimal, however discharge licences may be required from the EPA for all options.

Subsequent to the options development and strategic options assessment, further options analysis was undertaken to determine the most suitable infrastructure option to meet the project objectives for the Great Tasting Water project.

4.2 Stakeholder identification and consultation

The engagement approach was designed to ensure that all community and stakeholders were informed, involved and able to contribute their ideas, inform the ongoing visioning, and guide the direction of the project and Business Case to ensure a sense of shared ownership. The objective of stakeholder engagement is to identify stakeholders for ongoing consultation throughout the project's development and implementation to reduce the potential for misunderstanding.

4.3 Social Impacts

The project identified as having four aspects of social impact. The identified aspects of impacts, and potential impacts were:

- **Social Cohesion:** Possibility to create conflict between local communities in favour of or opposed to the project (for example related to fluoride addition).
- **Employment:** Increased employment opportunities for local residents during construction
- **Increases in water bills:** Development of the project could result in increased water bills for local communities.
- **Impact on value or amenity through changes to local environment:** Project is unlikely to impact visual amenity post construction.

4.4 Environmental Impacts

Environmental impacts of the operation of the upgraded treatment plants relate primarily to the brine and washwater generated as waste streams from the process.

Portland

Washwater containing the filtered solids including precipitated metals (iron) will be discharged to the existing Portland WRP via a dedicated pipeline. Discharge to the WRP means that this waste is now managed under the existing conditions of the WRP, analogous to a trade waste discharge, and as such is not expected to be of concern to EPA.

Brine (RO concentrate) is proposed to be discharged to the existing Portland WRP outfall, downstream of the WRP process. The stream includes the rejected salts and minerals from the groundwater. It may also include low levels of antiscalnt chemical used as part of the RO process operation.

A key implication of the Great Tasting Water project is that as part of consideration by the EPA, the existing WRP discharge licence may be opened for review. Also, if a Development Licence is required, there will be a need to seek community input on this topic.

Port Fairy

The issues at Port Fairy mirror those at Portland, albeit with slightly different infrastructure interfaces. The same concerns regarding discharge of brine via the existing outfall, downstream of the WRP, apply.

Heywood

At Heywood the concept involves discharge washwater and brine together to the WRP via a dedicated pipeline. Under this approach, upgrade of the WRP is required, including expansion of the irrigation area and construction of additional winter storage. This may require EPA approval and an update of license.

4.7 Economic Impacts

The project has a positive net present value (NPV) of $4.68 million and a benefit cost ratio (BCR) of 1.11.

The economic appraisal of the project has been undertaken using a CBA. The CBA assessed a variety of total benefits and costs for each of the selected options.

4.7.1 Quantifiable Impacts

The benefits assessed for each site were:

- Health gains
- Healthcare gains
- Dental cost averted
- Productivity gains
- Value of hospitalisations averted
- Industry cost savings
- Community cost savings

The costs assessed for each site were:

