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ACTIVATING LAKE EILDON

SEWERAGE SYSTEM

INVESTMENT BUSINESS CASE

DRAFT REPORT

TOURISM NORTH EAST | MARCH 2019



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REGIONAL
DEVELOPMENT  VICTORIA

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VERSION

1

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EXECUTIVE SUMMARY

OVERVIEW

Historically, Lake Eildon has suffered from a lack of investment over the past two decades, due to a range of challenges including severe long-term drought, global financial crisis, inconsistent governance and lack of leadership, unsuitable land zoning for development, and lack of supporting infrastructure to facilitate private sector investment.

The Activating Lake Eildon Project has identified four business case projects to proceed with in the short term that will grow the visitor economy in the Lake Eildon Region by providing new products, infrastructure and experiences. These business cases will assist in attracting private sector investment and lead to new visitor markets visiting the Lake Eildon Region which will increase visitation and yield.

The lack of township sewerage systems prohibits investment in key townships and contributes to pollution of Lake Eildon. Goughs Bay has no township sewerage system or reticulated sewer and there is no sewer pipeline connection from Jerusalem Creek to Eildon.

This business case will focus on Sewerage System Investment. This includes the following two components:

- **Eildon-Jerusalem Creek Pipeline;**
- **Mansfield-Goughs Bay Pipeline.**

This business case focuses on the tourism benefits provided by sewerage infrastructure investment.

EILDON-JERUSALEM CREEK PIPELINE

Project Description: Delivery of a 6.4 kilometre sewer pipeline connecting Jerusalem Creek and Eildon.

Project Cost: \$7 million.

Location: Eildon and Jerusalem Creek, Murrindindi Shire.

Delivery Agency: Goulburn Valley Water

Cost benefit

- Cost benefit from direct impacts: 12.2

Short Term Economic Impact:

- Total output of \$15 million in the Hume Region;
- 41 jobs across the Hume Region.

Ongoing Economic Impact:

- Total output of \$50 million in the Hume Region (year 10)
- 260 jobs across the Hume Region (year 10)

MANSFIELD TO GOUGHS BAY PIPELINE

Project Description: Delivery of an 18km pipeline connecting Goughs Bay with Mansfield.

Project Cost: \$15.2 million.

Location: Mansfield and Goughs Bay townships, Mansfield Shire.

Delivery Agency: Goulburn Valley Water.

Cost benefit

- Cost benefit from direct impacts: 15.9

Short Term Economic Impact:

- Total output of \$32 million in the Hume Region;
- 90 jobs across the Hume Region.

Ongoing Economic Impact:

- Total output of \$185 million in the Hume Region (year 10)
- 1027 jobs across the Hume Regio (year 10)

PROJECT BENEFITS

Providing sewerage to Goughs Bay and Jerusalem Creek is likely to generate several benefits for the region, including:

- Improved environmental outcomes and lower risks of effluent pollution to waterways, including Lake Eildon and surrounding rivers;
- Increasing residential spend and uplift for existing properties that are constrained by a lack of sewerage;
- Increasing residential development for new lots that have development constraints based on the size of their lots;
- Increasing the number of annual visitors to the region through increased holiday home ownership and construction;
- Facilitating expansion of existing businesses in the region, such as the Jerusalem Creek Marina and Holiday Park; and
- Supporting investment in large-scale developments identified for the region, including an integrated golf resort at Mountain Bay, and investment in nature-based precincts at Fry Bay and Mount Pinniger.

1. INTRODUCTION

1.1. BACKGROUND

The following business case is a result of extensive research and project work undertaken over the past 18 months for the two-phase Activating Lake Eildon Project. Urban Enterprise has been engaged for both Stages of the project, led by Regional Development Victoria, Hume Region and administered by Tourism North East.

The Activating Lake Eildon Project includes two stages of work:

- **Stage 1:** An economic impact of the value of tourism and recreation within the Lake Eildon region; and
- **Stage 2:** A masterplan and four business cases to prioritise investment and provide a cohesive strategy for land and water assets.

Lake Eildon has suffered from a lack of investment over the past two decades, due to a range of challenges including severe long-term drought, inconsistent governance and lack of leadership due to multiple land managers, unsuitable land zoning for development, and lack of supporting infrastructure to facilitate private sector investment.

As a result, a Masterplan has been prepared to guide strategic investment across the Lake Eildon region. Four business cases have been prepared for the top 4 game-changing projects identified in the Lake Eildon Tourism Masterplan, in order to address the key issues and opportunities for the Lake Eildon region.

This business case will focus Sewerage System Investment. This includes the following two components:

- **Eildon-Jerusalem Creek Pipeline**
- **Mansfield-Goughs Bay Pipeline**

This business case focuses on the tourism benefits provided by sewerage infrastructure investment.

1.2. PROCESS

These business cases are for implementation of the Lake Eildon Masterplan, undertaken by Urban Enterprise. These business cases are underpinned by the following research and detailed methodology.

- Market research and economic modelling as part of Stage 1 to understand the economic value of tourism and recreation at Lake Eildon;
- Extensive consultation with over 10 workshops in Mansfield and Murrindindi Shires, and more than 30 one to one consultations, across Local and State Government, industry and community;
- Audits and gap analysis of tourism product, infrastructure and experiences across the Lake Eildon region, to inform product development needs to reach target markets;
- Development of masterplan, identification of four Business Case projects and over 25 priority projects (Tier 1 and 2); and
- Concept plans and concept drawings developed by Cumulus Studio Architects for 4 key concepts.

Previous studies undertaken which have supported the development of the business cases include:

- Activating Lake Eildon Project: Stage 1 Economic Impact of Tourism and Recreation (Urban Enterprise, 2019)
- Lake Eildon Recreational Boating Facilities Improvement Plan (Goulburn-Murray Water)
- Lake Eildon Land And On-Water Management Plan (Goulburn-Murray Water, 2012)

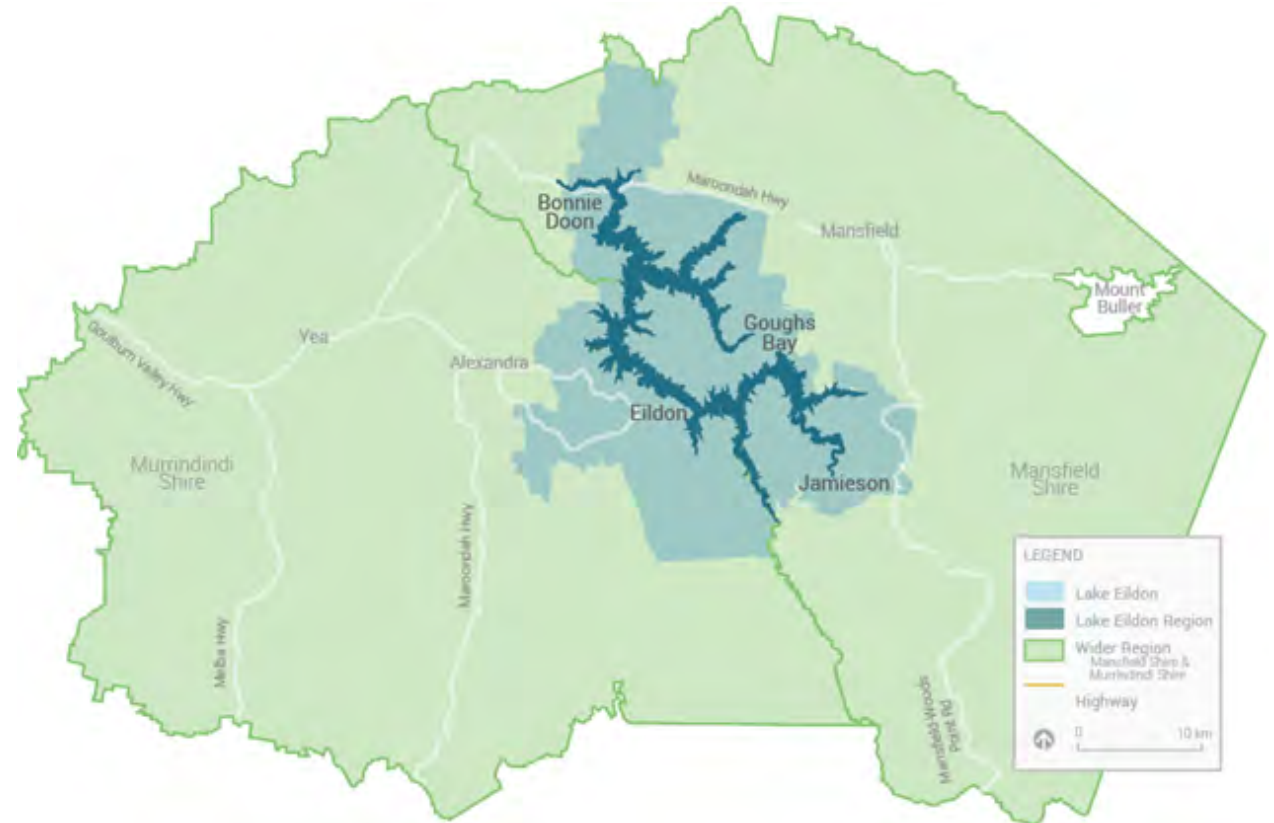
1.3. LAKE EILDON CONTEXT

Lake Eildon is located in North East Victoria, approximately two hours from Melbourne. Lake Eildon is Victoria's largest inland water storage, which provides a dual irrigation and recreation role.

The Lake Eildon region covers both Murrindindi and Mansfield Shires as shown below in Figure F1. The Lake Eildon region is defined as the Lake and the surrounding towns, villages and National Park land.

