



PROJECT

Bridport Foreshore Master Plan

CLIENT

Marine & Safety Tasmania

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1. Executive Summary

Marine & Safety Tasmania (MAST) is investigating the opportunities for future infrastructure upgrades and potential new development to support the growth in recreational fishing, beach users, tourism, as well as commercial marine operations in Bridport, on the north east coast of Tasmania.

In late 2018 MAST commissioned this Bridport Foreshore Master Plan (BFMP) to provide a community-led master plan for the Bridport foreshore that provides recommendations on the future infrastructure and opportunities with better access and improved amenity to the foreshore/waterways including:

- Assessment for a new Bridport pier including recreational boating access;
- Improved boat ramps, parking and launching facilities; and
- Improved access to the port of Bridport.

As part of this project Burbury Consulting undertook:

- Consultation with local stakeholders and interested residents to identify potential locations as well as infrastructure requirements for new and/or improved marine facilities;
- Community engagement sessions and formation of a project Working Group to develop, discuss and formulate opportunities for design development and investigations;
- Site assessment of the designated study areas to assess suitability and requirements for proposed marine infrastructure;
- Site specific studies, including marine habitat mapping, bathymetry surveys, natural values and habitat impact assessments used in the design development of infrastructure;
- Engineering design assessments;
- Project costings for each design option; and
- Development of a business case for the proposed master plan with recommended preferred site and project development.

Based on the site suitability assessment and stakeholder engagement the following key improvements were identified from the community for marine development within Bridport:

- Improve recreation boating/sailing facilities;
- Improve infrastructure for commercial shipping and port access;
- A pier development for recreational fishing and tourism; and
- Improve recreation fishing infrastructure.

In addition, the following sites in Bridport were identified for development of options for marine infrastructure:

- Old Pier Site;
- Port Entrance (existing);
- Investigation of a new port entrance; and
- Marina development options within Trent Water/Bridport.

This report identified potential opportunities and issues that will require consideration in the process of planning, design, construction and operation for each of the key sites above and development of marine infrastructure options to meet the community improvements.

Considerations within the project assessment included the potential for interactions with threatened and protected species, foreshore and subtidal disturbance, and the potential loss of physical and cultural values.



Of the many elements of the proposed development, the public identified with the scenic quality of the existing sites and particularly limiting the infrastructure impacts of Trent Water and this area was therefore excluded from infrastructure development.

Throughout site selection, consideration was primarily given to minimise adverse impacts on:

- Degradation of social and/or visual values;
- Loss, disturbance or destruction of the natural values (flora/fauna, geo-conservation);
- Degradation and destabilisation of the foreshore & coastal values; and
- Detrimental impact on Aboriginal heritage values.

A Project Working Group was developed after the community engagement session from residents or stakeholders that either expressed an interest in the project or were identified as key stakeholders to the project and community objectives. A balance of views and input were encountered through the Working Group on the development of infrastructure options which assisted in the recommendation of the proposed preferred development plan.

Design development of options and development sites were presented within the Working Group as well as analysed against the site investigations and then more critically against the environmental, social, economic and engineering benefits (and constraints) of each option.

The proposed master plan was assessed against the major outcomes and recommendations from the community engagement session to meet the key community improvements.

Overall the final master plan was integrated and developed to address the wider community values and incorporate favourable outcome against the social, environmental and economic values.

Preferred Development Plan

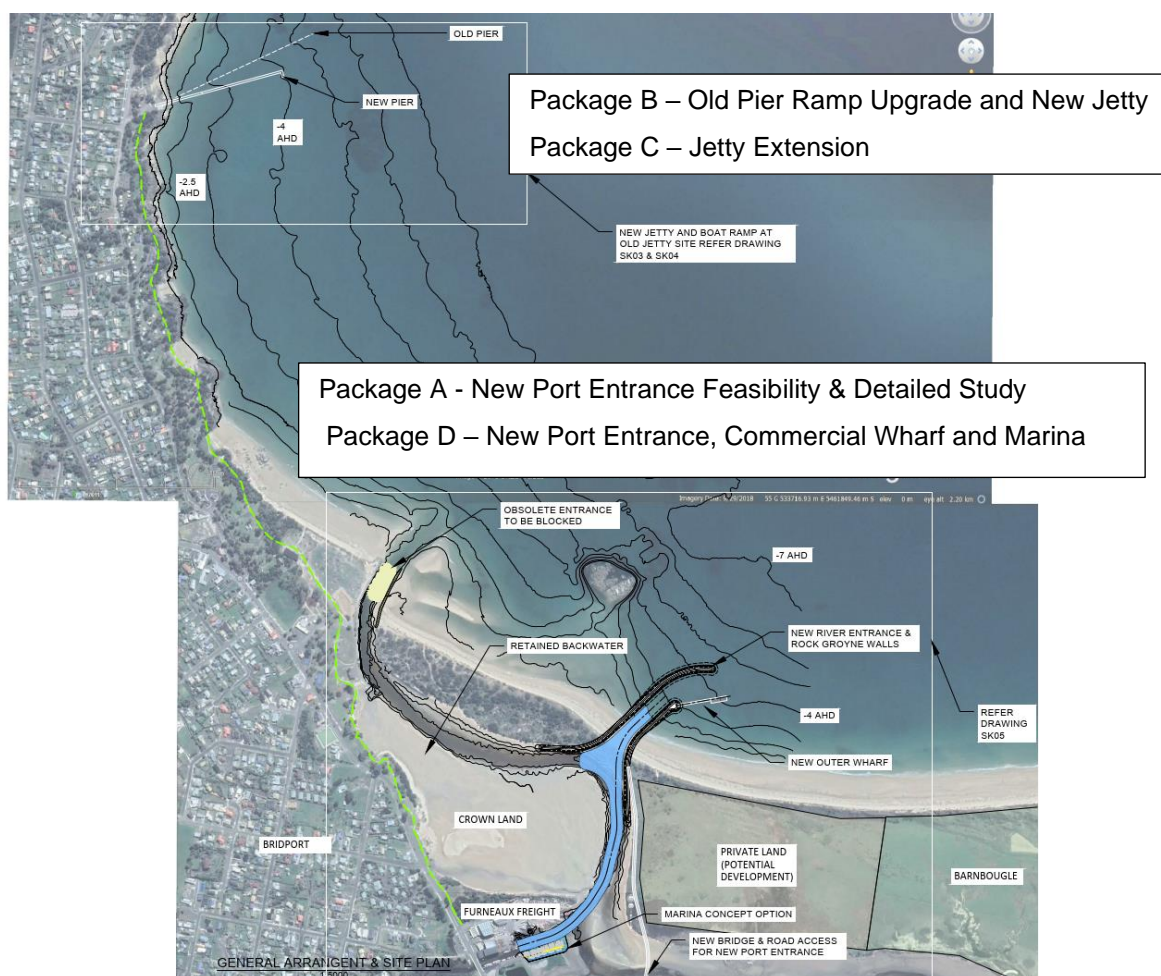
The preferred development plan includes infrastructure delivered the following packages of works with a combined capital investment of \$46m:

- Package A - New Port Entrance Feasibility & Detailed Study;
- Package B - Old Pier Boat Ramp Extension & New Jetty;
- Package C - Jetty Extension at Old Pier site; and
- Package D - New Port Entrance, Commercial Wharf & Port Marina.

The details of each package are outlined within the report including drawings as well as summarised in Figure 1 below.

The recommendation of the master planning process is to review the packages in line with the recommended scopes, program, capital investment and return on investment and identify options to integrate the packages in terms of overall function, scope and program.

Figure 1 Overall Master Plan



Economical and Business Summary and Recommendations

The cost benefit analysis for the three (3) packages identified the following key economic outputs:

Master Plan: Packages of Works	EIRR (%)	NPV (\$ Million)	BCR (Ratio)
Package A: New Port Entrance Feasibility & Detailed Study			
Package B: Old Pier Boat Ramp Extension & New Jetty	11.20	1.061	1.48
Package C: Jetty Extension	15.21	8.66	2.13
Package D: New Port Entrance, Commercial Wharf & Marina			
Most Optimistic Scenario	30.48	125.32	5.30
Least Optimistic Scenario	12.66	25.34	1.87

The proposed development of new marine infrastructure within the study area is highly reliant on public sector investment for Bridport.



It will ensure the increased appeal and sustainability of Bridport as an attractive marine and coastal destination. It will also be a major economic development incentive for the local economy, in particular, and for the Northern Tasmanian economy.

The proposed project packages would provide a unique opportunity for the Bridport economy to strengthen and diversify its economic base, in terms of existing economic activities and additional commercial, recreational and community connection opportunities.

Key **Intangible Benefits** of the project packages include:

1. Maintenance of the visual appeal and charm of the old pier relics;
2. Enhanced views of Bridport's coastline (off from 250 metres of the shoreline, by standing on the new pier);
3. Significant improvements in the 'quality of life' of Bridport residents with the new pier providing additional outdoor recreational opportunities;
4. Encouragement of new forms of water-based sports;
5. Additional opportunities for day visitors and local residents of the new foreshore walking track;
6. Provision of a safe haven/mooring for ocean-going vessels;
7. Opportunity to focus on an upgrading of the existing caravan park on the foreshore;
8. Provision of incentives for investment in new commercial buildings/upgrading of existing buildings in the Bridport town centre;
9. Encouragement of investment in new forms of vessel maintenance and construction; and
10. Encouragement of additional investment in fish processing and fish packaging/ exporting.

The proposed Project is expected to be an economically viable public sector investment, with a broad range of forecast benefits. It meets all COAG public sector investment pre-conditions and requirements.

The Project represents an investment of State and Commonwealth Government significance, given the uniqueness of its natural environs and opportunities to improve key marine infrastructure that has been strongly debated and identified within the community.



2. Introduction

This report has been developed for Marine & Safety Tasmania (MAST) as part of the Bridport Foreshore Master Plan (BFMP).

The report provides a summary of the site inspections, stakeholder consultation, initial site analysis and outcomes of a feasibility screening evaluation on potential marine infrastructure sites investigated around the marine area adjacent to and within the Trent Water area of Bridport, Tasmania.

This report provides recommendations to MAST on the proposed master plan for marine infrastructure development within Bridport as developed through the above packages.

2.1 Background

MAST, in conjunction with the Dorset Council (DC), is investigating the opportunities for future infrastructure upgrades and potential new development to support the growth in recreational fishing, beach users, tourism, as well as commercial marine operations in Bridport, which is located on the north east coast of Tasmania.

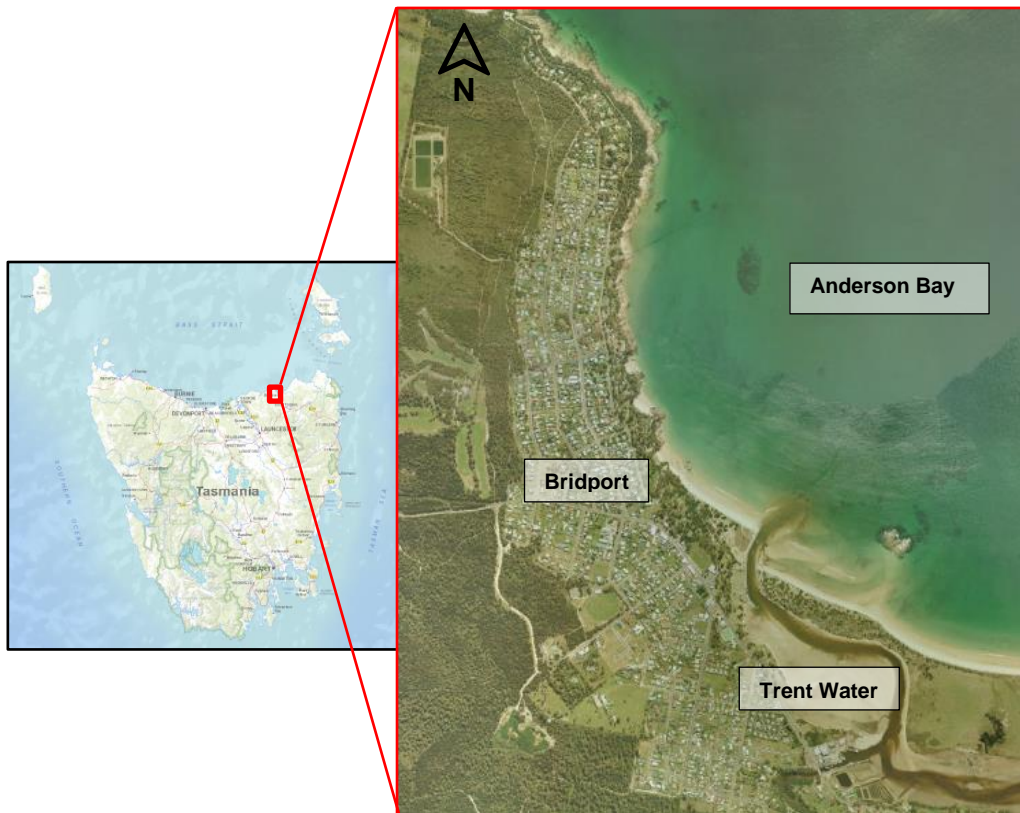
Bridport is a small coastal town that resides within Anderson Bay on the north-east coast of Tasmania.

At the 2016 Census, Bridport has a population of 1568 residents, however due to it being a significant holiday destination the population increasing markedly over the summer months, with some estimates indicating the population expands to 6000 people (MAST, 2018).

Bridport is home to a variety of waterway users, including recreational boat users, commercial fishermen, water sports and commercial freight services.