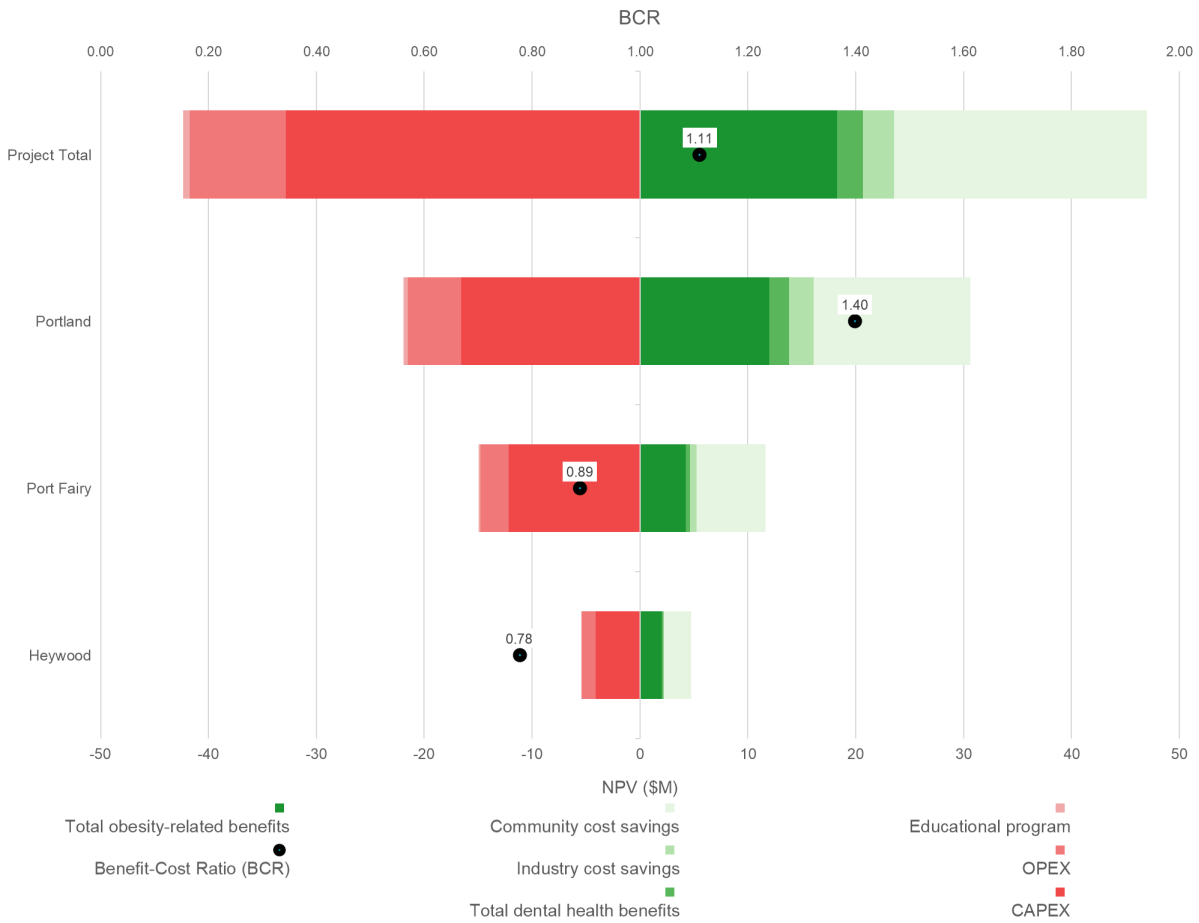
- Capital Expenditure
- Operational Expenditure
- Educational programs

The quantifiable benefits for these impacts were calculated, with the results summarized in Table 2 for each location.

Results from the economic assessment indicate the Project has a positive **net present value (NPV) of $4.68 million** and a **benefit cost ratio (BCR) of 1.11**. The largest benefit streams stem from community (avoided bottled water) and obesity-related benefits (healthcare cost). Results from Portland indicate benefits outweigh the costs. Results from Port Fairy and Heywood indicate the costs outweigh the benefits. The figure overleaf demonstrates the finalised costs and benefits for each assessed location.

Table 2: Summarised costs and benefits by town and option

Item	Portland		Port Fairy		Heywood	
	Option 1	Option 2	Option 1	Option 2	Option 1	Option 2
Total benefits	30.64	21.96	11.64	8.21	4.74	3.45
Total obesity-related benefits	**11.98**	**11.98**	**4.25**	**4.25**	**2.03**	**2.03**
Health Gains	11.41	11.41	4.05	4.05	1.92	1.92
Healthcare Cost	0.57	0.57	0.19	0.19	0.11	0.11
Total dental health benefits	**1.86**	**1.86**	**0.4**	**0.4**	**0.16**	**0**
Dental cost averted	1.32	1.32	0.28	0.28	0.11	0
Productivity gain	0.43	0.43	0.09	0.09	0.04	0
Value of hospitalisations averted	0.12	0.12	0.03	0.03	0.01	0
Cost savings	**16.8**	**8.12**	**6.99**	**3.56**	**2.55**	**1.42**
Industry cost savings	2.26	0	0.62	0	0	0
Community cost savings	14.54	8.12	6.37	3.56	2.55	1.42
Total Costs	**21.91**	**24.71**	**14.98**	**10.21**	**5.45**	**3.11**
CAPEX	16.55	6.43	12.16	2.66	4.13	0.78
OPEX	4.98	17.9	2.65	7.38	1.27	2.28
Educational program	0.38	0.38	0.17	0.17	0.05	0.05
Net Present Value	**8.73**	**-2.75**	**-3.34**	**-2.00**	**-0.71**	**0.34**
Benefit-Cost Ratio (BCR)	**1.40**	**0.89**	**0.78**	**0.80**	**0.87**	**1.11**



NPV and BCR results for assessed options

4.7.2 Qualitative Impacts

There were additional benefits that could not be quantified, which were derived from increased health outcomes, higher levels of amenity for users, impacts on social disadvantages, increased economic growth, and decreased negative externalities.