Key townships across the region include Eildon, Bonnie Doon, Goughs Bay and Jamieson. These townships are popular destinations for visitors to the region, many of whom are frequent visitors owning holiday homes, caravans and houseboats.

F1. LAKE EILDON REGIONAL CONTEXT



Source: Urban Enterprise, 2019.

2. STRATEGIC CONTEXT

2.1. INTRODUCTION

This section provides an overview of the Lake Eildon region context, including an overview of strategic policy context, existing tourism context and a summary of the masterplan context.

2.2. STRATEGIC POLICY CONTEXT

A range of federal, state and local strategies and policies have been analysed to understand the current strategic context of Lake Eildon and the wider region.

In line with Australia's federal and state tourism strategies, there is significant opportunity for the Lake Eildon region to further enhance and support its own natural assets through improved infrastructure, investment in high-quality tourism products and experiences, as well as through skills development for local industry.

Common tourism development themes across these strategies include:

- Growing and attracting private sector investment in quality tourism experiences;
- Maintaining a diverse product mix;
- Leveraging natural assets through supporting infrastructure and amenity;
- Developing authentic Aboriginal experiences;
- Leveraging growing demand from Asia; and
- Developing international awareness and readiness for business owners.

Numerous local management studies have been developed for Lake Eildon that are relevant to the Activating Lake Eildon Project, including:

- Lake Eildon Recreational Boating Facilities Improvement Plan
- Lake Eildon Land and On-Water Management Plan
- Fraser Visitor Experience Area Strategic Plan
- Lake Eildon National Park Management Plan.

- Victorian Boating Behaviour Report by Transport Safety Victoria
- Eildon Structure Plan

There are a vast amount of actions identified across the studies, with a focus on localised infrastructure improvements such as boat ramps and public realm projects. The Activating Lake Eildon Project needs to prioritise investment across the region, given the scale of investment required. This will ensure that funding is provided to areas that have both the greatest potential for return on investment, and also meet development objectives that will enhance tourism outcomes for the region.

2.3. TOURISM CONTEXT

2.3.1. VISITOR ECONOMY OVERVIEW

The Lake Eildon region received **869,958** visitors to in 2018, comprised of 89% overnight visitors and 11% daytrip visitors. Overnight visitation is driven by caravan/camping visitors (48%), followed by visitors staying in commercial accommodation (30%).

The total economic impact of tourism and recreation within the Lake Eildon region is estimated at **\$486 million** in output and **2,548 jobs** to the Hume region. This accounts for direct visitor expenditure within the Lake Eildon region, as well as expenditure by holiday home and houseboat owners within both Mansfield and Murrindindi Shires.

Visitors to the Lake Eildon region are relatively low yielding, spending an average of \$153 per person per trip compared to \$340 for visitors to the High Country. 70% of overnight visitors are mainly self-supporting, either not paying for or paying very little for accommodation (i.e. caravan/camping, holiday home and houseboat visitors).

2.3.2. TARGET MARKETS

Key target markets for the Lake Eildon region include the low-yielding, mainly self-sustaining Habitual Market, and the higher-yielding, experience-seeking Lifestyle Leader market. The Lake Eildon region is currently attracting mainly low-yield Habituals who tend to visit only in peak periods, and very low levels of Lifestyle Leaders. There is a critical need to deliver quality contemporary tourism experiences that will assist in attracting the Lifestyle Leader market, as well as delivering projects that will extract greater yield from the Habitual market.

2.3.3. PROJECTED VISITATION

The Lake Eildon region is projected to grow by an additional **+604,922** visitors by 2030, to reach **1,474,800** visitors. This highlights the need for both private and public sector investment to provide a unique, attractive and contemporary experience to service these visitors. This should include leveraging and enhancing primary and secondary product strengths, as well as fulfilling the critical gaps in the tourism product and infrastructure such as quality food and beverage, contemporary commercial accommodation, family-friendly activities and Indigenous cultural touring.

2.3.4. TOURISM CONTEXT

The Lake Eildon region is primarily a nature-based destination, with key strengths in both water-based and land-based natural assets and associated activities. Key natural assets include Lake Eildon, numerous rivers, and Lake Eildon National Park.

Table T1 provides an overview of tourism product within the Lake Eildon region.

T1. OVERVIEW OF TOURISM PRODUCT AND EXPERIENCE CONTEXT

Product Type	Description
Primary Strengths	
Waterways (Lake/Rivers)	Lake Eildon, and Goulburn, Howqua, Jamieson, Big and Delatite Rivers.
Significant parks and landscapes	Natural assets including Lake Eildon National Park, Rubicon State Forest & Snobs Creek.
Fishing	Well-regarded for Murray Cod, Trout Cod and Macquarie perch native fishing.
Boating and other water-based activities	E.g. powered boats, yachts, wakeboarding, water skiing, jet skiing, kayaking and flyboarding.
Four-wheel driving	Popular summer activity for Habitual visitors.
Hunting	Niche experience but popular amongst Habituals.
Outdoor education	Outdoor education operators and school camps.
Camping	Driven by basic or informal camping at Lake Eildon National Park, Delatite Arm Reserve, and along creeks and rivers.
Secondary Strengths	
Events	Various small-scale events but no major attractions.
Walking	Range of walking trails but limited investment.
Cycling	Well-regarded for road cycling, and growing number of mountain bike trails.
Houseboats	Lake Eildon has the largest fleet of houseboats in Victoria, with 722 registered boats, and is the only inland Lake with authorised use of houseboats.
Gaps/Opportunities for Product Development	
Food and beverage	Gap in high quality food and beverage.
Commercial accommodation	Lack of quality, contemporary commercial accommodation.
Family-friendly activities	Gap in activities for existing and future visitor markets.
Indigenous cultural touring	Limited Indigenous cultural touring experiences.

2.4. MASTERPLAN FRAMEWORK

The Masterplan Framework has been developed in response to key issues, opportunities and considerations for development in the Lake Eildon region. These have been developed through significant primary and secondary research, and have guided the development of each of the four business case projects.

VISION

The Lake Eildon region will fulfil its potential as Australia's premier inland water destination, with enhancement of its water-based tourism assets, activation of nature-based tourism, and improvement to the visitor experience in the key destination villages surrounding the Lake.

OBJECTIVES

The following are strategic objectives that respond to the issues and opportunities identified through preparation of the masterplan:

- Attract Lifestyle Leader market segments to the region;
- Improve the experience of current water-based and nature-based visitors;
- Grow visitor yield through investment in accommodation, food and beverage product and nature based tours and experiences;
- Improve the general amenity of the region, in particular the key towns and villages;
- Focus investment to create a critical mass of product at key visitor nodes;
- Support improved activation of and access to the Lake;
- Deliver improved governance and management of visitor services, tourism infrastructure, marketing and investment attraction.

STRATEGIC FRAMEWORK

The following themes for tourism investment have been developed, in line with the vision and strategic objectives for the Lake Eildon region.

T1: IMPROVE THE EXPERIENCE FOR EXISTING VISITOR MARKETS

Focus: Improve the visitor experience for existing visitor markets through infrastructure and amenity improvements, and investment in contemporary product.

T2: NEW PRODUCT TO REACH TARGET MARKETS

Focus: Deliver new contemporary products that are unrelated to water-based activities to grow year round visitation and attract new visitor markets.

T3: INVESTMENT IN ENABLING INFRASTRUCTURE

Focus: Deliver enabling infrastructure that will unlock investment potential at strategic locations.

T4: IMPROVED DESTINATION MANAGEMENT

Focus: Deliver improved governance and resources to facilitate visitor servicing, activation and marketing.

PROJECT ASSESSMENT CRITERIA

The following assessment criteria has been used to prioritise projects. Projects which meet the greatest number of these criteria have been identified to be developed as Business Case projects or Tier 1 level projects.

- 1. Large scale project scale/game changer.** The project will produce a significant change to the current experience of tourism in the Lake Eildon region, either through attraction of new visitor markets or investment in unique, large-scale tourism product.
- 2. Enabling infrastructure and investment.** The project will act as a catalyst for further public and/or private sector investment, through either delivery of infrastructure or product that will unlock development potential.
- 3. Expands regional product offer.** Creates new experiences which are not available in the region, and enhances the perception of Lake Eildon as a nature-based destination rather than just a water-based destination.
- 4. Improves awareness and perception of the region.** Project builds awareness/positively influences perception of Lake Eildon.
- 5. Aligns to high-value target markets.** Projects that positively influence the perception of Lake Eildon as a desirable visitor destination for high-value target markets.
- 6. Increases visitor yield.** Extracts greater yield from existing visitor markets, and develops a product offering to attract yield from new target markets.
- 7. Seasonal dispersal.** Draws visitors outside of peak periods, helping to create a more sustainable tourism industry for the region.
- 8. Increases visitation.** Increases visitation through motivating new visitors, converting daytrip to overnight visitors, and increasing overnight visitor's length of stay.
- 9. Improves community liveability and lifestyle attractiveness.** Creates visitor outcomes which positively impact on the local community's liveability and also improve lifestyle amenity for potential new residents.

BUSINESS CASE PROJECTS

Assessment of Business Case Projects

Four large projects have business cases developed for them. These projects align to the project assessment criteria and have the following attributes:

- Large scale project;
- Large economic impact;
- Can be delivered within short time frame; and
- Requires substantial funding.