The estuary in Bridport is known as Trent Water, which is a well-mixed tidal inlet that drains through a tidally dominated entrance into Bass Strait. Navigation into the port is very restricted during low tide.

Figure 2 Locality Plan



Historically, there has been feasibility works undertaken into the viability of a replacement pier, preparation of a Bridport central foreshore precinct plan and other strategic land use frameworks and management initiatives for the Bridport foreshore area. These previous published studies, in partnership with this BFMP will be used to create a vision for the Bridport foreshore that considers the following items;

- Site context, including access by land and water;
- The physical site conditions and limitations;
- Future economic viability;
- Legislative, planning, heritage and environmental concerns;
- Community requirements; and
- Business and governing stakeholder needs.

The project area of the Bridport foreshore and marine zone is endowed with idyllic natural features requiring a long-term sustainable development vision. Other features that are unique to the study area are as follows:

- It is uniquely positioned on the northeast coastline of Tasmania to interface with Bass Strait/Southern Australian marine resources;
- Emerging interstate/international yachting and cruise ship activity requires a strategic appreciation of Bridport's potential to provide marine safety facilities and services;
- Australia's insatiable demand for marina facilities for recreational boating and sailing indicates that the coastline of north-eastern Tasmania is uniquely suited to future marina development. Related semi-permanent housing will become more permanent with the growth of populations unwilling to remain in Sydney and Melbourne and Hobart – and wanting to participate in recreational sailing and boating;



- Tasmania's tourism potential continues to be developed. The Bridport area is well serviced by Launceston's growing airline services. Larger Spirit of Tasmania ferries will result in increased future vehicular traffic and visitors from the mainland;
- Commercial shipping and vessel construction activities have emerged as significant business activities, with shipping services to Bass Strait islands, and increased demand for small specialist coastal vessels from Victoria and NSW; and
- International trade and tourism links between Tasmania and China have expanded significantly. Future growth in attracting direct Chinese investment in coastal real estate for tourism/recreation, particularly golf and fishing, and for future residential housing/ retirement can be expected.

The BFMP requires a mix of thematic tasks over a 20-year time horizon, including:

- Immediate and short-term planning and coastal engineering investigations and design solutions;
- Medium-term forecasting and related planning in relation to expanded recreational facilities and opportunities for greater foreshore usage, new forms of tourism infrastructure, and new forms of urban housing, funded by mainland and international visitors/residents;
- Longer term realignment of Tasmania's urban housing to limit the crowding out of Hobart and its environs, and to allow for increased in-migration to the northeast of Tasmania; and
- Bridport is ideally located to provide an increasing role in maritime safety (a safe harbour) for all Bass Strait/SE offshore sailing/marine craft activities, and for direct involvement in future offshore waste recovery of plastic contamination to protect marine wildlife.

2.2 Project Rationale

The intent of the project is to provide a community-led Master Plan for the Bridport foreshore. The project targeted the marine zone; that is from an area in Anderson Bay between Granite Point through to Trent Water, including the Brid River from its estuary into the port (refer Figure 3).

The BFMP aims to develop opportunities to enable and assess future requirements for the Bridport marine area. The project vision is to provide the community of Bridport with a marine precinct that is economically, socially and environmentally sustainable, while outlining potential infrastructure that can support the increased recreational/commercial boating and tourism sectors.

Any recommendations will need to have community and stakeholder support and will be required to be practical and achievable.

Figure 3 Study area along the Bridport Foreshore (Marine Zone)



2.3 Project Objectives

Prior to commencing with our consultation, we prepared our specific definition around the project objective nominated in the MAST brief:

“The project scope is to provide a community-led master Plan for the Bridport foreshore area that will make recommendations in respect of future infrastructure upgrades to support the growing number of recreational fishers, boaters and beach goers. Better access and improved amenity will be considered through the Master Plan including;

- *The potential for a new Bridport Pier including pontoon access for recreational boaters with a location to be determined;*
- *Boat ramps, associated parking and launching facilities; and*
- *Improved access to the working port of Bridport.*



The critical components to complete this project included:

- Consultation with existing businesses and users within the marine tourism sectors;
- Identification of current and likely future demand of marine infrastructure;
- Understanding of existing and potential sites for an improved port access;
- Determine whether a marina would be suitable within Trent Water;
- Site desktop and physical site assessments;
- Site development SWOT (Strength, Weakness/constraints, Opportunities and Threats) assessment;
- Conceptual infrastructure planning and design of development for the preferred infrastructure site(s);
- Identification of range of likely economic and social benefits;
- Development of project and construction cost estimates;
- Preparation of economic/financial justification for project investment costs (Benefit-Cost Analyses);
- Advice on planning and environmental assessment requirements; and
- Preparation of a clear master plan, business case and report.

This report brings together the overall analysis, incorporating the stakeholder inputs, site assessments, and identification of site infrastructure opportunities, SWOT analysis and recommendation of preferred infrastructure requirements and locations.

The report makes recommendations on the preferred design options for further development.



3. Project Methodology

The methodology used was developed based on the project objectives and site appreciation as well as consideration of our approach to similar projects and success of the work undertaken to engage with community on consultation and project opportunity development.

The following section outlines the approach taken to complete the BFMP project.

3.1 Project Scoping & Planning

3.1.1 Inception Meeting

A working team, consisting of James Burbury (principal maritime engineer) and Nigel Palfreyman (project/environmental manager) from Burbury Consulting (BC), completed a project establishment meeting with the project manager, Justin Foster (MAST). The meeting discussed project requirements, objectives and confirmed the work program and outputs of the project. These discussions also facilitated input on the following items:

- Identification of key stakeholders;
- Nomination of key contacts that may provide relevant input to the project;
- Discussions on Dorset Council Planning Scheme requirements;
- Identify key current and likely future port and maritime facility users;
- Obtain background information and reports; and
- Plan for site inspection requirements for the site(s).

In addition, preliminary discussions on the project strategy and outcomes were undertaken with Rohan Willis (Director of Community & Development at Dorset Council).

3.1.2 Concept Design Workshop

A design, siting and consultation workshop was undertaken with targeted stakeholders to identify the key function and user requirements for marine infrastructure for the Bridport area.

This workshop provided ideas and information to on key drivers that could enhance recreational and commercial use of marine infrastructure including:

- Improvements for a more safe and efficient Port access;
- Existing Port access constraints;
- Recreational marine facilities demand and requirements;
- Facilities and access to marine supplies;
- Existing and future marine infrastructure needs and opportunities;
- Emerging trade and shipping trends affecting northern Tasmania; and
- Current markets.



3.2 Logical Framework Analysis

The Project framework utilised the Logical Framework Approach (LFA), which provided a process to involve situation and stakeholder analysis (also called problem analysis), objective setting and strategy selection, and monitoring indicator and method development.

The process of logical framework analysis allowed the project to:

- involve stakeholders in the problem analysis and design of the project;
- systematically and logically set out the project objectives and the means-end relationships between them;
- establish what assumptions within and outside the scope of the project may influence its success;
- set indicators to check whether the objectives have been achieved; and
- allow for a concise outline of the scope of the project, which can be readily understood by stakeholders.

The logframe matrix (outlined in Table 1) was used to present the project framework to the Working Group (WG) prior to the concept design option review.

Table 1 Project Framework (Logframe) for Bridport Foreshore Master Plan

DESIGN SUMMARY	PROJECT TARGETS	PROJECT MONITORING MECHANISMS	RISKS AND ASSUMPTIONS
A. GOAL (Strategic Vision)			
1. To optimise the future infrastructure development of the Bridport Foreshore (marine zone), which is economically, socially and environmentally sustainable over 20 years.	<ul style="list-style-type: none"> • Provide economic diversity and growth opportunities based on Bridport's recreational and commercial potential. • Develop commercial port infrastructure and functions to stimulate commercial fishing and related industry activities. • Incorporate community needs and desires across a range of diverse recreational and tourism opportunities. 	<ul style="list-style-type: none"> • Specific physical site conditions are reflected in the coastal engineering design components. • Sustainable indicators to be identifiable in all infrastructure plans and development scenarios. • A full range of potential recreational, tourism and commercial opportunities are incorporated in the physical plans. • New financially-viable commercial fishing and recreational boating, berthing and servicing sites will be available after Year 2 (2022/23). • Additional foreshore infrastructure to upgrade existing recreational activities 	<ul style="list-style-type: none"> • Individual infrastructure plans can fully incorporate the existing physical site conditions. • Commercial vessel access/egress limitations on channel depths and access to Bass Strait can be fully addressed. • Domestic and international demand for fish products can continue to grow with sustainable fishery resources and expanded aquaculture. • New commercial shipping construction/ servicing opportunities will be stimulated by new port investment. • Additional homeporting of commercial fishing vessels can be achieved. • Full support by the Bridport community for the final BFMP. • Full commitment by all key private sector interests.



	<ul style="list-style-type: none"> • Recognise heritage, land tenure, statutory, environmental and aesthetic issues. • Integrate the need for a 'Safe Harbour' in the planning of new infrastructure. 	will be proposed for community review and acceptance.	<ul style="list-style-type: none"> • Dorset Council and other relevant Councils to be fully supportive. • State Government strategic support is maintained at all stages of plan development. • State/Commonwealth Government support for funding via specific funding mechanisms can be obtained.
B. PURPOSE (Specific Objectives)			
1. Upgrade the existing commercial port infrastructure.	<ul style="list-style-type: none"> • Provide for additional wharf length and fishing boat berths. • Extend the back-up area of the existing commercial wharf/ship servicing. • 	<ul style="list-style-type: none"> • Geotechnical investigations and estimation of dredging options, volumes, and requirements for sand disposal. • Engineering plans, drawings, and cost estimates for new wharf infrastructure. • Reviews/approvals for development with Crown lands/MAST/other agencies. 	<ul style="list-style-type: none"> • Existing commercial operators are fully supportive of new infrastructure proposals. • MAST will continue to provide strategic and regulatory advice. • Dorset Council will be fully supportive of the redevelopment.
2. Deepen the existing river channel/provide direct ocean access.	<ul style="list-style-type: none"> • Provide an additional 1 to 2 meters of navigable depth and re-alignment of river. 	<ul style="list-style-type: none"> • Documentation for river deepening, with alternative dredging cost estimates. • Identification of sand management options, with new access to Bass Strait. 	<ul style="list-style-type: none"> • No adverse environmental issues to be addressed. • No Crown land issues. • MAST and Dorset Council will support the deepening.
3. Develop new marina facilities and breakwater.	<ul style="list-style-type: none"> • Provide for an additional 50 to 60 marina berths, additional car parking and road access, and 50 to 70 meters of breakwater to provide a 'Safe Harbour'. 	<ul style="list-style-type: none"> • Initial engineering designs and alternative layouts for marina berths and breakwater. • Drawings of road access and car parking options and initial cost estimates. 	<ul style="list-style-type: none"> • MAST will provide strategic and regulatory advice. • Potential marina investors/leaseholders/operators will be identified, and design features fully identified. • The concept of a 'Safe Harbour' is fully accepted by ocean yachting/small



			commercial vessel operators.
5. Support the development of aquaculture/oyster production in the river channels.	<ul style="list-style-type: none"> • Identification of specific river sections for oyster bed development. • Development of engineering plans for expansion of existing salmon/fish hatchery. 	<ul style="list-style-type: none"> • Water quality and biosecurity investigations and reports of studies for oyster bed development and for hatchery expansion. 	<ul style="list-style-type: none"> • Acceptance of bio-security standards for oyster bed development and hatchery expansion.
6. Upgrading or potential relocation of Trent Water Boat ramp.	<ul style="list-style-type: none"> • Identification of options for relocation of boat ramp to improve water depth and access, and to increase capacity with relocation. 	<ul style="list-style-type: none"> • Engineering plans and cost estimates for alternative location(s) of Trent Water boat ramp. 	<ul style="list-style-type: none"> • Acceptance by local recreational boat owners of the upgrading/relocation of the Trent Water boat ramp. • MAST and Dorset Council are fully supportive of the redevelopment / relocation of the boat ramp.
7. Upgrading of foreshore trails/walks and provision of boardwalks to beaches.	<ul style="list-style-type: none"> • Identification of specific sites for extensions of foreshore trails/walks and seating. • Identification of specific sites for boardwalks to provide improved access to the sea. 	<ul style="list-style-type: none"> • Engineering plans and cost estimate for additional foreshore trails/walks/seats and for boardwalks. 	<ul style="list-style-type: none"> • MAST and Dorset Council are fully supportive.
8. New pier development (near old pier relics or other site options).	<ul style="list-style-type: none"> • Review of 2015 Burbury Pier Study; review of earlier Pitt and Sherry Study (2001). • Review of evidence of local support for 	<ul style="list-style-type: none"> • Re-estimation of demand estimates for the new pier near site of pier relics. • Re-estimation of the engineering design/ construction costs of a new pier. 	<ul style="list-style-type: none"> • Existing petition signatures of support remain valid. • Engineering cost estimates can be revised with no further detailed coastal engineering studies.



	<p>new ferry development.</p> <ul style="list-style-type: none">• Review of Bridport Community support for new pier development at alternative sites/preferred site.	<ul style="list-style-type: none">• Re-estimation of the economic benefits of a new pier to the Bridport local/ State economy.	<ul style="list-style-type: none">• Bridport community is supportive of a new pier at the preferred location.
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3.3 Planning & Environmental Approvals Review

We have assessed the likely planning and environmental issues associated with the design options, which provided us with an initial understanding of the issues for any potential infrastructure site.

The preferred location and design (i.e. encompassing port areas or leaseholds) dictated the approval requirements. The outcomes of this phase have been included in this report, and provides a summary of the likely approval requirements, including any additional detailed studies required to be prepared and completed prior to the submission of a Development Application (DA) for the preferred design solution and site.