The following benefits have not been quantified as part of this CBA exercise however are attributable to the project and should be considered by decision makers. These non-quantifiable impacts include:

Other pathways for improved dental health: The investigations completed by Jaguar Consulting attempted to quantify benefits attributable to increased consumption of fluoridated water compared to non-fluoridated alternatives.

Improved amenity for residents and visitors: High purchases of bottled water and sugary drinks driven by aversion to the taste of tap water is a source of considerable plastic waste pollution, particularly in the tourist-heavy townships of Port Fairy and Portland. In peak tourism seasons, there is anecdotal evidence of overflowing bins and dispersed litter around town, inconsistent with the focus on environmentalism and impacting on visual amenity for residents and visitors

Improved household affordability and impacts on social disadvantages: Household affordability is of importance to all community members but is especially critical to those living in socio-economic disadvantage. Small cost savings for the reasons discussed above represent a larger proportion of household income for low-income households.

Regional economic growth and productivity: While there are quantitative effects captured within the CBA, there are secondary effects which include increases in sales, income or jobs in sectors that supply goods and services to the businesses directly affected, and induced impacts on sales within the region from household spending of the additional income generated by the project.

Negative externalities of bottled water consumption: Consumption of high rates of bottled water driven by the experience of poor tasting tap water, coupled with the associated energy and environmental impacts, appears inconsistent with the liveability and environmental identity of the region for both residents and visitors.