Identified Business Case Projects

The following projects have been identified as 'game-changers' for the Lake Eildon region, as they fulfil a critical product or experience gap in the region, and will help to support further investment in tourism. These projects have been developed into Business Cases to provide strategic justification for investment. These projects include:

- **Premier Nature-Based Precincts at Mt Pinniger (Eildon) and Fry Bay (Goughs Bay).** Development of nature-based precincts will create visitor destinations with high-quality trails and treetop experiences, outdoor activities, integrated dining facilities at key vantage points, low-impact eco-accommodation, and development of iconic walking trails.
- **Skyline Road Tourist Precinct.** Capitalising on the immersive views of Lake Eildon from Skyline Road, the development of the Skyline Road Tourist Precinct will include formalisation of the Great Lake Touring Route, boutique food and dining experiences, architectural look out points, and experiential accommodation overlooking Lake Eildon.
- **Large-scale Accommodation Investment.** The development of large-scale accommodation in Goughs Bay and Eildon will fulfil a critical gap in commercial accommodation and conferencing and events facilities, appeal to a broad market, and provide key entertainment, dining and leisure facilities that are

currently lacking within the region. Large-scale integrated accommodation will also promote off-peak visitation to the region.

- **Sewerage System Investment.** Investment in sewerage infrastructure will help to build the visitor nodes of Goughs Bay and Jerusalem Creek into key visitor destinations, by unlocking development potential through the removal of infrastructure barriers that can often deter potential investors, as well as improving environmental outcomes.

Figure F2 overleaf shows the Masterplan for the Lake Eildon region, which considers the projects involved in the four business cases.

Further information on additional projects and investment for the region can be found in the Lake Eildon Masterplan Report

Lake Eildon Masterplan

Bonnie Doon



Maroondah Hwy

Mansfield

Skyline Rd

05

Mansfield-Woods Point Rd

07

Goughs Bay

04

01

Alexandra

Eildon

02

03

08

Goulburn Valley Hwy

06

Eildon-Jamieson Rd

- Business Case 1 - Large-scale Accommodation Investment**
 - 01. Integrated Golf Resort at Mountain Bay
 - 02. Mid-level Resort at Eildon Boat Club
- Business Case 2 - Premier Nature-based Precincts**
 - 03. Mt Pinniger Nature-Based Precinct
 - 04. Fry Bay Nature-Based Precinct
- Business Case 3 - Skyline Rd Tourist Precinct**
 - 05. Skyline Rd Precinct (incl. areas for rezoning and road sealing)
 - 06. Great Lake Touring Route
- Business Case 4 - Sewerage System Investment**
 - 07. Mansfield-Goughs Bay Pipeline
 - 08. Eildon-Jerusalem Creek Pipeline

3. CONCEPT

3.1. INTRODUCTION

This section provides a detailed description of the Sewerage System Investment projects, namely the Eildon-Jerusalem Creek Pipeline and Mansfield-Goughs Bay Pipeline.

An overview of project costs and project benefits are provided for the project, which are explored in further detail throughout this report.

3.2. BACKGROUND

There are very few locations surrounding Lake Eildon that have reticulated water and sewer. This impacts significantly on the developability of land as any development needs to treat wastewater on site. In many cases this is not possible due to land size, topography or proximity to Lake Eildon and other waterways.

Investment in sewerage and water infrastructure will help to build the visitor nodes of Goughs Bay and Jerusalem Creek into key visitor destinations, by unlocking development potential through the removal of infrastructure barriers that can often deter potential investors, as well as improving environmental outcomes.

3.3. EILDON-JERUSALEM CREEK PIPELINE

3.3.1. PROJECT OVERVIEW

Pipeline Name: Eildon to Jerusalem Creek Pipeline.

Distance of Pipeline: 6.4 kms

Project Cost: \$7 million.

Location: Eildon and Jerusalem Creek, Murrindindi Shire.

Delivery Agency: Goulburn Valley Water

Land Ownership: Proposed alignment passes through both public and private property. Requires further investigation.

3.3.2. PROJECT DESCRIPTION

An on-site sewerage lagoon system currently operates at Jerusalem Creek, which treats effluent that is pumped from the Jerusalem Creek Marina and Holiday Park and from the Jerusalem Creek houseboat sewerage barge through a sub-merged pump line.

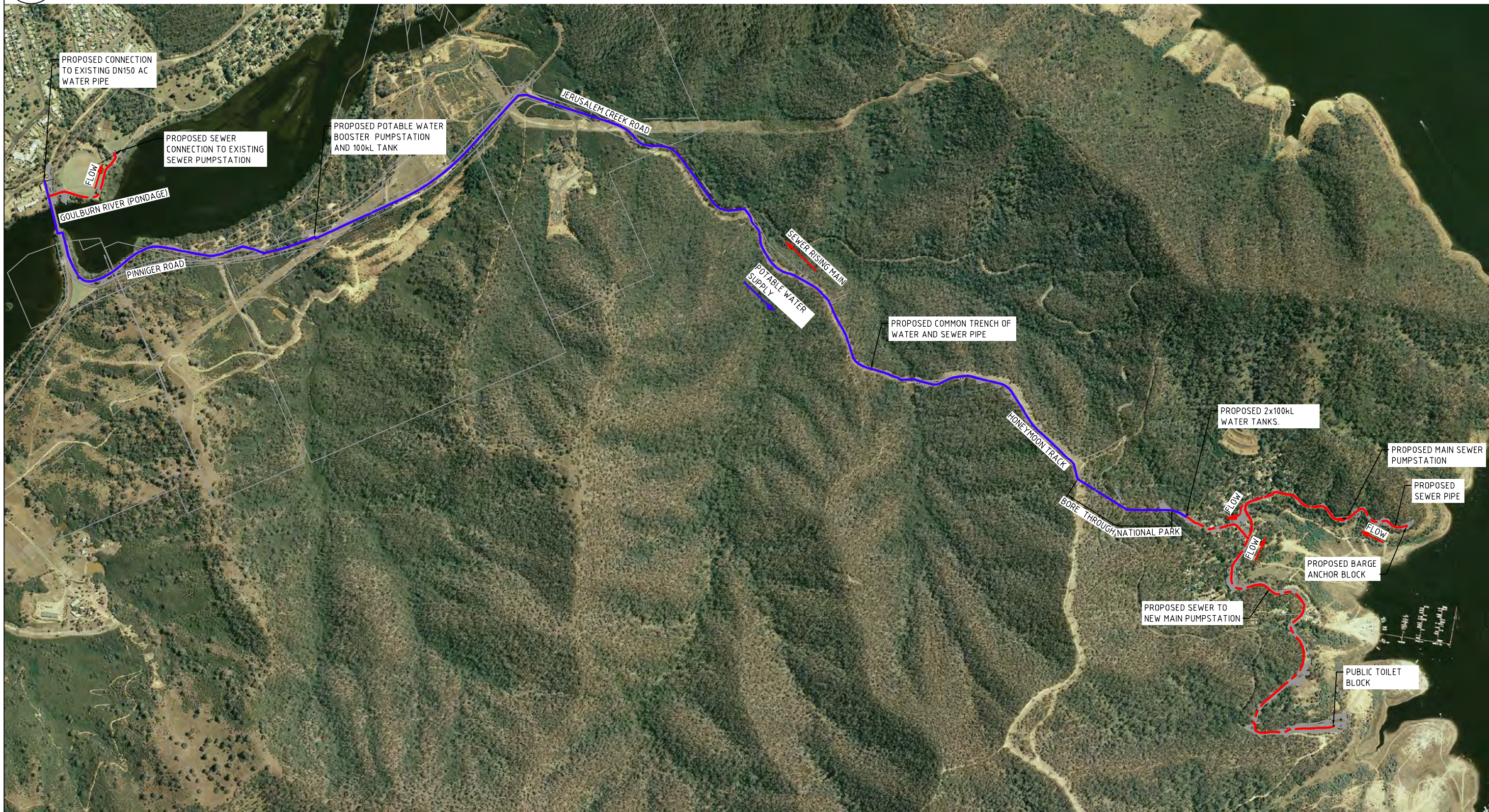
A new facility was developed at Point Warner (neighbouring Eildon boat Club), which allows a transfer vessel to transport the effluent between the sewerage barge and the Point Warner facility.

There have been a number of previous studies that have looked at options to upgrade the existing on-site sewerage system within the Jerusalem Creek Marina and Holiday Park, to allow for future investment of the site and pumping of wastewater from houseboats.

Goulburn-Murray Water decided the preferred outcome would be the development of a new pipeline connecting a new pumping station to the Eildon town sewerage system. the most recent study conducted by Jacobs.

3.3.3. PROPOSED ALIGNMENT

Figure 0 shows the proposed alignment of the Eildon-Jerusalem Creek pipeline, as developed by Jacobs in 2015. The alignment will join Jerusalem Creek to the Eildon sewerage system and support investment in tourism and residential development.



PRELIMINARY ISSUE

REV	DATE	DESIGN REVIEW	REV'D P.MGR	APP'D P.DIR	REVISIONS	REV.	PLAN NO.	REFERENCE PLAN TITLE

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JERUSALEM CREEK SEWER UPGRADE
 OVERALL SITE LAYOUT

3.3.4. PRELIMINARY PROJECT COSTINGS

Preliminary costings for the Eildon-Jerusalem Creek prepared by Jacobs indicate a total construction cost of approximately \$7 million¹, based on a cost of \$6.2 million for construction of the pipeline, and a planning and design cost of \$749,616.

These costings are based on a preliminary design and alignment prepared by Jacobs in 2015. All cost have been escalated to present day value using the 2020 Building Cost Index provided by Rawlinsons Construction Handbook.

Further costings will be prepared once detailed documentation for the site are completed, including investigation of land ownership along the proposed alignment.

T2. PRELIMINARY PROJECT COST FOR EILDON-JERUSALEM CREEK PIPELINE

	2020*
Construction Cost	\$6,201,950
Planning and Design Cost	\$749,616
Total cost	\$6,951,565

Source: Jacobs, Jerusalem Creek Sewerage Upgrade Preliminary Design Report, 2015.