3.4 Stakeholder Engagement and Market Research

3.4.1 Engagement and Consultation Strategy

This community led BFMP involved understanding the views of the Bridport public. Community support is a crucial element for the project to proceed to the construction phase.

There can be both positive and negative impacts depending on what views and values members of the public hold, accordingly it is important for the community to understand all potential outcomes so that they can reach an informed position.

The overarching objectives of the stakeholder and community engagement process was to:

- Inform stakeholders and the community of the BFMP proposal;
- Gain input from stakeholders/community that can improve the project developments and outcomes;
- Gain an appropriate level of stakeholder support in order to successfully develop and implement the project and deliverables; and
- Gain broad acceptance of the BFMP from the relevant stakeholders/communities resulting in a “social licence”.

This engagement strategy used the International Association of Public Participation’s (IAP2) Public Participation Spectrum¹ to guide and assess all engagement activities. The spectrum is based on the premise that different stakeholders have diverse levels of influence and interest in decision making on a project and therefore have different levels of engagement requirements.

¹ <http://www.iap2.org.au/resources>



Table 2 Engagement Strategy – IAP2

Goal	To provide the public with balanced and Objective information to assist them in understanding the problems, alternatives, Opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions. To fully understand how current constraints can be mitigated.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision-making in the hands of the public.
Promise to the Public	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for direct advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

3.4.2 Market Research

A key element of the stakeholder engagement process was to identify important information on current and future needs of the recreational and commercial boating facilities for the Bridport area and surrounds, including regional marina infrastructure, demand and existing and future services.

We collated information on current and future needs for recreational and commercial marine facilities along the Tasmanian north and north east coast as well as Project Team awareness of the mainland.

The market research has incorporated:

- Utilisation of the consultation surveys and stakeholder information;
- Market surveys for key economic and user needs;
- Tracking of users within the south east Australia region (i.e. through marina berthing registers);
- Interviews with potential users; and



- Development of opportunities and constraints to current and potential users.

3.5 Desktop Technical Reviews

The desktop technical assessments have been undertaken in conjunction with the preliminary design and siting workshops so that the technical reviews form part of the siting and concept design as well as preferred location from a financial and economic basis.

3.5.1 Desktop Reviews & Investigations

This phase included the following:

- Review existing infrastructure reports, plans and studies for the sites and surrounds (as nominated);
- Understanding of each site's existing infrastructure, including key access points, transport links to land and key nodes (parking, amenities, services infrastructure, etc.);
- Review of existing land mapping, zoning, available survey/bathymetric data and any other available information for each design option site;
- Identification of required site-specific studies and investigations based on a gap analysis of reviews from existing reports and information;
- Examination of existing data relating to demand, including increased commercial fishing & recreational opportunities; and
- Identify key interview targets for market assessments.

The existing reports and relevant policy and planning frameworks have been summarised for each nominated design option and captured in this report.

3.6 Preliminary Designs Concepts

3.6.1 Development of Concept Designs

Concept design plans have been developed and provide to both MAST and the Working Group for their review and comments.

The designs have incorporated general arrangement plans, typical sections and elevations, for public marine infrastructure at the following sites:

- Old Pier Site
- Port Entrance (existing);
- New Port Entrance; and
- Marina options within Trent Water.

The concept plans were used for preliminary engineering to help prepare project and construction estimates as well as define the basis of design.

The design criteria were guided by the following:

- Wave climate;
- Geotechnical conditions;
- Environmental constraints;



- Design loads (ultimate and serviceable); and
- Dimensional requirements (vessel, infrastructure and access).

3.7 Project Assessment

3.7.1 Demand Assessment & Site SWOT analysis

The most used approach to strategic planning at the initial phase of any investment activity is to complete a SWOT (Strengths, Weaknesses, Opportunities and Threats) framework, which classifies the various influences of proposed project investments into four (4) components:

- (i) Strengths;
- (ii) Weaknesses;
- (iii) Opportunities; and
- (iv) Threats.

An initial SWOT analysis has been undertaken for Bridport to distinguish between internal and external influences (economic, technical, social, environmental) on any proposed project investments by public agencies, such as MAST, Tasports, local residents, businesses and maritime users/operators.

3.7.2 Assessment of Design Options

On completion of the SWOT analysis, it was presented to the WG for discussion in our first project design meeting. This process enabled the WG to provide their design recommendations to BC, so that we could investigate, then complete and present to them at the subsequent project design meeting.

3.8 Detailed Site Studies

This phase helped in providing a site and specific project definition and objective, while also providing a summary of information required for regulatory approvals/Development Application (subject to final solution and planning scheme overlays for that specific site) as well as more detailed inputs for production of accurate engineering and construction costs.

The detailed studies included:

- Site specific investigations to minimise assumptions in design and improve engineering design and construction cost estimates;
- Analysis on potential environmental impacts of proposed development and impact on detailed business case;
- The site investigations involved the following works:
 - Site bathymetry surveys;
 - Dive surveys for habitat mapping and characterisation;
 - Sampling of sediments for potential contaminants of concern (i.e. such as around old slips or wharf), for metals, tributyltin, acid sulfate soils and particle sizing (required for regulatory approvals and natural values assessment of the proposed design solutions);
 - Geotechnical jet probing to assess marine sediment profiles and identify any potential bedrock (to quantify and estimate pile lengths and design for any piled structure and ascertain dredging viability);



- Deployment of survey vessels and equipment including dive cameras, dive equipment, sampling equipment, etc.; and
 - Documentation of a marine ecological investigation report for the proposed development which is a requirement of regulatory authorities (Crown Land Services, DPIPWE, EPA, Council) on referral of marine/land developments.
- Refine engineering design based on site assessment, especially related to geotechnical and environmental inputs; and
- Allowance to refine construction cost estimates from field studies results, allowing for more accurate input to detailed business case.

3.9 Detailed Business Case

3.9.1 Finalised Concept Design Plans & Report

The final, site specific, development proposal plans have been updated through the above phases and in conjunction with consultation with MAST and the Working Group.

Final concept plans incorporate general arrangement plans to detail the extents of infrastructure, layouts, dimensions, associated land infrastructure and development opportunity links.

This report provides the details of the recommended infrastructure, business cases assessment and recommendations for preferred design options and development scope.



4. Project References

4.1 Technical References

The following documents and drawings were gathered as part the preliminary research. MAST provided some of the references and added valuable input into our preliminary inquiries.

The below references were reviewed in conjunction with stakeholder and targeted consultation, as well as site investigations:

Table 3 Referenced Documents

Reference No.	Title	Author	Date
1.01	Bridport Port Improvement Study	D.Steane	November 1986
1.02	Bridport Port Improvement Study	Water Research Laboratory	June 1991
1.03	Bridport Foreshore Strategic Framework	GHD	August 1996
1.04	River Entrance at Bridport – Options for Improvement to Navigation	Vantree Pty Ltd (G Byrne.)	April 2001
1.05	Bridport Pier Feasibility Study – Final Report	Pitt & Sherry	July 2001
1.06	Determining the Location and Depth of Hard Rock at Trent Water, Bridport	Hydro Tasmania Consulting	December 2005
1.07	Bridport Future Planning & Development Strategy – Issues Paper	GHD	December 2005
1.08	Bridport Future Planning & Development Strategy	GHD	January 2006
1.09	Preliminary Geomorphological Assessment of a Proposal to Create a New Sea Wall and New River Outlet, Trent Water, Bridport	University of Tasmania	April 2006
1.10	Dorset Tourism Strategy	Urban Enterprise	December 2011
1.11	Bridport Central Foreshore – Precinct Plan	Hansen Partnership Pty Ltd	November 2012
1.12	Brid River Eastern Training Wal – Funding Application to MAST – Maintenance on the Brid River Eastern Rock Wall	Furneaux Freight Pty Ltd	2017

4.2 Summary of Key Technical Reports

The following section provides a summary of the reports that have been reviewed and subsequently utilised for this BFMP report:

4.2.1 Steane – 1986

The Steane report was commissioned by the Lands Department, Tasmania in 1986 to study the options for works and further investigations relevant to the improvement and maintenance of the port of Bridport.



The key recommendations of the report where;

- The value of the Bridport fishing and boating industry justifies considerable expenditure on the port;
- Re-diverting the Great Forester River is opposed, due to economic and environmental grounds;
- A suitably detailed hydraulic study would cost at least \$250,000 (in 1986) and is not recommended at this time;
- Raising the training walls and stabilizing the dune system at East Double Sandy Point are recommended, in conjunction with channel dredging;
- Sand accumulating adjacent to the existing training wall should be stockpiled and if necessary pumped across the channel to Barnboughe Beach for beach nourishment;
- Implementation of a monitoring program and if longshore drift is too large, consideration to be given to relocating fishing fleet or adopting shallow draft vessels';
- A sand bypass system may be an option to pump sand directly to the western end of Barnboughe Beach; and
- By virtue of its location, the Brid Estuary is not a naturally deep port and its maintenance will always depend on dredging and other works.

4.2.2 Water Research Laboratory (WRT) - 1991

In August 1987 WRT were engaged by the Department of Roads and Transport, Tasmania to investigate concerns the port deterioration by sedimentation and to look at both immediate problems and long-term development at Bridport with the aim of improving the port utility. The work was undertaken over a three (3) year timeline and involved;

- Site investigations;
- Field data collection and analysis;
- Trial dredging; and
- Various analytical studies.

The report completed technical works that assessed specific coastal processes occurring at the site. The following components have been summarised from the report;

Littoral transport

- Aerial photography was used to study littoral movement, including historical photos dating back to 1949 and photos commissioned for the study in 1987, '89 and '90;
- All photos show a clear net longshore sediment movement from west to east (in study area between East Double Sandy Point and Adams Cut);
- Uniform rate of sand accumulation against the western face of training wall;
- Migrating sand waves progressing shoreward visible at East Double Sandy Point moving onto the offshore entrance bar at Little Forester River;
- No long-term shoreline recession evident on beaches in the study area;
- Despite stabilisation of dunes to the west, no effects of reduced littoral supply were observed;
- The site is typical of tidal dominated coastal inlets (offshore entrance bar, entrance channel and inshore shoals);
- The channel entrance has migrated eastwards periodically when sediment build-up, west of the training wall, reaches capacity and spills around the entrance.



Wave Climate

- Only limited statistical offshore wave climate data available;
- The Tasmanian Boating Weather Guide (1981) statistics (most likely from weather chart examination rather than direct observations) shows dominant swell direction from west and north-west although waves from east and north-east are common in Jan and Feb;
- Swell fetch lengths are less than 400km (locally generated waves);
- Westerly winds dominant, particularly during winter, north and east winds only during summer months;
- Bridport entrance indicative littoral transport direction is to the east for wave attack from the east of north;

Beach Stability

- Storm induced beach and dune erosion was evident during the study period and most severe at Barnbougle Beach;
- Erosion events identified as typical short-term cyclic behaviour and no significant long term shoreline variability has been detected;

Entrance Stability

- Western training wall could be prevented from overtopping by removing accumulated material every 2-3 years;
- Prolonged interruption to the littoral transport could have detrimental effects downdrift and considerable care in placement and management of the removed material to the downdrift beaches is required;
- Trial dredging has been undertaken and in general most of the dredged channel experienced considerable and rapid accretion (3-6 months);
- Rapid restoration of dredged channel attributed to the relatively large volume of active sediment in inner entrance shoals and show channel is presently under dynamic equilibrium;
- Major dredging of Trent Water Shoals would increase tidal prism by about 30% and may improve channel depth by a max of 0.3m; and
- Such a dramatic change would have long term effects on the coastal dynamics, including increase rate of sediment trapping in the estuary and possibly leading to erosion of downdrift beaches.

The findings from the report can be summarised as:

- There is no practical solution towards permanently increasing the navigable depth of the Bridport entrance;
- Current entrance channel will continue to be affected by west to east sand movement, which will build up on the western wall before spilling, blowing or washing around the wall;
- Only practical solution to littoral drift is a sand bypass system. On average annual quantities of 13 000 cubic metres could be expected. This bypass system would not increase the depth of the existing channel
- Major dredging of the Trent Water shoals to increase tidal prism would possibly help slightly in scouring the channel however it is costly measure if done for this reason alone; and
- Re-diversion of the Great Forester River to discharge through Bridport entrance would not result in any measurable improvement in entrance conditions, though such action would increase the risk of flooding



4.2.3 Pitt & Sherry – 2001

The Bridport Pier Committee, a community base group, hired consultants, Pitt & Sherry to undertake a feasibility investigation to determine whether it would be feasible to build/rebuild a pier in the township of Bridport. The key objectives of the report were to determine the following:

- the most appropriate site for a pier in Bridport;
 - Site 1 – The Old Pier Site;
 - Site 2 – Croquet lawn Beach (eastern end); and
 - Site 3 – Existing Channel Entrance (eastern end).
- The financial viability of a pier in Bridport; and
- What economic and social benefits a pier would bring to Bridport.

The study indicated that a key requirement of the broader community of Bridport was to increase the tourism market in order to provide economic improvements to the township. Throughout the study it was apparent that a large proportion of the population of Bridport were keen to see development in the township, which could be in the form of a pier. However, for a pier to be viable the report states, that it must be developed as a component of an effective tourism package for the township. Accordingly, the report recommended that a Strategic Tourism Plan be developed for Bridport.