Chapter 5

→ Preferred Option

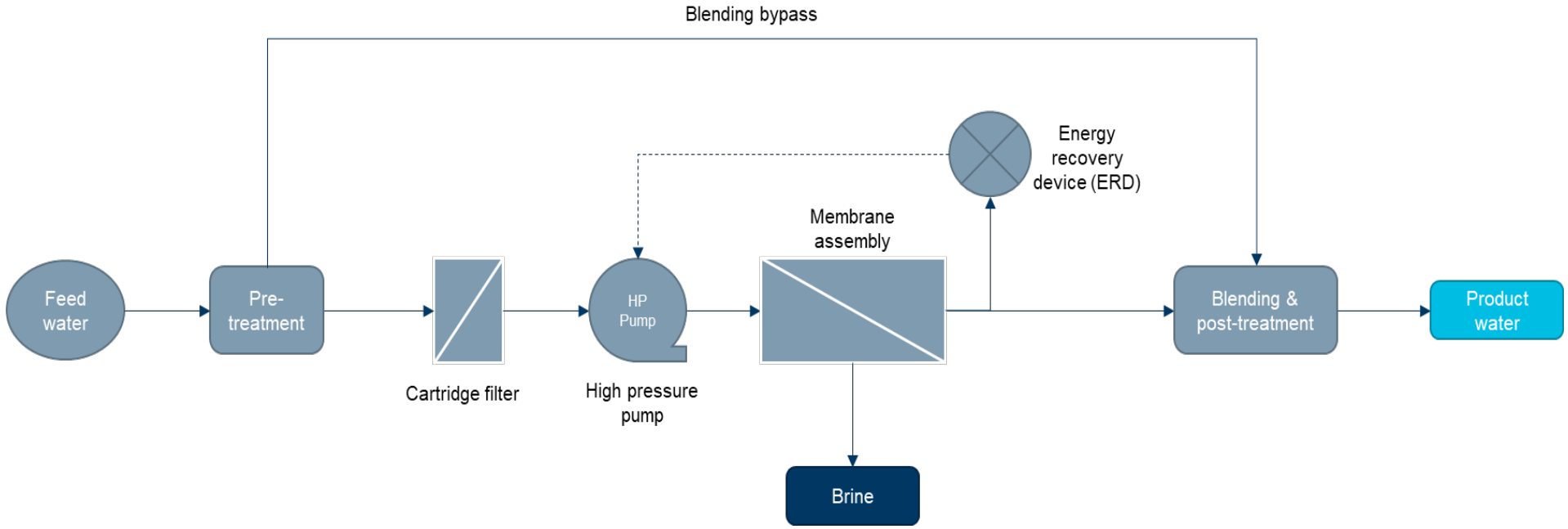
5.1 Overview

Component	Portland	Port Fairy	Heywood
Technology	MMF-BWRO	MMF-BWRO	MMF-BWRO
Total water production (PDD)	11.2 ML/d	5.8 ML/d	1 ML/d
Brine discharge	Portland outfall	Port Fairy outfall	Heywood WRP*
Washwater discharge	Sewer	Sewer	Sewer
Post-treatment chemicals	Lime	Soda ash	Soda ash
Fluoridation chemicals	FSA	Sodium fluoride	Sodium fluoride
Other	Wyatt St retained as emergency supplied	Treatment plant sized for Folk Festival demand	Upgrades at WRP required
Alternatives considered	Seawater desal Point of use	Seawater desal Point of use Pipeline from Warrnambool (via Koroit)	Point of use Pipelines from Hamilton or upgraded Portland
	Alternatives not considered further due to significant cost to provide for reduced or no additional benefit		

5.2 Process Design

The existing treatment system consists of pre-chlorination, cooling towers, Calgon dosing (at Port Fairy and Heywood), storage and post-chlorination. The new treatment system will retain the existing equipment (but not Calgon dosing), with a side-stream of 70-80 % of the flow from the cooling towers treated via dual media filtration and reverse osmosis, before blending with the bypass stream, and finally dosed with an alkali, chlorinated, and fluoridated (where required).

A high-level overview of a standard BWRO treatment process is provided in the figure below.



5.3 Brine and Washwater

5.4 Fluoride

Brine will be discharged through the construction of a new pipeline connecting to the existing ocean outfall for Portland, and the WRP's for Port Fairy and Heywood. The fluoridation chemical chosen for Portland is FSA, whereas Port Fairy and Heywood will use SF.

5.3.1 Portland

The approach taken has been to discharge brine through the construction of a new pipeline which connects to the existing ocean outfall. The Washwater Pipeline is to follow the northern brine alignment to Tecoma Road before heading North-West and entering the inlet pit at the beginning of the Water Reclamation Plant. This Washwater Pipeline is approximately 1050m long and is estimated to cost $290k.

5.3.2 Port Fairy

The approach taken has been to discharge brine through the construction of a new pipeline from Port Fairy WTP to the Port Fairy WRP**.** The Washwater Pipeline is to follow the road route along The Princes Highway before entering the sewer pump station on Philip Street. This Washwater Pipeline is approximately 1150m long and is estimated to cost $320k.

5.3.3 Heywood

The approach taken has been to discharge brine and washwater via a new pipeline from Heywood WTP to Heywood WRP. The pipeline travels north easterly from the WTP, crossing the Princes Highway and railway line before following the route of the rising main from Hunter Street SPS to the first lagoon of the WRP.

Other options have been considered including evaporation of brine, discharge to waterway, groundwater reinjection and carting to an ocean outfall. Works will be required at the WRP to accommodate the additional volumes, likely involving additional winter storage and irrigation area.

5.4.1 Fluoridation chemicals

The Fluoridation chemicals being considered are Sodium Fluoride (SF) and Fluorosilicic Acid (FSA). Sodium Silicofluoride was also considered but was deemed unsuitable.

5.4.2 Dosing requirements, chemical demand and preferred fluoridation chemical

Based on the annual average maximum temperature of each site, the proposed average total fluoride concentration target in the treated water supply is 0.9mg/L (Heywood and Port Fairy) and 1 mg/L (Portland).