*Price escalated to present day value using Rawlinsons Construction Handbook Building Cost Index.

¹ Preliminary costings have been developed by Jacobs. These are a high level indicative opinion only, and have a range of exclusions such as major services, reticulation, furniture and fittings etc.

3.4. MANSFIELD-GOUGHES BAY PIPELINE

3.4.1. PROJECT OVERVIEW

Pipeline Name: Mansfield to Goughs Bay Pipeline.

Pipeline Length: 18 kms

Project Cost: \$15.2 million.

Location: Mansfield and Goughs Bay townships, Mansfield Shire.

Delivery Agency: Goulburn Valley Water.

Land Ownership: Proposed alignment passes through both public and private property. Requires further investigation.

3.4.2. PROJECT DESCRIPTION

A lack of sewerage in Goughs Bay has historically constrained development of the township, in terms of both commercial and residential development.

Advocating for the provision of sewerage to Goughs Bay has been an ongoing priority for Mansfield Shire. A scoping study was undertaken by GHD in 2010, assessing a range of options for sewerage investment in Goughs Bay.

A number of options were considered in the scoping study including a new treatment plan in Goughs Bay and a pipeline to connect to the Mansfield sewerage system for treatment.

The preferred option is the development of a pipeline from Goughs Bay to Mansfield.

Although there is a greater capital investment required than the other options, the long-term benefits of sewerage system investment significantly outweigh the costs.

PROPOSED ALIGNMENT

Figure F4 shows the proposed alignment of the Mansfield-Goughs Bay Pipeline.

F4. PROPOSED ALIGNMENT OF MANSFIELD-GOUGHES BAY PIPELINE



Source: Urban Enterprise 2020, based on preliminary assessment by Jacobs in May 2015.

3.4.3. PRELIMINARY PROJECT COSTINGS

Preliminary costings for the Mansfield-Goughs Bay indicate a total construction cost of approximately \$15.2 million², based on a cost of \$6.2 million for construction of the pipeline, and a planning and design cost of \$855,616.

These costings are based on a preliminary design and alignment prepared by GHD in 2020. All cost have been escalated to present day value using the 2020 Building Cost Index provided by Rawlinsons Construction Handbook.

A detailed costing assessment should be undertaken once detailed designs for the site are completed, including investigation of land ownership along the proposed alignment.

T3. PRELIMINARY PROJECT COST FOR MANSFIELD-GOUGHES BAY PIPELINE

	2020*
Construction Cost	\$14,325,384
Planning and Design Cost	\$855,616
Total cost	\$15,181,000

Source: GHD, Goughs Bay Wastewater Scoping Study, 2010.

*Price escalated to present day value using Rawlinsons Construction Handbook Building Cost Index

² Preliminary costings have been developed by GHD. These are a high level indicative opinion only, and have a range of exclusions such as major services, reticulation, furniture and fittings etc.

4. INVESTMENT LOGIC

4.1. INTRODUCTION

Below is an outline of the project drivers and problems, interventions required and solution. These project drivers are covered in further detail in the following section.

4.2. PROJECT DRIVERS

- **Lack of reticulated water and sewer in key visitor destinations to support tourism development**, specifically Goughs Bay and Jerusalem Creek.
- **Waterway pollution as a result of poorly maintained septic systems**. This leads to blue green algae outbreaks in Lake Eildon.
- **Lack of investment in new dwellings** due as lots cannot support on site waste water treatment.
- **Limitations to renovations and additions to existing properties** due on site to wastewater treatment restrictions.
- **Potential to unlock large scale tourism development in Gough Bay/ Mountain Bay and in Jerusalem Creek/Eildon townships.**

4.3. PROBLEMS

- **Waterway pollution concerns as a result of poorly maintained septic systems.**
- **Low levels of investment in Jerusalem Creek and Goughs Bay/Mountain Bay** as a result of lack of reticulated sewer to private property.
- **Risk of effluent pollution into Lake Eildon from transportation of effluent** from Jerusalem Creek sewerage barge to Point Worner.

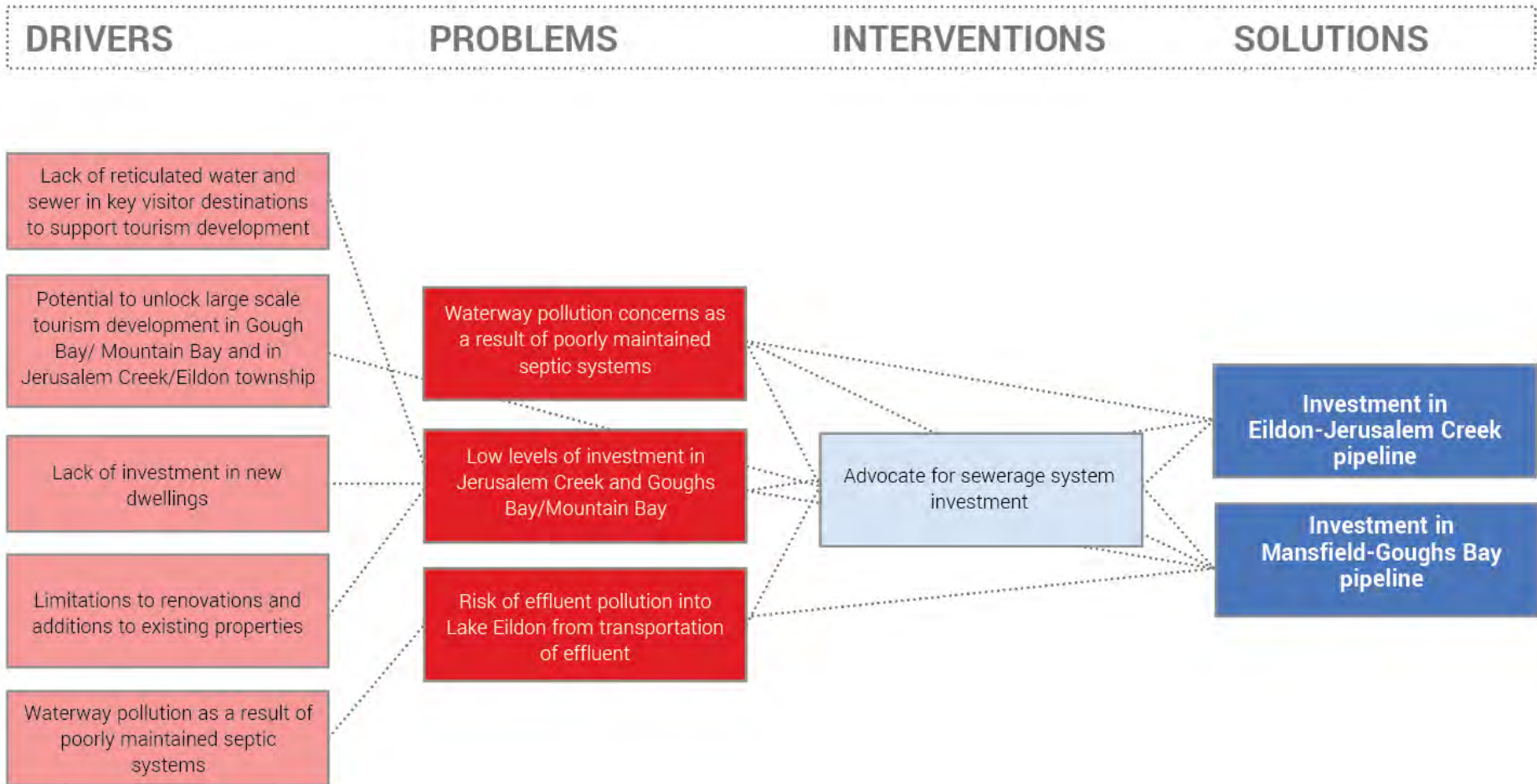
4.4. INTERVENTIONS

- **Advocate for sewerage system investment** to unlock private sector development opportunities and sure in Jerusalem Creek and Goughs Bay

4.5. THE SOLUTION

- **Investment in Eildon-Jerusalem Creek pipeline.**
- **Investment in Mansfield-Goughs Bay pipeline.**

T4. INVESTMENT LOGIC MAP



5. PROJECT DRIVERS

Lack of reticulated water and sewer in key visitor destinations to support tourism development

A lack of infrastructure in some locations, such as Mountain Bay and Goughs Bay, prevents economic and tourism development of the towns, particularly in terms of lack of sewerage.

Currently, the cost of construction for a septic system capable of handling 10,800 litres or 60 persons is approximately \$80,000 for a system³, does not include connection, installation or maintenance costs. This is a major cost for investors and is likely to deter many from investing in areas without sewer, with other constraints including land size to support such a septic system.

Investment in sewerage and water infrastructure will help to build the visitor nodes of Goughs Bay and Jerusalem Creek into key visitor destinations, by unlocking development potential through the removal of infrastructure barriers.

Sewerage investment will provide new opportunities for residential expansion, further development of a town centre and minimised costs for potential investors.

Limited capacity of existing water and sewer systems in Eildon and Bonnie Doon to support residential and commercial growth.

Eildon and Bonnie Doon are the only towns with reticulated sewerage around the Lake, and Goulburn Valley Water have indicated that there is no capacity to service additional properties in either town with current sewerage infrastructure⁴.

Current sewerage infrastructure will need to be upgraded in both Eildon and Bonnie Doon to support any future investment and development in the townships.

³ Rawlinsons Construction Handbook, Septic System Costs, 2020.

⁴ Source: Goulburn Valley Water, 2019. The information provided is correct as of 29/8/2019 and GVW bears no responsibility of their accuracy past this date.