4.2.4 Vantree Pty Ltd – 2001

Marine and Safety Tasmania engaged Vantree to investigate if there were techniques available or other options that could be used to improve the navigation on the Brid River. The report reviewed previous works completed at the Bridport River entrance. The key findings are as follows

- Only way to improve the existing system is to bypass the sand on a regular basis from the west side of the training wall to the east of the river entrance;
- The study and report conclusions undertaken by WRL in 1991 appear to be well founded.

4.2.5 Hydro Tasmanian Consulting - 2005

At the request of the Department of Economic Developmental and Primary Industries, Water and Environment (TAS), Hydro Tasmania Consulting designed and completed a drilling program to ascertain the option of creating a new river entrance into Anderson's Bay from Trent Water to Sisters Rocks. The assessment investigated the depth of hard rock along a proposed new channel location and out to Sisters Rocks. The report did not assess sand movement.

The report's key findings were:

- Depth of sand ranges from 4 to 6 metres below low tide mark across the entire traverse;
- Gravels were encountered below the sand for at least another 2 to 3 metres; and
- No bedrock was encountered up to a depth of 9.5 metres below low tide mark.

4.2.6 GHD – 2006

The Dorset Council engaged GHD to complete a future planning and development strategy for Bridport in 2006. The aim was to provide a planning and economic framework to address current and future environmental, social and economic needs within the town, while also defining a vision to allow Bridport's full potential to be achieved.



An action plan devised from the strategy, identified the following major infrastructure projects that the Council should implement:

- Water supply upgrading;
- Sewage plant upgrading;
- Western road access to Bridport; and
- Wellness Centre.

4.2.7 University of Tasmania – 2006

The Department of Economic Development (TAS) commissioned the University of Tasmania (UTAS Innovation Ltd – Commercial Arm) to undertake a preliminary geomorphic assessment of a proposed to create a new sea wall and new river outlet at Trent Water, in Bridport. The assessment recommended the following:

- New sea wall should not proceed due to interrupting the westward net littoral drift of sand and potentially starving Barnbougle Beach; and
- A detailed feasibility study is required to assess the potential geomorphic impacts of a new channel entrance and the need for retaining walls to maintain the channel at its new location.

4.2.8 Summary Discussion

The entrance to the Brid River and Trent Water have been the subject of considerable study and assessment into possible port improvement projects and associated coastal impacts. Both the Steane (1986) and the WRL (1991) reports are extremely thorough and have been compiled by authors/organisations with considerable experience in their field.

The WRL study also involved three (3) years of field measurements and assessment providing a thorough basis for findings and conclusions nominated.

The UTAS Report (2006) references both the Steane and WRT reports extensively and makes a robust scientific assessment of existing geomorphological processes and future impacts from any proposed new entrance to Trent Water.

In summary the previous studies tend to have a broad agreement on a number of factors which are relevant to the proposed BFMP, these are:

- There is no practical solution to permanently increasing the depth of the existing entrance;
- The existing entrance is relatively stable until sand builds up on the western training wall and spills into the channel and is either displaced by outgoing tide (slowly) or mechanical means;
- When the channel is dredged deeper, it has quickly returned to its previous shallow depth;
- Net longshore sand transport is west to east, at an approximate minimum rate of 13,000 cubic metres per year;
- Rediverting the Great Forester River back through Trent Water is not a viable option, for economic and environmental reasons;
- Dredging the Trent Water estuary would only marginally increase the tidal prism and have limited impact on the depth at the channel entrance;
- A new channel entrance to the east of Sisters Rocks would cause significant change to the coastal processes and would need to be assessed thoroughly;
- Any proposed seawall for a new entrance out to Sisters Rocks would significantly disrupt longshore sand movement and starve neighbouring Barnbougle Beach;



- Based on the existing tidal prism, a new channel entrance would not naturally maintain its depth under tidal flow and would require maintenance dredging and a sand bypass system; and
- No reliable local wave or current data is available for the site.

4.3 Stakeholder Groups

4.3.1 Key Stakeholders

Stakeholders are individuals or organisations, which effect, or can be affected by project decisions. Stakeholders' interest and ability to influence the Master Plan will vary, accordingly stakeholder specific engagement techniques are to be implemented. Individuals, attitudes, ideas and perceptions are not static, and neither are stakeholders – they will emerge and evolve throughout the engagement process.

Ideally the stakeholder engagement process will give a voice to the broadest range of interests, perspectives and agendas within the context of the BFMP. During the engagement process consideration must be given to those who will be potentially affected by, or who will be interested in, the decisions being undertaken for the BFMP.

Prior to commencing the project, MAST provided a stakeholder list for us to communicate and engage with for the project. Following our initial discussions, the following list of stakeholders was created, and contact instigated:

- Dorset Council (officers and alderman);
- Tas Ports;
- Parks & Wildlife Service - Crown Land Services
- TasWater;
- Old Pier Community Group;
- Marine and Safety Tasmania (MAST);
- Furneaux Freight;
- Barnett Fishing;
- Bridport Surf Lifesaving Club;
- Barnbougle Golf Links;
- Commercial Fisherman;
- North East Tourism; and
- Tourism Tasmania.

Figure 4 Bridport Marine Facilities





5. Stakeholder Engagement and Consultation

5.1 Introduction

The intent of the project was to provide a community-led Master Plan for the Bridport foreshore and maritime infrastructure.

This BFMP aims to develop opportunities to enable and assess future requirements for the Bridport marine area. The project will provide the community of Bridport with a marine precinct that is economically, socially and environmentally sustainable, while identifying potential marine infrastructure options that will enable access improvements as well as investigate the potential for a safe port incorporating all weather (tide, wave and current) infrastructure for mooring and berthing of vessels (permanent and itinerant). Associated facilities including boat ramp, amenities and marina berths may be considered subject to stakeholder input on demand and benefits of the infrastructure in terms of:

- Site context, including access by land and water;
- The physical site conditions and limitations;
- Future economic viability;
- Legislative, planning, heritage and environmental concerns;
- Community requirements; and
- Business and governing stakeholder needs.

The following items were discussed with the stakeholders:

- Current demand for marine facilities for permanent marine vessels and visitors;
- Future demand for facilities or improvements (public, private/commercial, etc.);
- Emerging demand trends for visitation or infrastructure requirements;
- Identification of critical marine access issues and improvement opportunities;
- Limitations on existing facilities;
- Infrastructure requirements for a new entrance and expanded port (size, vessel capacity, services, vehicle access, location to amenities, etc.);
- Use or expansion of existing facilities;
- Impact on local businesses related to the infrastructure, etc.
- Incentives for regional/Australian investment;
- Opportunity for foreign investment;
- Business & job opportunities associated with new infrastructure – including existing businesses; and
- Known business or infrastructure proposals or improvements that may link with marine infrastructure improvements.

5.1.1 Approach

Stakeholder and community engagement are about making more informed, better and sustainable decisions through a process that engenders trust and credibility.



Stakeholder and community engagement contribute to informed decisions in several important ways. It brings all perspectives to the table; it identifies key issues early; and it allows any decision to be understood and owned by as many people as possible.

Specifically, for this BFMP, active engagement was implemented to help create mutual benefits for government agencies, business and the local community. It enables a clear process through which the Project owner and its representatives interacts with stakeholders and the community to inform the decision-making processes of the project. A transparent and robust engagement program can facilitate the following outcomes:

- Build respectful relationships allowing stakeholder and community support for and identification with the vision of the project;
- Decrease the levels of misinformation about the project;
- Ensure appropriate controls are established to manage stakeholder/community input and feedback; and
- Allow active regular communication to be maintained.

The above approaches were key aims of the project.

5.1.2 Engagement Tools

Engagement tools were used based on the stakeholder mapping and analysis. However, we believe that face to face interactions with technically competent project team members, experienced in stakeholder engagement, is one of the most effective tools in achieving stakeholder and community engagement objectives.

Key engagement tools that were utilised for this BFMP were as follows:

1. Targeted Stakeholder meetings;
2. Project team member phone and email contact;
3. Establishment of a project working group; and
4. Public drop in and information session for the Bridport community.

5.2 Community Information Session

A key component of the BFMP was to engage with the Bridport Community.

Accordingly, a community information session was held at Bridport on October 29th, 2018. This session allowed the public to understand and get an overview of the BFMP. The information session provided a survey for the public to complete and offer their input and feedback on the BMP strategy.

The following provides a summary of the public feedback received from the survey.

It was estimated that we had more than one hundred (100) people in attendance at the community information session.

We had a total of fifty-nine (59) survey responses.

5.2.1 Public Survey Analysis

1. (Q1) *Connections/Relationship of Respondents to Bridport (Primary Response)*

- | | |
|-------------------------------|-------|
| - Bridport Resident | : 90% |
| - As a landowner | : 61% |
| - Member of a Community Group | : 35% |



- Resident of Dorset Council : 29%
- Bridport Business Owner : 19%
- As a Farmer : 1%

- Primary relationship was as a Bridport resident.
 - No visitors responded.
-

2. (Q2) Age Profile of Respondent (59 Responses)

- | | |
|---------------------|-----------------|
| - 14 and under : 0% | • 40 – 49 : 2% |
| - 15 – 19 : 0% | • 50 – 59 : 24% |
| - 20 – 29 : 2% | • 60 – 69 : 38% |
| - 30 – 39 : 5% | • 70+ : 29% |

- Major informant/respondent group in the range 61 – 69 years.
 - Aged group were second most important respondent group (70+ years).
 - Middle-aged group (50 – 59 years) was third significant group.
 - Respondents in the 20 – 49 years' age grouping were insignificant.
 - No responses from children and teenage groups.
-

3. (Q3) Do you utilise Bridport's current marine infrastructure (e.g. boat ramps, river entrance, wharf, beaches, lifesaving club, etc.)?

- YES : 88%
- NO : 12%

- Highly significant utilisation of existing marine infrastructure.
- Very few respondents did not make use of infrastructure (despite the overwhelming age/ "greying": 67% of respondents were over 60 years).

4. (Q4) Use of Existing Facilities by Respondents (Primary Response)

- | | |
|---------------------------|-------|
| - Beaches | : 40% |
| - Trent Water Boat Ramp | : 20% |
| - Port Wharves | : 11% |
| - Shoreline/Coastal Walks | : 9% |
| - Port Entrance | : 8% |

- Major use/importance was as a beach facility;
 - No use recorded for Clubs (Life Saving or Sailing);
 - Trent Water Boat Ramp was the second most utilised facility;
-

5. (Q5) Priorities for Improvement/Expansion (Primary Response)

- Improve recreation boating/sailing facilities : 25%
- Improve infrastructure for commercial shipping : 22%
- Pier development : 17%



- Improve recreation fishing infrastructure : 5%
 - Leave 'As Is' - No change : 1%
 - Close order of priority between improvements to recreational boating and sailing, and commercial shipping improvements;
 - Very minor preference for 'no change'. Nearly all respondents expect improvements.
-

6. (Q6) Importance of Existing Facilities (Primary Response)

- Shoreline/Coastal Walks : 30%
 - Boat Ramps (both) : 28%
 - Port Access : 22%
 - Foreshore Parking and Amenities : 9%
 - Wharf Facilities : 6%
 - Marine Services : 2%
 - Top three (3) facilities were well appreciated by most respondents.
 - Foreshore facilities were utilised but not of primary significance.
-

7. (Q7) How Marine Investment Should be Funded

- Commonwealth Government : 37%
 - State Government : 37%
 - Local Council : 3%
 - Private Sector : 7%
 - Equal preference for future Commonwealth and State Government funding;
 - Low preference for private sector;
 - Lowest preference was for local Council funding - reflecting an understanding of existing Council revenues/costs;
-

8. (Q8) Preference for Pier Site

- Site 1 – Old Pier Site : 49%
 - Site 2 – Croquet Lawn : 19%
 - Site 3 – Channel Entrance : 20%
 - Almost 50% of respondents preferred the Old Pier Site for the new pier.
 - Similar lower levels of preference for the alternative sites at the Croquet Lawn and Channel Entrance.
-

9. (Q8) Top priorities for improvement/expansion, in terms of existing facilities/amenities involve

- improvements to recreation boating/sailing facilities;
- improvements to commercial shipping infrastructure; and
- commercial port access, for existing and possible future commercial vessels.

These three items accounted for 80% of all single response suggestions for improvements.

10. (Q9) Other Council priorities

Varying comments including;



- Improvements to foreshore/beaches from erosion, stormwater issues; and
 - Improvements to river entrance
-

5.3 Working Group

Establishing a Working Group (WG) was an important component of the community engagement process for the BFMP project. The WG consisted of a broad range of community interests and values.

The WG was a community-based committee developed to work constructively with the project team to ensure community issues and concerns in relation to the BFMP were identified, and where possible, addressed through appropriate planning and engagement processes.

Members were encouraged to raise community concerns at WG meetings and provide feedback on the information/outcomes of the project work.

The guidance of the WG was sought on matters that require community input.

The role of the WG was to:

- Enable information to be disseminated to the broader community via their existing networks;
- Enable community issues to be identified and addressed;
- Facilitate an increased understanding about the project;
- Enable community input on a range of matters throughout the project phase;
- Facilitate involvement in the project by the community;
- Represent different views on the project and ensure those views are considered;
- Facilitate a more effective response to emerging issues and concerns for the project team;

Specific matters for consultation by the WG included:

- Contribute and review of concept design options for the public benefits and to meet the community's needs;
- Assessment of socio-economic risks and opportunities associated with all phases of the project development, construction and operation; and
- Ongoing community consultation processes as the concept develops.

The aim of the WG was to represent a diversity of public viewpoints and ensure that the project objectives were being met and that the project outcomes could be realised. Consensus amongst members was not required on all issues discussed. Rather, different viewpoints were sought.