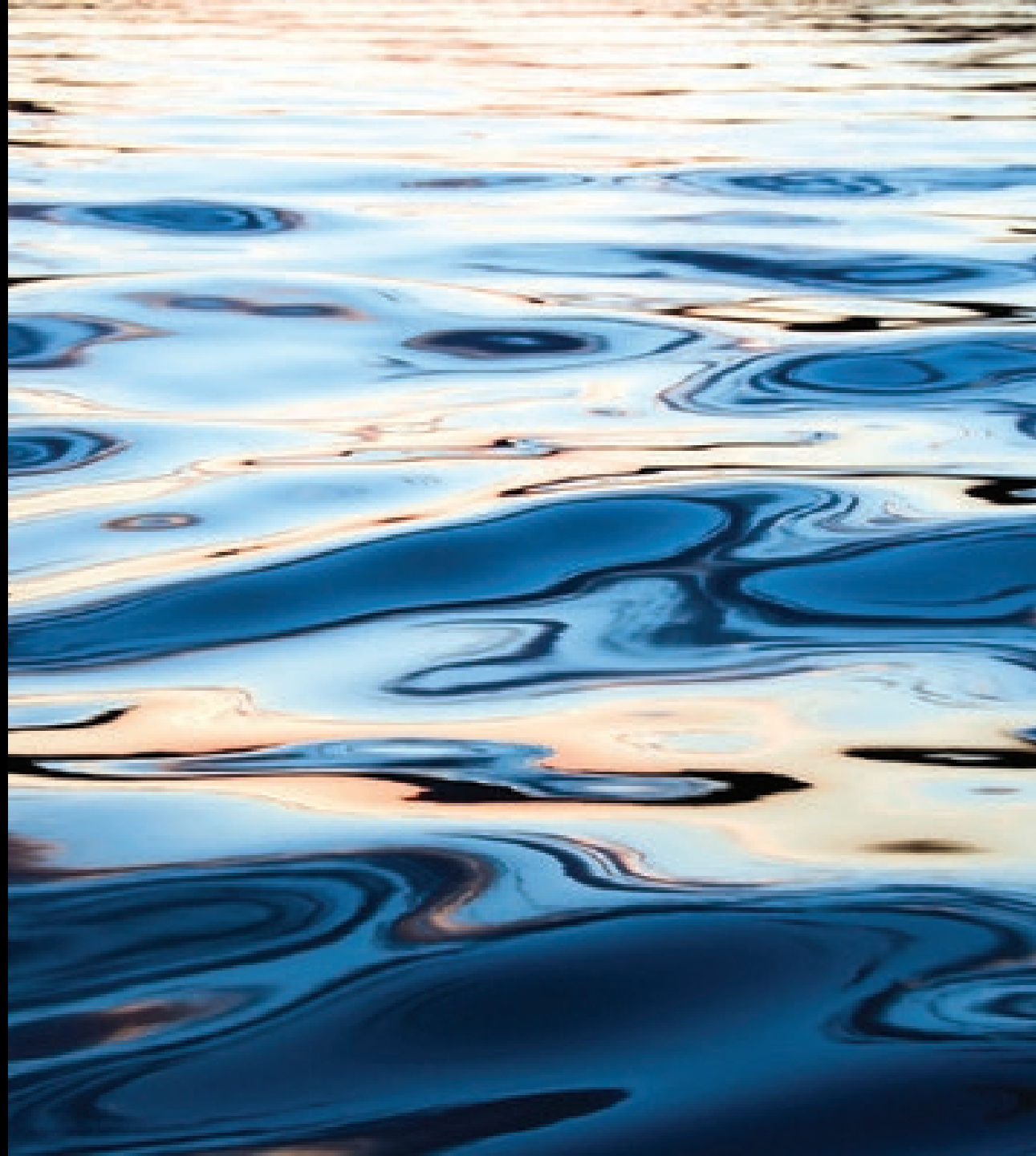
Based on the key considerations of fluoridation chemicals and expected chemical consumption rates, FSA is preferred for Portland and SF is preferred for Port Fairy and Heywood.

5.4.3 Fluoride Analysers

As per the *Code of Practice,* each site will require a primary and secondary fluoride analyser, with the primary analyser located upstream of the CWS, and the secondary analyser located downstream of the CWS. Due to the presence of naturally occurring fluoride in the water at each site and the RO bypass, a third fluoride analyser upstream of the fluoride dosing point will be required to measure fluoride concentration in the fluoridated water. This analyser and a filtered water flow meter would be used to control the fluoride dose rate. It has been assumed that all three analysers would be located in a new wet rack.

Chapter 6

→ Implementation



5.1 Commercial Procurement

There were number of procurement models that were considered for the Program with Construct Only, Design and Construct and Managing Contractor being shortlisted.

The approach for procurement is to maintain a holistic view of the project such that the desired outcomes and experience from the customer drive the delivery method as opposed to procurement of various pieces of equipment and services.