Waterway pollution concerns as a result of poorly maintained septic systems.

Research indicates that insufficiently treated sewage from septic systems can cause groundwater contamination, which can spread disease in humans and animals⁵.

Improperly treated sewage poses the risk of contaminating nearby surface waters threatening swimmers with various infectious diseases. This is particularly important for Goughs Bay and Jerusalem Creek, as they are

Furthermore, infrequently used septic systems experience much greater degradation over time and have higher risks of leakage. This is particularly relevant to locations with a high number of holiday home properties, like Goughs Bay. Goughs Bay is designated as a high risk area in Mansfield Shire's Domestic Wastewater Management Plan.

Barrier to investment in new dwellings on lots that cannot support on-site wastewater treatment

There is significant potential to expand the Goughs Bay township, as the town has a large supply of land and number of vacant lots, however there are a range of sewerage-related constraints to property development in the town.

The scoping study for sewerage investment in Goughs Bay identified the following key constraints for on-site wastewater treatment and disposal:

- Small allotments;
- High rainfall and steeply sloping terrain (increasing effluent run off into Lake);
- Low pan evaporation; and
- Proximity to Lake Eildon (i.e. increased risk of pollution to the Lake).

⁵ Environmental Protection Authority (EPA), United States of America.

Barrier to reinvestment of existing properties

Many properties in Goughs Bay are unable to be renovated or reinvested in, due to the costs that will be incurred by property owners to upgrade their septic systems. The price for a standard septic system in Victoria was \$4,300 in 2020⁶, with additional costs due to land owners and residents being responsible for properly maintaining their on-site wastewater management system, requiring regular servicing and desludging approximately every 3 years.

Furthermore, there are regulations for minimum lot size for the use of septic systems. A Land Capability Assessment must be undertaken by a registered plumber for properties with a size of 6,000m² or less⁷, which accounts for a large proportion of properties in Goughs Bay.

These time and cost factors can be major deterrents for property owners wanting to reinvest in their homes.

⁶ Rawlinsons Construction Handbook, 2020.

⁷ Nillumbik Domestic Wastewater Treatment Guide,

6. PROJECT BENEFITS

6.1. INTRODUCTION

There are a range of benefits that will be shared across the entire Lake Eildon region with investment sewerage systems. This includes quantitative (economic) benefits, and qualitative benefits (social and environmental).

6.2. QUANTITATIVE BENEFITS

PROVIDING LOCAL EMPLOYMENT OPPORTUNITIES

Investment in two major sewerage infrastructure projects will create a significant number of local jobs, for local and regional engineering and design firms and construction companies.

This will provide significant economic benefit to residents of Mansfield and Murrindindi Shires who are employed in these sectors, as well as flow-on benefits to the wider construction industry across the Hume region.

INCREASED RESIDENTIAL DEVELOPMENT

It is assumed that investment in sewerage pipelines, to both Goughs Bay and Jerusalem Creek, will stimulate significant residential property development across both Shires.

The annual costs for individual property owners will be significantly reduced by connecting to a township sewerage system. Furthermore, the area will likely increase further in popularity as a tourist and holiday home destination following investment in the other tourist facilities supported by the sewer system.

INCREASED PRIVATE SECTOR INVESTMENT

Investment in sewerage would reduce investment barriers for commercial and tourism operators.

Investment in the Eildon-Jerusalem Creek pipeline will support the development of a nature-based precinct at Mount Pinniger, including the development of a destination dining facility and experiential accommodation.

Investment in the Mansfield-Goughs Bay pipeline will support the development of an integrated golf resort at Mountain Bay, and investment in the Fry Bay nature-based precinct, including an eco-retreat accommodation establishment and day spa.

Investment in sewerage infrastructure would also support the expansion of existing businesses in the region. An example of an existing operator constrained by the existing on-site sewerage treatment process is Jerusalem Creek Marina and Holiday Park which is currently developing concept plans for investment in commercial accommodation but is constrained by their land availability to treat wastewater on site.

6.3. QUALITATIVE BENEFITS

In addition to the quantitative economic benefits detailed above, the sewerage system investment project is likely to generate several qualitative benefits (e.g. social impacts) for the local and regional community.

REDUCED RISK OF WATERWAY POLLUTION

There is an increased risk of waterway pollution as a result of poorly maintained septic systems.

Protecting the surrounding waterways from effluent pollution is a key benefit of investing in reticulated water and sewerage, particularly for settlements like Jerusalem Creek and Goughs Bay that are located so close to the Lake's edge.

REDUCTION IN ALGAL BLOOMS

Leaking septic systems are a major cause of algal blooms in waterways. This can affect the health of the waterways by affecting aquatic life, and sometimes human life in extreme circumstances.

Reduction in incidence of algal blooms leading to closure of Lake/River access will also have economic benefits for the region. Algal blooms in Lake Eildon can cause the entire Lake to be closed to visitors, and can have significant economic implications for the region as a result of reduced visitation and visitor expenditure.

7. COST BENEFIT ASSESSMENT

7.1. INTRODUCTION

A cost-benefit model was developed for sewerage investment projects over a 10-year cash flow period, showing the operation from commencement in 2021 (Year 1) through to 2030 (Year 10)⁸ This assessment draws on projected investment that could be facilitated by investment in the two sewerage systems, and includes an estimate of:

- Capital and development costs;
- Ongoing operating costs; and
- Ongoing project benefits, which is derived from additional visitor spend.

From this analysis, the overall Return on Investment (ROI) has been identified by calculating the Net Present Value (NPV) and Benefit Cost Ratio (BCR). This helps to determine whether the project is financially viable and sustainable.

Unless indicated otherwise, it is assumed that all financial estimates are in current (2020) dollars and all figures have been inflated by 2.5% per annum.

Although the following is an overview of the financial model and cost-benefit assessment, more detailed information can be found in Appendix A and Appendix B. This includes a detailed 10-year financial model, financial model assumptions, and financial impact assumptions (NPV, BCR, ROI, etc.) for each project.

⁸ Project construction/development is expected to be completed during the 2019-20 financial year (before operation), which is defined as Year 0.

7.2. PROJECT ECONOMIC BENEFITS

As mentioned previously, investment in sewerage for Goughs Bay and Eildon is likely to generate significant benefits to the region through residential and commercial investment.

To estimate the net impact of sewerage investment, the total level of capital investment and flow-on visitor expenditure was estimated for each investment opportunity.

Table T5 details the estimated economic benefits provided by each investment type. As investment in commercial developments (e.g. integrated golf resort at Mountain Bay) are assumed to occur over the 10 year period, the benefits have been presented for Year 10.

Overall, the total benefit in Year 10 provided by investment in sewerage is \$87.6 million. This includes benefit of \$28 million provided by the investment in the Eildon-Jerusalem Creek pipeline, and \$59.6 million provided by the investment in the Mansfield-Goughs Bay pipeline.

The Year 10 benefit is based on the following assumptions:

- **Residential Development.** It is assumed that investment in a sewerage system will facilitate additional residential investment of 20 properties in Mountain Bay and Goughs Bay per annum, at an average spend of \$316,500⁹ per property.
- **Holiday Home Investment.** It is assumed that 50% of additional properties developed in Goughs Bay and Eildon will be holiday homes. Holiday home research indicates that holiday homes are used by 100 visitors per annum¹⁰, including holiday home owners, friends and relatives. An average of 100 visitors has been applied to each property developed (10 p.a. per Shire), with an average

⁹ Average dwelling build cost for Victoria, ABS, 2018.

¹⁰ Mornington Peninsula Holiday Home Research, 2012

spend of \$153 for visitors to the Lake Eildon region¹¹ applied to determine the visitor expenditure generated by additional holiday home visitors.

- Facilitation of Private Sector Investments:** There are a range of investments identified in the masterplan and other business cases that would be facilitated by the provision of sewerage to Jerusalem Creek and Goughs Bay. The economic benefit provided by the following private sector investments has been calculated:
 - Private Sector Investment in High End Trout Lodge.** Based on estimated \$5 million construction cost during Year 3-4, and estimated visitor expenditure based on capacity of 40 rooms, visitor expenditure of \$502¹² per trip and occupancy of between 50% and 70% (beginning from Year 5).
 - Private Sector Investment at Mt Pinniger:** Benefit estimated based on construction cost of \$4.6 million for glamping tents and café during Year 4, and visitor expenditure by accommodation and food & beverage visitors (beginning from Year 5)¹³.
 - Private Sector Investment at Mountain Bay:** Benefit estimated based on construction cost of \$126.4 million for golf-resort over Years 3-5, and visitor expenditure beginning from Year 6¹⁴.
 - Private Sector Investment at Fry Bay:** Benefit estimated based on construction cost of \$21.3 million for eco-retreat accommodation and day spa during Years 3-4, and visitor expenditure by accommodation and day spa visitors (beginning from Year 5¹⁵).

All figures are inflated by 2.5% per annum over the 10-year cash flow period.

¹¹ Urban Enterprise PAVE Model, 2019.

¹² Average spend per trip for overnight visitors to High Country Region, YE Sept 2019, Business Victoria.

¹³ Activating Lake Eildon, Premier Nature-based Precinct Investment Business Case, Urban Enterprise, 2020.

T5. ESTIMATED PROJECTED BENEFITS (YEAR 10)

Summary	Eildon-Jerusalem Creek Pipeline	Mansfield-Goughs Bay Pipeline	Total
Residential Expansion	\$7,905,303	\$8,102,935	\$16,008,238
Holiday Home Visitor Spend	\$1,910,760	\$1,910,760	\$3,821,521
Investment in High End Trout Lodge	\$9,950,780	N/A	\$9,950,780
Investment at Mount Pinniger	\$8,282,901	N/A	\$8,282,901
Investment in Golf Resort at Mountain Bay	N/A	\$43,507,814	\$43,507,814
Investment at Fry Bay	N/A	\$6,047,220	\$6,047,220
Total	\$28,049,745	\$59,568,729	\$87,618,474

Source: Urban Enterprise 2020.