The WG was not a decision-making body.

5.3.1 Project Economic Justification – Strategic View

Design workshops and WG meetings were undertaken to identify the vital function and user requirements for marine infrastructure, port access and what recreational and commercial opportunities would be available with any new or upgraded marine infrastructure.

The intent of the meetings/workshops was to provide ideas and information on key drivers that could increase utilisation of marine infrastructure within the defined study area, including:

- Navigation improvements for safe access;
- Existing access constraints;
- Facilities and access to marine supplies;



- Existing and future marine tourism needs and opportunities;
- Emerging commercial shipping trends affecting northern Tasmania; and
- Existing and current markets.

5.3.2 Key Messages from Design Workshops & Working Group

To help define what is the vision for the Bridport Foreshore Marine Zone, we discussed and explored what was the key stakeholder and community opinion on the following key items;

5.3.2.1 Access (Land & Water)

- Identification of critical marine access issues and improvement opportunities;
- Infrastructure requirements for a safe port (size, vessel capacity, services, vehicle access, location to amenities, etc.);
- Improvements in car and boat trailer parking for access to key infrastructure (boat ramp);
- Access to services (power, water, lighting, public toilets and showers, garbage disposal, etc.);
- Review of pedestrian access along the foreshore;

5.3.2.2 Physical Site Conditions & Limitations

- Limitations on existing facilities (boat ramp, port and wharf);
- Exposure to on-shore weather/sea conditions from Bass Strait;
- Sand migration from the west to east, constrains the current port entrance;
- Deposition of sand/sediments in estuary requires repeated maintenance dredging to ensure safe access and usage;

5.3.2.3 Economic Viability

- Current demand for marine facilities for permanent marine vessels and visitors;
- Emerging demand trends for visitation or infrastructure requirements;
- Impact on local businesses related to the infrastructure;
- Incentives for regional/Australian investment;
- Opportunity for foreign investment;
- Business & job opportunities associated with new infrastructure – including existing businesses; and
- Known business or infrastructure proposals or improvements that may link with safe harbour or marine improvements;

5.3.2.4 Statutory, Planning & Environmental Considerations

- Activity and use requirements;
- Landscape and vegetation management;
- Linking the foreshore with the town centre;

5.3.2.5 Community Requirements

- Community values and needs;
- Project to accommodate a range of uses;



- Set achievable guidelines for the future of the Bridport Foreshore;
- Improved public amenities;

5.3.2.6 Stakeholders Needs (Commercial & Government)

- Growth in recreational boating requires functional marine infrastructure and facilities to meet demand; and
- Potential for increased infrastructure in the port and on the land adjacent foreshore.

5.4 Summary of Key Stakeholders Responses

For the purposes of openness in stakeholder discussion we have not provided specific stakeholder names or businesses that participated in the project discussions. The responses provided below are unfiltered and form the basis of the consideration with regard to the objectives of the BFMP project.

5.4.1 Marine Infrastructure & Foreshore Users

As part of the stakeholder discussions we identified the existing and potential users of marine infrastructure and foreshore amenities for Bridport. These discussions identified common trends of traditional commercial fishing opportunities (both from Tasmania and mainland Australia) with emergence of larger recreational vessel visitation both from Tasmania and mainland Australia.

The recreational boating group offers the most consistent visitation, with potential for vessel stopover travelling north and south as well as destination trips.

The potential for the largest growth is in commercial fishing requirements with opportunity to attract for homeporting/calls for Victorian and NSW trawlers with new berth/fish catch handling facilities.

The following user groups were noted from the stakeholders and form the basis of marine infrastructure usage to Bridport:

Figure 5 Marine Infrastructure & Foreshore User Groups

Group / sector	Existing usage	Demands/needs	Marine Growth Potential	Additional Investment Opportunities
Commercial fishing	<ul style="list-style-type: none">• Port requirements (import/export);• Base for commercial fishing: scallops, scale fish, rock lobster, etc.• Vessels from both Tasmania and Victoria.	<ul style="list-style-type: none">• Port facilities;• Resourcing & supplies;• Access to fuel, water and food;• Maritime safety - shelter from seas;• Repairs and maintenance;	<ul style="list-style-type: none">• Based around growth in fish processing and packaging and exporting.	<ul style="list-style-type: none">• Vessel repairs and maintenance
Recreation vessels	<ul style="list-style-type: none">• Local resident usage;• Holiday peak demand usage• Generally short-term stays;	<ul style="list-style-type: none">• Safe shelter from seas;• Access to longer term berthing for visiting;	<ul style="list-style-type: none">• Large vessel movements up and down east coast of Australia;	<ul style="list-style-type: none">• Improved vessel security;• Vessel repairs and maintenance



Group / sector	Existing usage	Demands/needs	Marine Growth Potential	Additional Investment Opportunities
		<ul style="list-style-type: none"> • Access to fishing areas; • Access to laundry and cleaning services; • Access to fuel, water and food; • Repairs and maintenance; 	<ul style="list-style-type: none"> • Opportunity for longer term vessel stays; • Increase duration of stays (better facilities and security of safe anchorages); • Increased safety of navigation and access to Bridport 	
Freight Services	<ul style="list-style-type: none"> • Commercial freight services to Flinders Island; 	<ul style="list-style-type: none"> • Access to improved water depths to increase service output; 	<ul style="list-style-type: none"> • Opportunity to increase sea freight capability by handling additional cargo in both directions: 	<ul style="list-style-type: none"> • Potential sea freight savings to freight users;
Foreshore users	<ul style="list-style-type: none"> • Foreshore walking; 	<ul style="list-style-type: none"> • Foreshore infrastructure including formalised paths, viewing platforms etc. 	<ul style="list-style-type: none"> • Existing residents' market; 	<ul style="list-style-type: none"> • Existing use

5.4.2 Key Maritime Sites & Marine Infrastructure Requirements

The following sites were regularly identified (through key stakeholder consultation) as key areas for marine infrastructure and/or for marine access improvements:

- New River Entrance;
- Existing Port/Wharf Facilities;
- Boat Ramps;
- Historical/New Pier; and
- Local beaches and foreshore walks.



The immediate strengths and constraints of selected sites were also discussed. These are presented below:

INFRASTRUCTURE OPTION	CONSTRAINTS	STRENGTHS
EXISTING RIVER ACCESS	<ul style="list-style-type: none"> • Very limited access (approx. 1 hour a day), due to current depth of water • Depth constrained by bedrock on seafloor • Cost to blast and extract bedrock to achieve required depths of water • High probability of occurrence of Potential Acid Sulfate Soils (when dredging) 	<ul style="list-style-type: none"> • Existing entrance – known conditions/constraints! • No requirement to change existing environment
NEW RIVER ACCESS	<ul style="list-style-type: none"> • Aesthetics, some residents may not find the view palatable • Significant cost for rock groynes – access, transport, redundancy of existing • Potential impact to local coastal processes and coastal flora/fauna • Increased cost for construction • Requires new formed access roads 	<ul style="list-style-type: none"> • Achieve depth of water requirements for commercial and recreational vessels • Achieve all tide access (up to 18 hours per day) • Would provide a shorter distance for vessel into existing Port/Wharf area for berthing and access • Provides freight security for Flinders Island and Furneaux Group • Provide a safe harbour for boating – recreational & commercial • Likely to decrease the maintenance dredging requirements • Create a continuous and accessible beach along Goftons and Barnbougle beaches
OPTION 1 – NEW MARINA IN TRENT WATER	<ul style="list-style-type: none"> • Cost • High probability of occurrence of Potential Acid Sulfate Soils (when dredging) • Large construction footprint and dredging works 	<ul style="list-style-type: none"> • Located within existing port/wharf zone • Enables boat ramp to be included in design and provides adequate parking options • Have increased tide access to public boat ramp • Includes trailer parking & public amenities • Opportunity for commercial development associated with marine business • Larger development (longer term demand)



OPTION 2 – MARINA ALONG CHANNEL TO PORT	<ul style="list-style-type: none">• Public acceptance of the location of the marina and the associated car parking and amenities• Significant cost for the number of berths offered• High probability of occurrence of Potential Acid Sulfate Soils (when dredging)	<ul style="list-style-type: none">• Separates the commercial port and the marina for use of river• Provides good navigational safety
OPTION 3 – MARINA AT THE WHARF (PUBLIC JETTY)	<ul style="list-style-type: none">• Potential interactions with freight vessels	<ul style="list-style-type: none">• Cost effective option• Meets the berth demands of economic viability for funding application• Effective use of existing wharf infrastructure• Located within existing port/wharf zone• Existing commercial wharf to use for product distribution and processing



5.5 Opportunities Identified Through Consultation

A key component of the stakeholder engagement was establishing and discussing with the working group potential opportunities for marine infrastructure at Bridport. The following table 4 provides a summary of identified opportunities.

Table 4 Opportunities from marine infrastructure works

OPPORTUNITIES	
To revitalise/expand commercial fishing operations.	<ul style="list-style-type: none"> • Bass Strait; • NE seaboard of Tasmania;
To expand the capacity of the commercial wharf facilities	<ul style="list-style-type: none"> • Extend length of wharf; • Berth spaces for 6 – 8 homeported fishing/trawler boats; • Berth spaces for up to 6 additional slots to unload fish products over 4 hours. Up to 20 tonnes per catch can be expected; • Water depth for access/egress needs to be an additional 1 – 2 meters; • One extra metre – gives an additional 3 hours of time at berth (currently a maximum of 1 hour is possible for turnaround); • Two extra metres – would give 12 – 16 hours of time at berth. Will not have 24-hour access;
Opportunity to expand processing/packaging and dispatch of a range of fish products	<ul style="list-style-type: none"> • Scallops; • Octopus; • Abalone; • Shark; • Orange roughy (now available); • Salmon (from Devonport area); • Crayfish (west coast and Bass Strait);
Opportunity to attract for homeporting/calls for Victorian trawlers	<ul style="list-style-type: none"> • At least 4 will come if access/egress is upgraded; • Going down to Triabunna/Hobart is too far; if Bridport was available, it would be utilised;
Opportunity to increase seasonal workforce.	<ul style="list-style-type: none"> • Could have 40 to 50 for processing/support during May to December; • Will require better car parking and road access;
New entrance concept to enable access depth for up to two (2) metres	<ul style="list-style-type: none"> • Potential to use the existing river for aquaculture (oysters) after the new access is completed;
Possible to develop further support activities for the commercial boats	<ul style="list-style-type: none"> • Hull maintenance; • Engines;



	<ul style="list-style-type: none"> • Hydraulics; • Communications/electronics/electrical;
Ideal opportunity for the development and promotion of Bridport as a safe harbour	<ul style="list-style-type: none"> • for Bass Strait entrance; • NE coastline of Tasmania, including Flinders Island; • ocean yachts will be encouraged, particularly pleasure sailing via Barnbougle to Binalong Bay;
Bridport pier can remain as an iconic visitor attraction.	<ul style="list-style-type: none"> • A good project component, which should remain in the Masterplan for the next 5 years, after commercial port redevelopment;
Infrastructure upgrading for key public assets	<ul style="list-style-type: none"> • Small boat ramp relocation or upgrading; and • Board walks and benches for walking along the foreshore (seniors submarket).

6. Preliminary Site Analysis

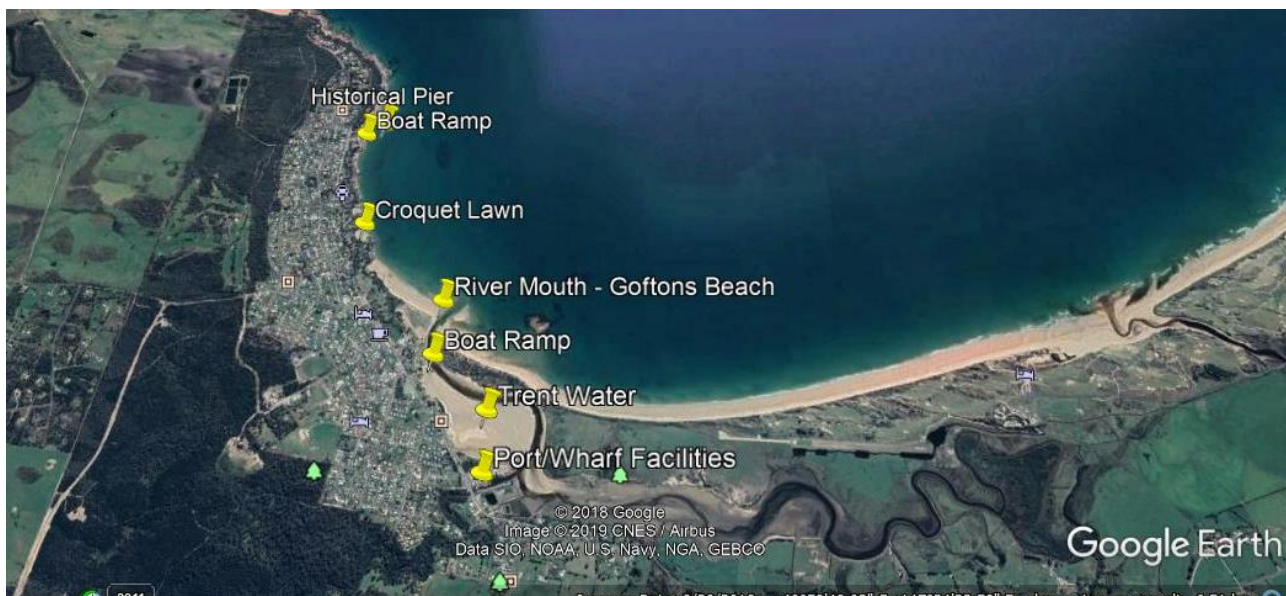
6.1 Site Assessments

Initial site investigations were conducted on the, 28th and 29th August and again on the 30th October 2018 by the project team (engineering, environmental and economist) to identify the site features and inputs into the Preliminary Site Assessment and Appraisal of Project Design Options.