5.1.1 Construct Only

WW will have full responsibility for design and documentation developed by a design team engaged under a separate contract. WW will issue tenders once design and documentation are completed. Contractors' tendered price will be for construction in accordance with the design. A contractor is engaged under a single lump sum agreement.

5.1.2 Design and Construct

WW, with support from stakeholders and technical advisers prepares a functional key user performance requirements document, and seeks tenders for the respective engineering, design development, procurement, construction, and commissioning services necessary for the completion of this project. The design development will further detail the design that has been developed concurrently with this Business Case.

5.1.3 Managing Contractor

The Managing Contractor (MC) method is normally used for the construction of large complex projects. This relationship-style delivery model, based on collaborative principles, involves a Head Contractor (HC) being engaged as the 'managing contractor' to manage the design development, coordinate production of construction documentation, enter into contracts with consultants and subcontractors and manage the delivery of the works on behalf of the project owner.

5.2 Project Schedule

- ESC submission not expected until late 2022
- Timeline dependent on procurement and packaging options
- Reduction of timeframe if individual projects overlapped/delivered in parallel
- EPA Development License Application required – timing and sequence uncertain

Milestones	Start date	Duration
Business Case submission	Nov 2022	1 month
Ecology and CH approvals	TBC	TBC
EPA and Community processes	TBC	TBC
Confirm funding arrangement	Early 2022	TBC
ESC Process	Oct 2022	TBC
WW decision to proceed	Early 2023	1 month
Issue request for tender	Mar 2023	2 months
Contract award	May 2023	1 month
Construction	Jul 2023	1-3 years
Commission	Late 2026	TBC
Operation	Late 2026	

5.3 Implementation Plan

As part of the business case, an implementation and management strategy has been developed that includes consideration of the ongoing governance process, recommendations for stakeholder engagement, development of a change management strategy, development of a strategy to measure and realise benefits and development of a risk management framework.

Governance

The governance structure needs to provide clarity around roles, responsibilities, and delegated authorities across all levels of the program. Although the size of teams and the numbers fulfilling specific functions may change, it is important that there is a degree of consistency to how the common functions are described and their relative responsibilities and accountabilities.

Stakeholder Engagement

A number of stakeholders were identified during the development of the business case as being impacted by the project, having interest in the project, or being involved in the delivery of project benefits. A high-level communications framework must be developed in the next stage of the project to assist with the ongoing management of stakeholder interests.

Change Management Plan

It is anticipated changes will be requested and made during the delivery of the Project. Such changes may include scope changes due to latent site conditions, late changes in user requirements or contractor initiated to improve constructability. A Change Register is recommended to be established to enable the recording and management of change items. It is further expected all change requests will be made in line with contract clauses entered between Wannon Water and the requesting party.

Performance Measures and Benefits Realisation

While some benefit may be realised immediately following completion of the project, it is anticipated that there will be a time lag before the full benefit is realised. Consequently, the benefits realisation stage may extend well beyond completion of the Project.

It is recommended that a Benefits Realisation Plan (BMP) and Benefits Map are developed as part of the next project phase to articulate, monitor, and realise the benefits of the project during delivery and operations.

Risk Management

Risk factors may develop and change over time, as may the processes that were initially served to mitigate them. Identification, analysis, and evaluation must be repeated on a regular basis to reassess each risk.

During the project inception meeting with the project control group and through on-going stakeholder consultations the project team developed a risk assessment aligning with the principles of AS/NZS ISO 31000 for the preliminary design and related business case stage of the project.

GHD Pty Ltd

Level 9, 180 Lonsdale Street, Melbourne VIC 3000

T 03 8687 8000 **F** 03 8687 8111 **E** melbourne.reception@ghd.com

Document status

Rev No.	Author	Reviewer		Authorisation		
		Name	Signature	Name	Signature	Date
Final 0	W Ranken, S Keldie, P Moore	P Carroll G Finlayson	*P Carroll* *G Finlayson*	G Finlayson	*G Finlayson*	11/02/2022
1	P Carroll	P Carroll	P Carroll	G Finlayson	*G Finlayson*	5/05/2022
2	P Carroll	P Carroll	P Carroll	G Finlayson	*G Finlayson*	30/08/2022

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