7.3. PROJECT EXPENDITURE

7.3.1. CAPITAL EXPENDITURE

Total investment in large-scale accommodation is estimated to cost \$22.1 million. This represents a public sector investment cost of from \$7 million for the Eildon-Jerusalem Creek pipeline to \$15.2 million for the Mansfield-Goughs Bay pipeline.

¹⁴ Activating Lake Eildon, Premier Nature-based Precinct Investment Business Case, Urban Enterprise, 2020.

¹⁵ Activating Lake Eildon, Large-scale Accommodation Investment Business Case, Urban Enterprise, 2020.

7.3.2. OPERATING EXPENDITURE

The operating expenses for the project assumes ongoing costs for each of the sewerage pipelines, based on the following assumptions:

- **Repairs and Maintenance Costs.** Average cost of maintenance for each sewerage system is assumed to be \$200,000 per annum¹⁶.
- **Operating Costs.** Based on estimated operating cost of \$100,000 per annum¹⁷.
- **Service fees.** Based on an annual service charge of \$437.50 for each property connected to the reticulated sewerage system¹⁸. This includes existing and additional properties developed in Goughs Bay, and includes only additional properties developed in Eildon.

Therefore, overall operating expenses are relatively low, increasing from a total of \$791,852 million in Year 1 to \$1,045,589 million in Year 10 (as all figures are inflated by 2.5% per annum over the 10-year cash flow period).

7.4. COST-BENEFIT SUMMARY

Based on the estimated visitation¹⁹, revenue and (capital and operating) expenditure over a 10-year period, the cost-benefit results for each investment is shown in Table T6. The key findings are summarised below:

- The project is likely to generate a positive net impact for each investment, due to its effect on additional private sector investment and holiday home visitor expenditure. Net impact of the Eildon-Jerusalem Creek pipeline ranges from \$6.2 million in Year 1, increasing to \$27.6 million in Year 10, whilst Mansfield-Goughs Bay pipeline ranges from \$6.1 million in Year 1, to \$59 million in Year 10.
- Importantly, the project is also likely to generate a positive return on investment for each scenario, demonstrated by:

- A positive NPV, ranging from \$107.9 million for Eildon-Jerusalem Creek pipeline and \$281.2 million for Mansfield-Goughs Bay pipeline.
- A BCR greater than 1²⁰ – ranging from 12.2 for Eildon-Jerusalem Creek pipeline to 15.9 for Mansfield-Goughs Bay pipeline.

T6. COST-BENEFIT SUMMARY

Summary	Eildon-Jerusalem Creek Pipeline	Mansfield-Goughs Bay Pipeline	Total
Benefit - Year 1	6,483,000	\$6,641,250	\$13,124,250
Benefit - Year 10	\$28,049,745	\$59,568,729	\$87,618,474
Expenditure - Year 1	\$308,740	\$483,111	\$791,852
Expenditure - Year 10	\$483,815	\$561,775	\$1,045,589
CAPEX	\$6,951,565	\$15,181,000	\$22,132,565
Net Impact - Year 1	\$6,174,260	\$6,158,139	\$12,332,398
Net Impact - Year 10	\$27,565,930	\$59,006,954	\$86,572,884
NPV	\$107,899,710	\$281,271,141	\$389,170,851
BCR	12.2	15.9	14

Source: Urban Enterprise 2020

These cost-benefit results suggest that, even with conservative investment estimates, sewerage investment is likely to be an **extremely high-value** project and **financially viable**. This can be attributed to the relatively low level of capital and operating expenditure, which is more than offset by the increases in investment facilitated.

¹⁶ Total cost for repairs & maintenance in 2018/19 across GVV facilities, divided by 26 wastewater facilities. Assumption of 1 wastewater facility per township. *Goulburn Valley Water Annual Report, 2019/20*

¹⁷ Based on GHD preliminary operating costs of \$50-100k p.a. for sewerage pipeline from Mansfield to Goughs Bay. *Goughs Bay Sewerage Scoping Study, 2010*.

¹⁸ *2019-2020 Tariff Schedule, Goulburn Valley Water*.

¹⁹ Excluding residents, as the project does not generate additional spend from this market.

²⁰ The NPV and BCR are calculated using a discount rate of 7%, which is consistent with Victorian Treasury guidelines;

8. ECONOMIC IMPACT ASSESSMENT

This section of the report identifies the likely economic benefits that investment in sewerage systems for Jerusalem Creek and Goughs Bay could generate for the Hume Region, by adopting the impacts from the cost-benefit assessment.

8.1.1. TYPES OF ECONOMIC BENEFITS

This project is likely to be of a size, scale and function to deliver the following (direct and indirect) economic benefits to the Hume Region:

- Economic output;
- Value-added; and
- Number of jobs created and subsequent increase in wages.

The impacts are calculated using the input-output method²¹. Definitions for key economic terms are provided in Appendix C.

The economic benefits listed above can be attributed to a combination of growth in residential property development, growth in holiday home ownership and subsequent annual expenditure by holiday home visitors, private sector investments facilitated as a result of sewerage investment, as well as flow-on impacts from construction.

These benefits are quantified over two distinct phases as follows:

- **The construction phase.** This includes the following short-term direct and indirect impacts occurring during the construction of the proposal:
 - The *direct* effect of the construction phase is defined by the development costs (e.g. construction costs, land acquisition, etc.); and
 - The indirect effect of this phase is typified by the subsequent flow-on impacts on other sectors of the economy, particularly the supply-chain.
- **The ongoing operational phase.** This considers the annual (i.e. ongoing) economic impact from the final year of the cashflow period²², which is derived

from additional visitor spend identified in Section 0. The ongoing direct and indirect impacts are defined as follows:

- The direct effect is represented by additional visitor expenditure in the region; and
- The indirect effect reflects the additional, flow-on output generated by other sectors of the economy, particularly the supply-chain.

Please note that all assumptions in this section have been benchmarked against suitable comparators and industry standards. As such, these figures are indicative only and subject to further investigation and market testing.

²¹ Developed by REMPLAN and applied by Urban Enterprise

²² Note: Refers to Year 10, when the project is fully operational and established.

8.2. ECONOMIC IMPACT – CONSTRUCTION PHASE

The total capital expenditure of \$22.1 million is expected to generate the following economic benefits (direct and indirect) during the short-term construction phase in the 2020 calendar year (see Table T7):

- Total output of \$48 million, based on:
 - \$15.1 million construction impact of Eildon-Jerusalem Creek Pipeline
 - \$32.9 million construction impact of Mansfield-Goughs Bay Pip1,418eline
- 131 jobs, resulting in an increase in wages of \$9.1 million; and
- \$17.9 million in value-added.

T7. SHORT-TERM ECONOMIC IMPACT – CONSTRUCTION PHASE

	Output	Employment	Wages	Value-added
Impact of Eildon-Jerusalem Creek Pipeline				
Direct Effect	\$6,951,000	16	\$1,121,000	\$2,196,000
Indirect Effect	\$8,116,000	25	\$1,746,000	\$3,433,000
Total Effect	\$15,067,000	41	\$2,867,000	\$5,629,000
Impact of Mansfield-Goughs Bay Pipeline				
Direct Effect	\$15,181,000	35	\$2,448,000	\$4,796,000
Indirect Effect	\$17,725,000	55	\$3,813,000	\$7,497,000
Total Effect	\$32,906,000	90	\$6,261,000	\$12,293,000
Total Short-term Economic Impact				
Direct Effect	\$22,132,000	51	\$3,569,000	\$6,992,000
Indirect Effect	\$25,841,000	80	\$5,559,000	\$10,930,000
Total Effect	\$47,973,000	131	\$9,128,000	\$17,922,000

Source: Urban Enterprise 2020

8.3. ECONOMIC IMPACT – OPERATIONAL PHASE (ONGOING)

The ongoing (i.e. annual) benefits from the operation of the two sewerage investments is calculated by applying projected economic benefit (Year 10) to the input-output model. This is likely to generate the following ongoing economic benefits (see Table T8).

- Total output of \$234.7 million, based on:
 - \$49.6 million ongoing impact of Eildon-Jerusalem Creek Pipeline
 - \$185.1 million ongoing impact of Mansfield-Goughs Bay Pipeline
- 1,287 jobs across both Murrindindi and Mansfield Shires, resulting in an increase in wages of \$58.2 million; and
- \$103.8 million in value-added.

T8. ONGOING ECONOMIC IMPACT – OPERATIONAL PHASE (ANNUAL)

	Output	Employment	Wages	Value-added
Impact of Eildon-Jerusalem Creek Pipeline				
Direct Effect	\$28,049,000	189	\$7,391,000	\$11,521,000
Indirect Effect	\$21,550,000	71	\$4,741,000	\$10,292,000
Total Effect	\$49,599,000	260	\$12,132,000	\$21,813,000
Impact of Mansfield-Goughs Bay Pipeline				
Direct Effect	\$59,568,000	401	\$15,696,000	\$24,466,000
Indirect Effect	\$125,521,000	626	\$30,364,000	\$57,560,000
Total Effect	\$185,089,000	1,027	\$46,060,000	\$82,026,000
Total Ongoing Economic Impact				
Direct Effect	\$87,617,000	590	\$23,087,000	\$35,987,000
Indirect Effect	\$147,071,000	697	\$35,105,000	\$67,852,000
Total Effect	\$234,688,000	1287	\$58,192,000	\$103,839,000

Source: Urban Enterprise 2020

Importantly, the ongoing operation of the investments will generate substantial annual economic benefits for both Shires.