A total of six (6) sites, within the study area were visited, these included:

1. Port/Wharf Facilities (existing);
2. Boat Ramps in Trent Water (existing);
3. Old Pier Beach/Point (historical pier & existing boat ramp);
4. Croquet Lawn Beach (potential pier location);
5. Goftons Beach (existing river mouth access); and
6. Trent Water (at low tide).

Figure 6 Aerial of sites visited at Bridport



The existing marine infrastructure within the study site consisted of the following;

Port

The current marine facilities at the port site include:

- Main Wharf (commercial & recreational vessels);
- Finger Pier;
- River & Channel entrance;
- Ro-ro wharf for commercial shipping (Furneaux Freight);
- Port hardstand and storage area (Furneaux Freight);

Boat Ramp (Trent water)

The current marine facilities at the boat ramp site include:

- Two ramp lanes for access;
- Gangway;
- Pontoons; and
- Small car parking area.

Historic Pier

The current marine facilities at the historical pier site include:

- Historical timber piles;
- Boat Ramp that includes;
 - Formed boat ramp; and
 - Access jetty

Photo 1 Existing boat ramp at Trent Water (low tide)



Photo 2 Existing Jetty in Port



Photo 3 Existing Boat Ramp & Old Pier

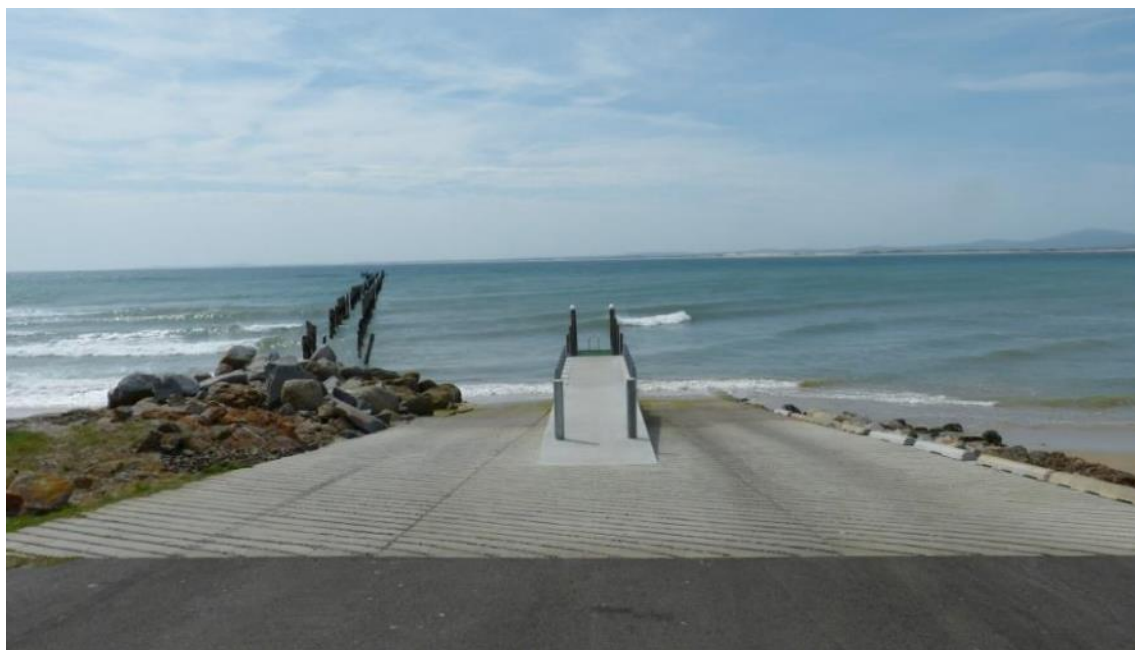




Figure 7 Site Assessment Summary Review

Location	Existing Facilities	Consultation Inputs	Advantages	Disadvantages
Historical Pier & Boat Ramp	<ul style="list-style-type: none"> Remains of old timber piles; Boat ramp (2 lanes); and Small layup jetty/landing; Car parking (limited); Limited services and supplies 	<ul style="list-style-type: none"> Existing public boat ramp; Can be combined with an upgrade to existing boat ramp (or relocation of ramp from Trent Water area); Pier upgrade would be for recreational use only; Reputation amongst “boaters” as difficult to access in difficult wave and tidal conditions; Would require wave attenuation for all weather protection particularly from westerly waves from Bass Strait; 	<ul style="list-style-type: none"> Existing permitted usage with existing boat ramp facilities; Improves recreational boating infrastructure; 	<ul style="list-style-type: none"> Predominantly recreational vessel focused; Difficult approaches; A distance away from town centre; Visual impact of the infrastructure; Will require maintenance dredging of the channel access;
Port Precinct	<ul style="list-style-type: none"> Port Jetties; Freight facility; Boat building capabilities; Fish processing facility; Access to services & supplies; Car parking (minimal); 	<ul style="list-style-type: none"> Existing port jetties are used for commercial and visiting recreational vessels; Need expansion of the capacity of the current wharf facilities; Potential to expand commercial fishing opportunities; Access to services (power, water, lighting, garbage disposal, etc.); 	<ul style="list-style-type: none"> Existing port infrastructure; Permitted use and opportunity to allow upgrade in conjunction with MAST; Infrastructure investment can be combined with wider use (port, commercial, recreation, tourism, etc.); Services of the existing port; 	<ul style="list-style-type: none"> Depth limited; Tide constraints (only access port safety in high tide); Public access and separation of commercial port secure areas; Will require periodic maintenance dredging; Aging infrastructure; Significant cost investment; No public amenities (toilets, washing etc.); Town requires upgrades of infrastructure to support additional development growth; Difficult approaches;
Boat Ramp in Trent Water	<ul style="list-style-type: none"> Public boat ramp; Car parking; 	<ul style="list-style-type: none"> Reputation amongst “boaters” as difficult to access in difficult wave and tidal conditions; 	<ul style="list-style-type: none"> Road access; Allows for wider economic gain for businesses associated with increased usage; Access to existing services; 	<ul style="list-style-type: none"> Tide constraints (only use safety in high tide); Limited boat trailer/car parking;



7. Pre-Feasibility Screening Evaluations

7.1 Strategic Observations

7.1.1 A 'SWOT' Perspective

Critical to the typical development of a successful socio-economic investment strategy is a realistic assessment of a community's suitability and competitiveness as a commercial and recreational location. An analysis of the Bridport community's strengths, weaknesses, opportunities, and threats (SWOT) identifies the internal and external factors that make the Bridport destination a competitive location or that may constrain potential future growth.

A SWOT analysis also considers what factors and /or elements are in place (or need to be put in place) to ensure the community's socio-economic resiliency or long-term sustainability. A SWOT analysis typically provides a framework for identifying local action items and priorities, and for creating a list of priority items under each category to help decision makers build on community strengths, address weaknesses, take advantage of opportunities, and prepare for possible future threats.

SWOT Defined:

- **Strengths** are a destination's relative competitive socio-economic advantages (e.g. maritime supply chains and clusters, commercial port facilities, road, airport, specialised workforce skills, regional partnerships, outdoor recreation amenities and attractions).
- **Weaknesses** are local issues or characteristics of infrastructure that limit or constrain a community's economic growth and development. Weaknesses are internal limitations or constraints that make the local economy less competitive unless they are eliminated or minimised.
- **Opportunities** are conditions and investment concepts that, if capitalised on, can contribute to improvement or progress in achieving economic development objectives and enhanced social and environmental amenities.
- **Threats** are external factors or trends and internal limitations that, if further realised, can threaten a community's future economic growth, leading to a weaker economy or local area decline (such as ageing population, infrastructure constraints, or local companies relocating to lower cost locations).

An initial SWOT analysis has been undertaken for The Bridport foreshore marine zone to distinguish between internal and external influences (economic, technical, social, environmental) on any proposed project investments by public agencies, such as, MAST, Tas Ports; local residents, businesses and Maritime users/operators.

Using a SWOT analysis is a useful as a starting point for the strategic evaluation and planning.

Table 4 provides a summary SWOT analysis of Bridport foreshore. The results provide insights into the likely levels of success (or otherwise) for any proposed Marine Infrastructure.



Figure 8 Initial ‘SWOT’ Analysis of Bridport Marine Infrastructure Options
(Based on Field Investigations & Interviews)

Strengths	Threats
<ul style="list-style-type: none">• Bridport has natural resource assets (white beaches, scenic coastal vistas, coastal walks);• Attractive village shopping precinct;• Public Boat Ramp (x2).• Commercial shipping berths and storage areas.• Public wharf for commercial & recreational vessels.• Homeporting for Bass Straight Islands services.• Upgraded road access.• Historic relics/old pier.• Access to world class golf facility.• Access to boutique wineries/fruit farms.• Viable small vessel boat building/repair capability.• Friendly and unpretentious community.	<ul style="list-style-type: none">• Lack of State/Commonwealth support for commercial infrastructure upgrading.• Failure to provide additional 1 to 2 metres of channel/river depth for commercial vessels.• No long-term tourism development vision and strategy.• No development planning to attract private sector marina investment.• Failing to attract new tourism-related investment (restaurants, entertainment, accommodation).• Tasmania State agency’s failure to recognise Bridport’s iconic features.• Failure to upgrade the existing caravan park, to capitalise on its foreshore surroundings.• Inability to develop a stronger synergy with Barnbougle.• Failure to develop a safe harbour for the NE coastline of Tasmania and for eastern Bass Strait.• Inadequate water supply and sanitation capacity remains unfunded.• Failure to develop commercial services for Winnebago’s/mobile homes.
Weaknesses	Opportunities
<ul style="list-style-type: none">• Limited navigation for commercial shipping/ shallow water depth.• Significant tide variations further limiting port access/egress.• Insufficient wharf length for berthing of larger commercial fishing vessels.• Seasonal water supply and sanitation constraints.• Limited range of evening entertainment venues.• Variable internet service.• Limited public transport/taxi services.• Unappealing adjacent caravan park facilities.• Limited tourism signage/billboards.• Absence of seating/shelter along coastal walks.• Service facilities for hired Winnebago’s/mobile homes.• Limited boardwalks/easy access to beachfront.• Limited back-up area from expansion of commercial fishing/commercial shipping services.• No marina facilities to provide outdoor recreational boating/sailing for local, regional, inter-state boat owners.• No dry stacking or storage for kayaking/canoeing.• No new tourism-related infrastructure or assets to encourage new forms of tourism.	<ul style="list-style-type: none">• Develop a safe harbour or ocean-going yachts and small commercial vessels.• Attract additional commercial fishing vessels (homeporting).• Expand fishing processing and fish exports.• Expand recreational boating and sailing activities with marine facilities.• Attract additional Tasmanian, interstate and international visitors.• Improve the walking track experiences for residents and visitors.• Expand the conference/convention market.• Develop biodiversity tours/exhibits for school groups.• Attract small cruise ship visits/onshore tours.• Promote new forms of adventure tourism (kite surfing, hand gliding, dune biking).• Construct a new Pier (adjacent old pier relics)• Upgrade the existing airstrip and terminal facilities.• Development of oyster leases, with sheltered water.• Marina facilities to enable easy access/egress from berthed yachts and powerboats.• Construction of marina-based café and bar/outdoor entertainment facilities.• Mooring facilities to allow for the development of a small business to hire dinghies/outboard engines.



7.2 Economic Justification Strategic View

To identify a strategic vision that encapsulated an aim to;

- Optimise/maximise the marine infrastructure to be developed in Bridport over a 20-year period; and
- Major development target is the provision of infrastructure to develop/expand Bridport's commercial sector and marine recreational facilities.

The project team identified, discussed and established the following opportunities through stakeholder consultation, especially during the three (3) working group meetings.

7.3 Working Group - Assessment of Design Options

On completion and presentation of the SWOT analysis to the working group, time was provided for the working group to discuss and recommend any design solutions and to identify the preferred marine infrastructure sites and requirements for more detailed investigations and assessment.

The results of the working group appraisal are highlighted in the following sections.

7.4 Working Group Pre-Screening Summary

Of strategic importance is the role of future public and private investment in any proposed marine infrastructure options, to be dispersed with Bridport. Rather than a concentration of marine-based public and private investment in one location, investment should be allocated across the outlined study area in Bridport.

In the identification of the overarching strategic relevance and significance of any proposed marine infrastructure investment at Bridport, it was outlined to the working group that to develop any potential development opportunities. The following sources of funding would need to be developed:

- I. All public sector (Local/State/Commonwealth),
- II. All private sector, or
- III. A mix of staged public and private sector investment.

The question posed for each marine infrastructure option was:

“What would be the likely impact (positive or negative) of the development of a range of maritime infrastructure (new river entrance, new pier, boat ramps, marina facilities, dredging, reclamation and access to land development)?”

The detailed site specific studies for each infrastructure site will result in greater identification of a preferred marine infrastructure and recommended design solution.

For preliminary design, infrastructure and concepts as referenced in the working group meetings included the following:

1. Port Expansion & New River Entrance:

- Provision of a new river entrance, with a rock groyne/ breakwater seaward of the existing port providing all weather protection;
- Providing marina facilities to increase berthing with the port precinct for a wide range of vessels;
- Enable marina amenities & facilities and new public boat ramp;
- Retainment of Trent Water backwater area for public use;
- Investigation into requirement for dredging and infrastructure costs is required;



2. New Recreational Pier

- Provision for a pier option should be viewed as a recreational pier (not necessarily exclusively for vessel access/berthing);
- Assessment suitability for recreational benefits;
- Opportunity to address commercial demand (subject to location); and
- Consideration to preferred site for design and construction.



8. Site Investigations

8.1 Marine Infrastructure Design

In conjunction with the site investigation phase a number of engineering solutions were considered for marine infrastructure within the investigated areas and defined sites.

In particular, the key design features considered in development of the marina layouts included:

- Site water depths;
- Surrounding infrastructure including navigation, separation distances and site lines;
- Impact on existing users (navigation and existing facilities) including commercial and recreational vessels;
- Proposed infrastructure requirements (new river entrance, wharf, marina berths, jetty/pier, rock groyne, boat ramp, etc.)
- Impact of new infrastructure on the environmental flows and existing natural environmental conditions;
- Land access and potential for managing land infrastructure requirements (car parking and services connections);
- Opportunity for staging on the basis of demand;
- Opportunity to enable connection with land and water;
- Appreciation of the site constraints through detailed investigations and planning requirements;
- Wave exposure, particularly with regard to new entrance breakwater alignment and safe vessel navigation and access;
- Breakwater preliminary design requirements for rock size, length and volume of rock;
- Provision of both permanent and itinerant berthing capacity;
- Concentration of marine facilities within close proximity to the existing and planned infrastructure; and
- Constraints and costs for dredging, reclamation and maintenance dredging (as required).

A key driver for the concept designs and engineering costs included resolution of the above components within the site investigation phase as noted further below.

8.2 Site Investigations

To deliver MAST with a detailed business case and project proposal, information required for a recommended project scope, as well as provide more detailed inputs for production of accurate engineering and construction costs, detailed site investigations were completed.

The detailed site investigations involved the following works:

- Deployment of survey vessels and equipment including dive cameras, dive equipment, sampling equipment, etc.;
- Site bathymetry surveys across the Bridport sites;
- Dive surveys for habitat mapping and characterisation;
- Sampling of sediments for potential contaminants of concern (i.e. such as around the port and wharves), for metals, tributyltin, acid sulfate soils and particle sizing (required for regulatory approvals and natural values assessment of the proposed design solutions);
- Extraction of site survey mapping for the Bridport region;



- Geotechnical jet probing to assess marine sediment profiles and identify any potential bedrock (to quantify and estimate conditions for dredging as well as maritime infrastructure);
- Documentation of a marine ecological investigation report for the proposed development which is a requirement of regulatory authorities (Crown Land Services, DPIPW, EPA, Council) on referral of marine/land developments;
- Review of site coastal conditions, currents waves and tidal behaviours;
- Mapping of historical aerials and coastal changes for the port, port entrance and surrounding beaches;
- Investigation of tidal constraints of the existing port and in particular change in tidal levels with river flows; and
- Engineering design development and drawings for developed concepts for marine infrastructure at nominated sites.

The aim of these investigations was to characterise ecological communities, map the bathymetry of proposed development footprints, and collect data to advise of any potential environmental impacts of developing marine infrastructure and further advance the engineering design for the proposed marine infrastructure.

Marine Solutions, a specialist environmental consultancy company, completed the detailed investigations and have documented their findings in the following report (Refer to Appendix C for a copy);

Marine Solutions (March 2019) – Marine and estuarine Environmental Assessment in Bridport.

8.3 Review of Suitable Sites for a Public Pier

A review of the sites within the Bridport are for supporting a public pier was undertaken including consideration of design, access, proximity to town and public services as well as potential function.

The sites included:

- Old Pier Site;
- Croquet Lawns; and
- West of existing port entrance (Goftons Beach).

Our investigations concluded that all sites could accommodate a new public pier. The old pier site has an existing public boat ramp which through modifications could be an improved recreational boating facility through installation of a longer jetty and berthing and mooring for vessels managing tide and exposure constraints. The site is a significant distance from the town and limited parking.

The croquet lawns site is closer to Bridport township and enhances public interface of caravan parks and crown land areas as well as better water depths for jetty extents.

The Goftons Beach site is more exposed however would have good access to parking.

A summary of the design requirements and limitations for each site is noted in the table below. A review of the jetty layouts for each site indicates that the length, size and scale would be consistent, with access to croquet lawn site requiring more works than the other options.



Pier Site Location	Concept Design Length to -4mAHD depth contour (Lm)	Access Requirements	Functional Use Options
Old Pier / Boat Ramp	340	Accessible from boat ramp car park, will need expanded parking.	Recreational boating, fishing, tourism
Croquet Lawn / Regatta View Point	300	Poor road access. Pedestrian access only.	Fishing, tourism (limited boating), closer to town centre,
Goftons Beach River Mouth	400	Accessible from existing car park with new road access required for construction.	Fishing, tourism (limited boating), closer to town centre, surf life saving.

For the purposes of this master plan and recognising the stakeholder and community engagement undertaken within the project we've recommended adopting the old pier site for this new public jetty.

The business case has been undertaken on the basis of costings from the concept design for the public jetty and likely economic benefits to assist Dorset Council with sourcing funding support for the project.

It is noted, that any of the above sites (old pier, croquet lawn and Gofton Beach) could incorporate a pier in the event that the wider community engagement identified as the most preferred site, funding availability and functional use.

The community engagement through this project identified the Old Pier as a preferred location for a new pier. It would be recommended that wider level consultation targeted specifically for the pier be undertaken to confirm the communities preferred site.

It was recognised through the stakeholder engagement, and in particular consultation with Dorset Council, that the public pier provides a wider community benefit than just through the Dorset Council. In addition the size of the pier would likely exceed Dorset Council's capacity to own and manage and therefore consideration to alternative ownership would need to be explored.



8.4 Concept Design Development

Concept designs were developed for the BFMP through iteration of input from the working group recommendations, key stakeholder input, site inspections, outputs from the site investigations and conceptual engineering design for suitable marine infrastructure solutions.

The concept designs developed incorporate the following marine infrastructure:

- Boat ramp upgrade to provide all tide capacity;
- Public pier/jetty with low landing (Stage 1) in conjunction with boat ramp upgrades;
- Public pier/jetty extension (Stage 2) to the boat ramp jetty to enable expanded use;
- New river entrance to improve port access;
- Commercial /recreational wharf facility upgrades;
- Rock groyne wall structures designed to suit coastal conditions and improve port access;
- New road and bridge culvert access for new port entrance;
- Dredging of the new port entrance;
- Development of up to a 20-berth marina facility, including floating walkways and gangway; and
- Decommissioning of existing river entrance.

A concept general arrangement layout for the proposed marine infrastructure is provided below.

The concepts centre around three (3) packages that are outlined.

8.4.1 Package A – New Port Entrance Feasibility & Detailed Study

- Detailed environmental and engineering studies that investigate the New River Entrance & Port Expansion proposed in Package D;

8.4.2 Package B - Boat Ramp & Public Jetty

This package of works will include the following:

- Upgrade of the existing public boat ramp facility at the Old Pier site extending the ramp seaward with elevated structure to enable greater tide access and allow sand movement below the ramp;
- Installation of a public pier/jetty with low landing (Stage 1) along the northern side of the boat ramp and immediately adjacent to the old pier piles (adjacent alignment);
- Minor works at existing river emittance (training wall modifications and continual dredging as required) for ongoing use of the port (status quo with budgeted maintenance costs).

8.4.3 Package C - Public Jetty Extension

This package of works will include the following:

- Extension to public jetty from the boat ramp jetty;
- The pier will allow for recreational and tourism vessel access for at least 2 metres of water at low tide;
- Provide a focal point for tourism, walking trails and events;

Figure 9 Site Location Map showing proposed development for Packages B and C

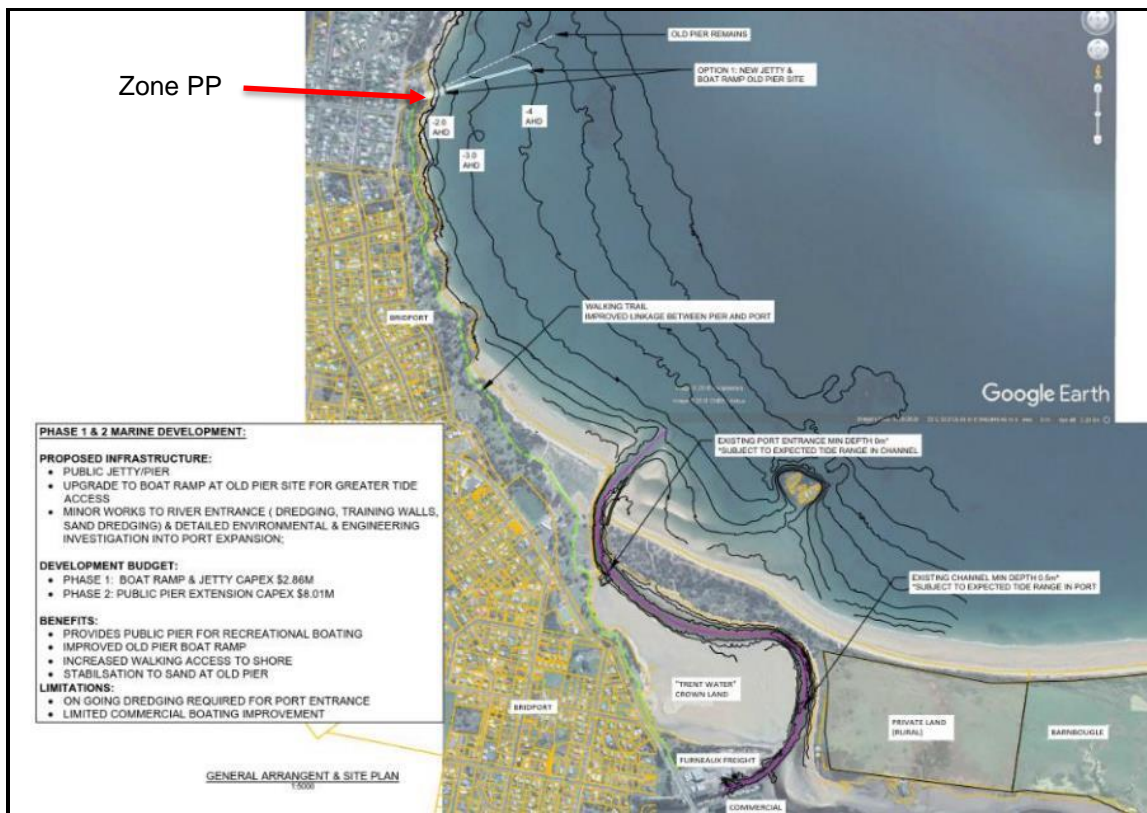
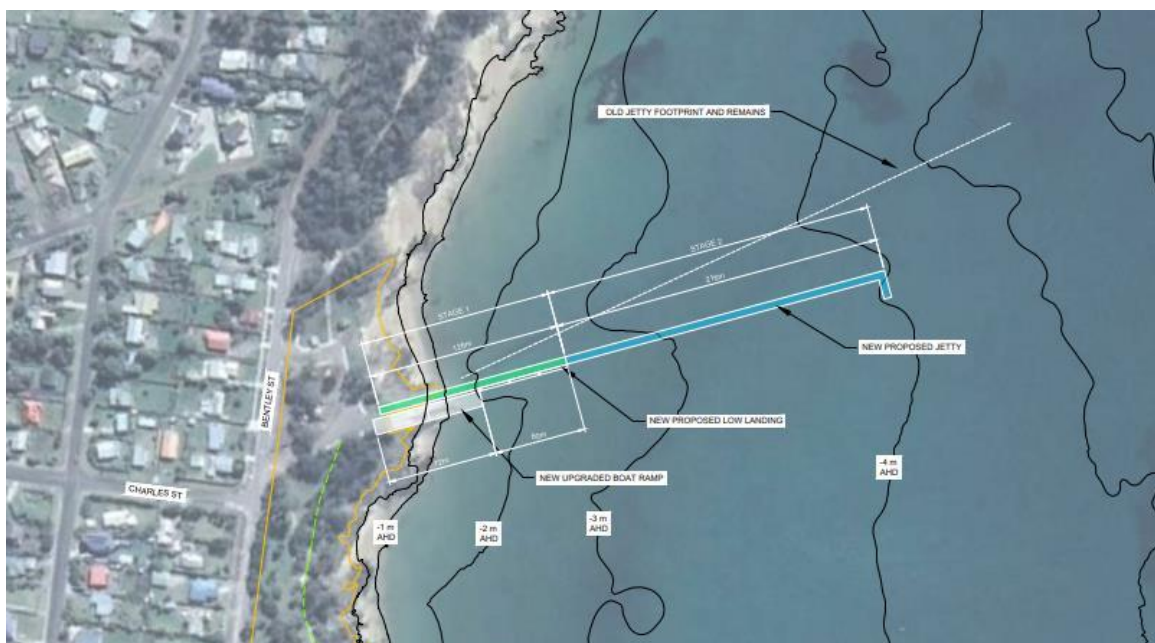


Figure 10 New Ramp and Pier Development (Packages B and C)



8.4.4 Package D – New River Entrance & Port Expansion

This phase will include the following:

- New river entrance with increased draft for commercial vessel access;
- Outer wharf for commercial or recreation boating access for all tide usage;
- Rock groyne wall structures to provide for a safe river access for the new entrance, enable vehicle access for outer wharf and provide protection to the wharf from waves and surge from the westerly quadrant of waves;
- New road and bridge culvert access for outer wharf;
- Dredging of port entrance;
- Development of up to a 20-berth marina facility, including floating walkways and gangway at the public jetty; and
- Decommissioning of existing river entrance.