9. DELIVERY ACTION PLAN

A detailed implementation plan has been provided for each of the proposed sewerage pipelines.

T9. ACTION PLAN FOR EILDON-JERUSALEM CREEK SEWERAGE PIPELINE

Action	Delivery Lead	Cost	Timeframe
ACTION 1.1 Advocate for funding to deliver sewerage to Goughs Bay to support investment.	Murrindindi Shire Council	N/A	Immediate
ACTION 1.2 Development of detailed designs for construction.	Murrindindi Shire Council	\$200,000	2021-22
ACTION 1.3 Undertake planning approvals process, including Environmental and Cultural Heritage Assessments.	Murrindindi Shire Council	\$120,000	2022
ACTION 1.4 Deliver easements for the sewerage pipeline	Murrindindi Shire Council	\$1 million	2022
ACTION 1.5 Construction of sewerage pipeline.	Goulburn Valley Water	\$15.2 million	2022-3

T10. ACTION PLAN FOR MANSFIELD-GOUGHES BAY SEWERAGE PIPELINE

Action	Delivery Lead	Cost	Timeframe
ACTION 1.6 Advocate for funding to deliver sewerage to Goughs Bay to support investment.	Mansfield Shire Council	N/A	Immediate
ACTION 1.7 Development of preliminary design report, including on assessment of proposed alignment and preparation of functional design.	Mansfield Shire Council to engage consultant	\$200,000	2021
ACTION 1.8 Development of detailed designs for construction.	Mansfield Shire Council	\$350,000	2022
ACTION 1.9 Undertake planning approvals process, including Environmental and Cultural Heritage Assessments.	Mansfield Shire Council	\$100,000	2023
ACTION 1.10 Deliver easements for the sewerage pipeline.	Mansfield Shire Council	\$1 million	2023
ACTION 1.11 Construction of sewerage pipeline.	Goulburn Valley Water	\$15.2 million	2023-4

APPENDICES

APPENDIX A ECONOMIC MODELLING FOR EILDON-JERUSALEM CREEK PIPELINE

DETAILED FINANCIAL MODEL (10 YEAR CASH FLOW)

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Project Benefits		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Residential Expansion		\$6,330,000	\$6,488,250	\$6,650,456	\$6,816,718	\$6,987,136	\$7,161,814	\$7,340,859	\$7,524,381	\$7,712,490	\$7,905,303
Holiday Home Visitor Spend		\$153,000	\$313,650	\$482,237	\$659,057	\$844,417	\$1,038,633	\$1,242,032	\$1,454,951	\$1,677,741	\$1,910,760
Facilitate Investment in High End Trout Lodge		\$0	\$0	\$2,500,000	\$2,500,000	\$7,329,200	\$7,512,430	\$8,470,265	\$9,471,296	\$9,708,079	\$9,950,780
Facilitate Investment at Mount Pinniger		\$0	\$0	\$0	\$4,584,940	\$5,232,961	\$5,637,121	\$6,084,554	\$6,580,367	\$7,659,244	\$8,282,901
Total visitor spend	\$0	\$6,483,000	\$6,801,900	\$9,632,693	\$14,560,715	\$20,393,714	\$21,349,998	\$23,137,710	\$25,030,996	\$26,757,553	\$28,049,745

Operating Expenditure		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Repairs & Maintenance Cost	\$200,000	\$200,000	\$205,000	\$210,125	\$215,378	\$220,763	\$226,282	\$231,939	\$237,737	\$243,681	\$249,773
Operation costs	\$100,000	\$100,000	\$102,500	\$105,063	\$107,689	\$110,381	\$113,141	\$115,969	\$118,869	\$121,840	\$124,886
Cost for connecting to sewer											
Annual service charges (residential & commercial)	\$437	\$437	\$448	\$459	\$471	\$482	\$494	\$507	\$519	\$532	\$546
New Dwellings In Eildon	20	20	40	60	80	100	120	140	160	180	200
Annual Service Charges		\$8,740	\$17,918	\$27,549	\$37,650	\$48,239	\$59,334	\$70,953	\$83,117	\$95,844	\$109,156
Total Operating Expenditure		\$308,740	\$325,418	\$342,736	\$360,717	\$379,383	\$398,756	\$418,861	\$439,722	\$461,365	\$483,815

Capital Expenditure	Total Cost
Construction Cost	6,201,950
Planning and Design Cost	749,616
Total Capital Costs	6,951,565

Net Impact	(\$6,951,565)	\$6,174,260	\$6,476,482	\$9,289,957	\$14,199,998	\$20,014,331	\$20,951,242	\$22,718,849	\$24,591,273	\$26,296,189	\$27,565,930
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ASSUMPTIONS	
Inflation	2.5%
Pipeline Length	6,377
Visitors to Eildon/Taylor Bay (2018)	224,926

FINANCIAL MODEL ASSUMPTIONS

ASSUMPTIONS											
Inflation	2.5%										
Pipeline Length	6,377										
Visitors to Eildon/Taylor Bay (2018)	224,926										
PROJECT BENEFITS											
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Ave Visitor Expenditure											
Overnight ave spend/trip	\$502	\$502	\$515	\$527	\$541	\$554	\$568	\$582	\$597	\$612	\$627
Daytrip Visitor Spend	\$102	\$102	\$105	\$107	\$110	\$113	\$115	\$118	\$121	\$124	\$127
F&B Daytrip Spend	\$45	\$45	\$46	\$47	\$49	\$50	\$51	\$52	\$54	\$55	\$56
Residential Expansion		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Spend Per Property	\$316,500	\$316,500	\$324,413	\$332,523	\$340,836	\$349,357	\$358,091	\$367,043	\$376,219	\$385,625	\$395,265
Area in Eildon for Potential Development (m2)	198,131										
Average lot size (m2)	1000										
Additional Lots Developed	198										
Total spend		\$6,330,000	\$6,488,250	\$6,650,456	\$6,816,718	\$6,987,136	\$7,161,814	\$7,340,859	\$7,524,381	\$7,712,490	\$7,905,303
Holiday Home Visitors		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Spend Per Visitor	\$153	\$153	\$157	\$161	\$165	\$169	\$173	\$177	\$182	\$186	\$191
Number of visitors	100										
Visitor spend p.a.		\$15,300	\$15,683	\$16,075	\$16,476	\$16,888	\$17,311	\$17,743	\$18,187	\$18,642	\$19,108
Number of properties	10	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00
Spend by HH visitors	10	\$153,000	\$313,650	\$482,237	\$659,057	\$844,417	\$1,038,633	\$1,242,032	\$1,454,951	\$1,677,741	\$1,910,760
Total spend		\$153,000	\$313,650	\$482,237	\$659,057	\$844,417	\$1,038,633	\$1,242,032	\$1,454,951	\$1,677,741	\$1,910,760
Facilitate Investment in High End Trout Lodge		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Fishing Lodge Build Cost	#####			\$2,500,000	\$2,500,000						
Fishing Lodge Accommodation Capacity (rooms)	40.00										
Occupancy	70.00%					50.00%	50.00%	55.00%	60.00%	60.00%	60.00%
Average visitors per room	2.00										
High End Trout Lodge Visitors						14,600	14,600	16,060	17,520	17,520	17,520
High End Trout Lodge Visitor Expenditure						\$7,329,200	\$7,512,430	\$8,470,265	\$9,471,296	\$9,708,079	\$9,950,780
High End Trout Lodge Visitors				\$2,500,000	\$2,500,000	\$7,329,200	\$7,512,430	\$8,470,265	\$9,471,296	\$9,708,079	\$9,950,780

Facilitate Investment at Mount Pinniger		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Build Cost (Private)	\$4,584,940				\$ 4,584,940						
Glamping Accommodation Visitors (ave spend)						\$ 2,198,760	\$ 2,253,729	\$ 2,310,072	\$ 2,367,824	\$ 2,912,424	\$ 2,985,234
F&B visitors (ave spend)						\$ 3,034,201	\$ 3,383,392	\$ 3,774,482	\$ 4,212,543	\$ 4,746,820	\$ 5,297,667
Total benefit					\$4,584,940	\$5,232,961	\$5,637,121	\$6,084,554	\$6,580,367	\$7,659,244	\$8,282,901

FINANCIAL IMPACT ASSUMPTIONS (NPV, BCR)

Discount rate	7.0%						
Year	Benefits	Costs	Discount factor	Discounted benefits	Discounted costs	Discounted net benefits	Net benefits
0		\$ 6,951,565	1.00	\$ -	\$ 6,951,565	-\$ 6,951,565	-\$ 6,951,565
1	\$ 6,483,000	\$ 308,740	0.93	\$ 6,058,879	\$ 288,542	\$ 5,770,336	\$ 6,174,260
2	\$ 6,801,900	\$ 325,418	0.87	\$ 5,941,043	\$ 284,233	\$ 5,656,810	\$ 6,476,482
3	\$ 9,632,693	\$ 342,736	0.82	\$ 7,863,147	\$ 279,775	\$ 7,583,372	\$ 9,289,957
4	#####	\$ 360,717	0.76	\$ 11,108,300	\$ 275,189	\$ 10,833,110	\$ 14,199,998
5	#####	\$ 379,383	0.71	\$ 14,540,436	\$ 270,495	\$ 14,269,942	\$ 20,014,331
6	#####	\$ 398,756	0.67	\$ 14,226,405	\$ 265,708	\$ 13,960,697	\$ 20,951,242
7	#####	\$ 418,861	0.62	\$ 14,409,003	\$ 260,846	\$ 14,148,157	\$ 22,718,849
8	#####	\$ 439,722	0.58	\$ 14,568,267	\$ 255,922	\$ 14,312,345	\$ 24,591,273
9	#####	\$ 461,365	0.54	\$ 14,554,336	\$ 250,952	\$ 14,303,384	\$ 26,296,189
10	#####	\$ 483,815	0.51	\$ 14,259,068	\$ 245,947	\$ 14,013,121	\$ 27,565,930
Present value benefits				\$ 117,528,883			
Present value costs				\$ 9,629,174			
Net Present Value				\$ 107,899,710			
Benefit-cost ratio				12.2			

APPENDIX B ECONOMIC MODELLING FOR MANSFIELD-GOUGH'S BAY PIPELINE

DETAILED FINANCIAL MODEL (10 YEAR CASH FLOW)

Cost Benefit Assessment for Eildon-Jerusalem Creek Sewerage Pipeline											
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Project Benefits		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Residential Expansion		\$6,488,250	\$6,650,456	\$6,816,718	\$6,987,136	\$7,161,814	\$7,340,859	\$7,524,381	\$7,712,490	\$7,905,303	\$8,102,935
Holiday Home Visitor Spend		\$153,000	\$313,650	\$482,237	\$659,057	\$844,417	\$1,038,633	\$1,242,032	\$1,454,951	\$1,677,741	\$1,910,760
Facilitate Investment in Golf Resort		\$0	\$0	\$41,558,213	\$41,558,213	\$41,558,213	\$33,887,476	\$37,558,855	\$38,505,711	\$42,436,975	\$43,507,814
Facilitate Investment at Fry Bay		\$0	\$0	\$10,654,100	\$10,654,100	\$4,167,890	\$4,285,271	\$4,792,198	\$4,928,580	\$5,879,390	\$6,047,220
Total visitor spend	\$0	\$6,641,250	\$6,964,106	\$59,511,268	\$59,858,506	\$53,732,334	\$46,552,239	\$51,117,466	\$52,601,733	\$57,899,409	\$59,568,729
Operating Expenditure		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Repairs & Maintenance Cost	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000
Operation costs	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
Cost for connecting to sewer											
<i>Annual cost for resi & commercial</i>	\$437	\$437	\$437	\$437	\$437	\$437	\$437	\$437	\$437	\$437	\$437
<i>Number of Dwellings in Goughs Bay (2016 AB)</i>	419	419	439	459	479	499	519	539	559	579	599
Annual Service Charges		\$183,111	\$191,852	\$200,592	\$209,333	\$218,073	\$226,813	\$235,554	\$244,294	\$253,035	\$261,775
Total Operating Expenditure		\$483,111	\$491,852	\$500,592	\$509,333	\$518,073	\$526,813	\$535,554	\$544,294	\$553,035	\$561,775
Capital Expenditure	Total Cost										
Construction Cost	\$14,325,384										
Planning and Design Cost	\$855,616										
Total Capital Costs	15,181,000										
Net Impact	(\$14,325,384)	\$6,158,139	\$6,472,254	\$59,010,676	\$59,349,173	\$53,214,261	\$46,025,425	\$50,581,912	\$52,057,439	\$57,346,374	\$59,006,954

****ASSUMPTIONS****

Inflation	2.5%
Pipeline Length	18,000
Visitors to Goughs Bay (2018)	71,545

FINANCIAL MODEL ASSUMPTIONS

ASSUMPTIONS											
Inflation	2.5%										
Pipeline Length	18,000										
Visitors to Goughs Bay (2018)	71,545										
PROJECT BENEFITS											
Residential Expansion		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Spend Per Property	\$316,500	\$324,413	\$332,523	\$340,836	\$349,357	\$358,091	\$367,043	\$376,219	\$385,625	\$395,265	\$405,147
Additional Lots Developed		\$ 6,488,250	\$ 6,650,456	\$ 6,816,718	\$ 6,987,136	\$ 7,161,814	\$ 7,340,859	\$ 7,524,381	\$ 7,712,490	\$ 7,905,303	\$ 8,102,935
Total spend											
Holiday Home Visitors		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Spend Per Visitor	\$153	\$153	\$157	\$161	\$165	\$169	\$173	\$177	\$182	\$186	\$191
Number of visitors	100										
Visitor spend p.a.		\$15,300	\$15,683	\$16,075	\$16,476	\$16,888	\$17,311	\$17,743	\$18,187	\$18,642	\$19,108
Number of properties	10	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00
Spend by HH visitors	10	\$153,000	\$313,650	\$482,237	\$659,057	\$844,417	\$1,038,633	\$1,242,032	\$1,454,951	\$1,677,741	\$1,910,760
Total spend		\$ 153,000	\$ 313,650	\$ 482,237	\$ 659,057	\$ 844,417	\$ 1,038,633	\$ 1,242,032	\$ 1,454,951	\$ 1,677,741	\$ 1,910,760
Facilitate Investment in Golf Resort		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Capital Investment	\$124,674,640			\$ 41,558,213	\$ 41,558,213	\$ 41,558,213					
Visitor Spend							\$ 33,887,476	\$ 37,558,855	\$ 38,505,711	\$ 42,436,975	\$ 43,507,814
Total Benefit				\$41,558,213	\$41,558,213	\$41,558,213	\$33,887,476	\$37,558,855	\$38,505,711	\$42,436,975	\$43,507,814
Facilitate Investment at Fry Bay		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Capital Investment	\$ 21,308,200			\$ 10,654,100	\$ 10,654,100						
Accommodation Visitors						\$ 4,031,060	\$ 4,131,837	\$ 4,620,144	\$ 4,735,648	\$ 5,663,046	\$ 5,804,622
Walking Visitors						\$ 136,830	\$ 153,434	\$ 172,053	\$ 192,932	\$ 216,344	\$ 242,598
Total Benefit				\$10,654,100	\$10,654,100	\$4,167,890	\$4,285,271	\$4,792,198	\$4,928,580	\$5,879,390	\$6,047,220

FINANCIAL IMPACT ASSUMPTIONS

Discount rate	7.0%						
Year	Benefits	Costs	Discount factor	Discounted benefits	Discounted costs	Discounted net benefits	Net benefits
0		\$ 15,181,000	1.00	\$ -	\$ 15,181,000	-\$ 15,181,000	-\$ 15,181,000
1	\$ 6,641,250	\$ 483,111	0.93	\$ 6,206,776	\$ 451,506	\$ 5,755,270	\$ 6,158,139
2	\$ 6,964,106	\$ 491,852	0.87	\$ 6,082,720	\$ 429,602	\$ 5,653,118	\$ 6,472,254
3	\$ 59,511,268	\$ 500,592	0.82	\$ 48,578,922	\$ 408,632	\$ 48,170,289	\$ 59,010,676
4	\$ 59,858,506	\$ 509,333	0.76	\$ 45,665,768	\$ 388,567	\$ 45,277,200	\$ 59,349,173
5	\$ 53,732,334	\$ 518,073	0.71	\$ 38,310,412	\$ 369,379	\$ 37,941,033	\$ 53,214,261
6	\$ 46,552,239	\$ 526,813	0.67	\$ 31,019,722	\$ 351,038	\$ 30,668,684	\$ 46,025,425
7	\$ 51,117,466	\$ 535,554	0.62	\$ 31,833,388	\$ 333,516	\$ 31,499,872	\$ 50,581,912
8	\$ 52,601,733	\$ 544,294	0.58	\$ 30,614,687	\$ 316,784	\$ 30,297,903	\$ 52,057,439
9	\$ 57,899,409	\$ 553,035	0.54	\$ 31,493,442	\$ 300,814	\$ 31,192,628	\$ 57,346,374
10	\$ 59,568,729	\$ 561,775	0.51	\$ 30,281,721	\$ 285,578	\$ 29,996,143	\$ 59,006,954
Present value benefits				\$ 300,087,558			
Present value costs				\$ 18,816,417			
Net Present Value						\$ 281,271,141	
Benefit-cost ratio						15.9	

APPENDIX C ECONOMIC TERMS AND DEFINITIONS

Output data represents the gross revenue generated by businesses/organisations in each of the industry sectors in a defined region. Gross revenue is also referred to as total sales or total income.

Employment data represents the number of people employed by businesses / organisations in each of the industry sectors in a defined region. Employment data presented in this report is destination of work data. That is, no inference is made as to where people in a defined region reside. This employment represents total numbers of employees without any conversions to full-time equivalence. Retail jobs for instance represent typical employment profiles for that sector, i.e. some full time, some part time and some casual.

The increase in direct and indirect output and the corresponding creation of jobs in the economy are expected to result in an increase in the wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy.

Value-Added data represents the marginal economic value that is added by each industry sector in a defined region. Value-Added can be calculated by subtracting local expenditure and expenditure on regional imports from the output generated by an industry sector, or alternatively, by adding the Wages & Salaries paid to local employees, the gross operating surplus and taxes on products and production. Value-Added by industry sector is the major element in the calculation of Gross Regional Product / Gross State Product / Gross Domestic Product.

Gross State Product (GSP) is the total value of final goods and services produced in the region over the period of one year. This includes exports.

Impacts used in this assessment include the following terms:

- Direct effects – Direct output or value of development or construction activity.
- Indirect effects:
 - Supply-Chain effects - The increased output generated by servicing industry sectors in response to the direct change in output and demand; and
 - Consumption effects - As output increases, so too does employment and wages and salaries paid to local employees. Part of this additional income to households is used for consumption in the local economy which leads to further increases in demand and output region.



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