Figure 11 Locality showing proposed development for Bridport River Zone (Package D)

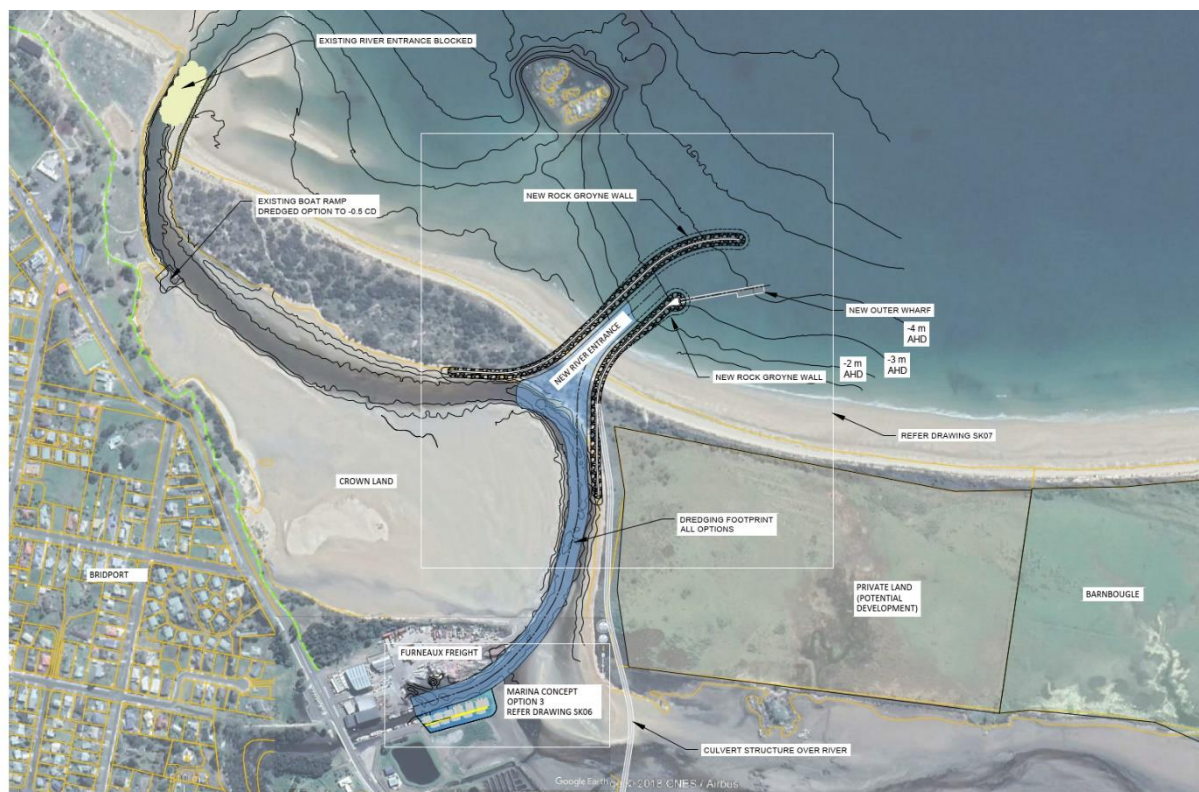


Image from LISTmap, 2019

An environmental assessment of the site and proposed development concepts were undertaken as outlined below.

8.4.5 Natural Values Survey (Marine)

A marine ecological investigation has been undertaken for the site. Marine Solutions were engaged to complete field surveys and undertake desktop analysis for the marine environment within the proposed development site at Bridport.



Generally, the benthic habitat throughout Anderson Bay was primarily coarse-grained ridged sand with shell grit, organic debris and drift algae. Patchy rocky reef with mixed macroalgae communities occur in the northern inshore regions, however no rocky reef was identified in the southern regions of Anderson Bay. Notably, seagrass habitat likely occurs within the area however no beds were identified in towed video transects.

The desktop search, including both the EPBC Act Protected Matters Search and Natural Values Atlas, identified a number of threatened or protected species that occur, or are likely occur, within the study area. It is recommended a management plan is developed to ensure threatened species are considered during construction processes, specifically including Australian grayling, cetaceans and marine reptiles. Surveys for Gunn's screw shell and the red handfish should also be considered prior to the commencement of approvals for any marine-based disturbances within the region.

For more detail refer to the Marine Solutions Report in Appendix C.

In summary, no sensitive benthic habitats exist in the direct footprint of the proposed infrastructure devolvement or dredging alignment, however additional species-specific surveys and management plans (particularly a Dredge Management Plan) are recommended prior to commencement of the approvals process for any marine infrastructure development.

8.4.6 Coastal Processes

Bridport is generally well protected from long-period ocean swells however, significant wind swells can be generated from strong north-westerly winds in Bass Strait as well as easterly weather patterns. The prevailing westerly waves can diffract around East Sandy Point and again around Granite Point before reaching the foreshore. These prevailing wind conditions help drive a net direction of sediment movement from the west to east, with an estimated net quantity of 13,000 cubic metres of sand per year.

The Trent Water estuary is characterised by a tidally dominated entrance, which has distinctive entrance shoals, a distinctive entrance channel and an offshore bar. The port within Trent water is only navigable in high tide conditions, due to the estuary trapping sediment continually and exacerbated by the shallow bathymetry of the waters in the adjacent Anderson Bay.

It is recommended that as part of the detailed environmental and engineering studies that investigate the New River Entrance & Port Expansion (Package A), a wave and current buoy be installed to provide a method of establishing the wave climate at the proposed marine infrastructure sites, which will provide an analysis of the coastal process occurring at the site.

As part of this project a review of the historical change to the port was assessed and is provided in the figures below. The current port entrance has changed dramatically since its installation of rock breakwater on the western side, then eastern side and extensions over time and tidal and coastal influences of the area.

The natural westerly coastal influence of sand has built up on the western groyne so much that the shoreline has dramatically changed over the last 30 years as is easily evident in Figure 12 below highlighting the differences between 1987 port entrance and 2018 port entrance.

The 1987 aerial highlights the wester rock groyne, no internal boat ramp and the eastern groyne only to the shoreline area which was later extended.

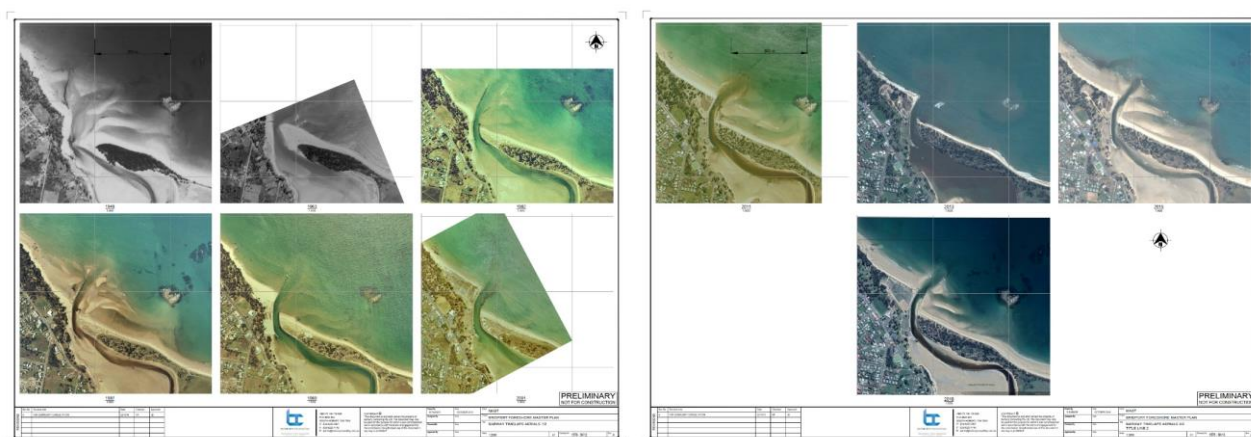
The ebb tide channel (easterly channel to the port as highlighted in Figure 12 below) has always been evident through the historical aerials and occurs from the outgoing tide projecting through the training walls and then overtopping the eastern training wall maintaining the easterly sand flow pattern through to Barnbougle Beach.

Without the continual flow of sand Barnbougle Beach would not replenish naturally and therefore any future changes to the port entrance need to account for continual sand bypass of the entrance.

Figure 12 Historical Aerial Mapping & Change (1987 and 2018)



Figure 13 Historical Aerial Mapping & Change (1949 to 2018)



8.4.7 Geology

A search of the Land Information System Tasmania (The LIST) Map indicates that Devonian, granodiorite and related undifferentiated granitic rocks are present throughout the project site. This dominant granite basement bedrock is overlain by Undifferentiated Quaternary sediments (dune & beach sand).

The ground conditions at the pier site are different, here the geology consists of Silurian aged, sandstone, with some interbedded siltstone.

8.4.8 Bathymetry

The proposed development area was mapped using two (2) vessels. Anderson Bay was mapped operating a larger vessel, using a CHIRP enabled broadband sounder Simrad NSS9 evo2 chart plotter. GPS position and water depth were logged every 2 seconds to *Seabed Mapper* run on a laptop computer. Due to the restrictive depths, Trent Water was mapped in a smaller vessel, using a CHIRP enabled broadband sounder Garmin EchoMAP plotter, also logging water depth were logged every 2 seconds.

Anderson Bay

The bathymetry within Anderson Bay was typical for a shallow coastal bay, with water depth gradually increasing with distance from the shore. The water depth is relatively shallow, with a uniform increase in

depth adjacent to the shore, with the exception of the Trent Water river mouth and the more eastern section of the study area.

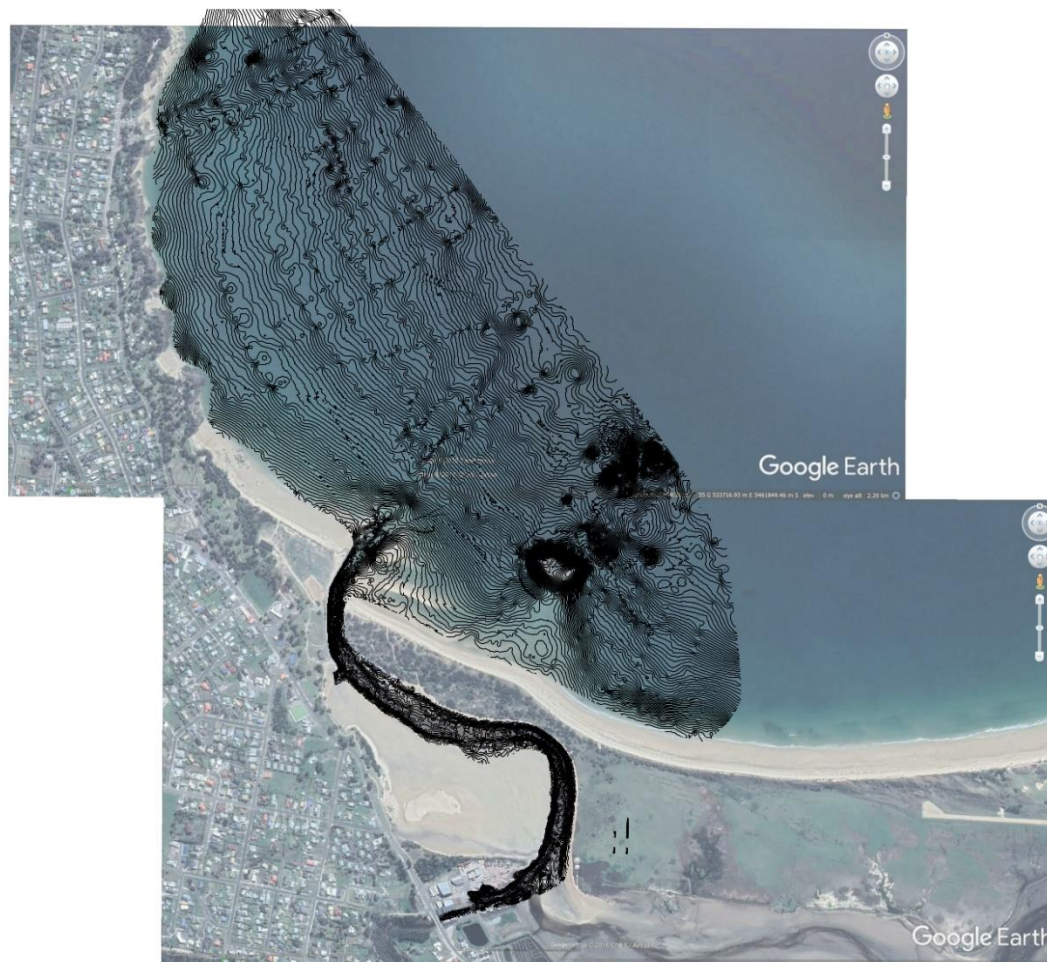
The water depth at the development site was considered sufficient for the proposed marine infrastructure proposed. Although the encountered depths did require the boat ramp and pier/jetty design limits to extend further out in the Bay to reach adequate depths of water and risks of all tidal access and wave exposure need to be well considered.

Hurst Creek (Trent Water)

The Hurst Creek river mouth is deeper than adjacent waters in Anderson Bay, with depths of 1m extending seawards of the training walls for approximately 250m. Hurst Creek itself is a narrow waterway with widespread shallow sand flats. The deepest section of the creek extends from the boat ramp to the river month. The creek quickly shallows from the boat ramp to the wharf. There is a deeper section adjacent the wharf area. Generally, the seabed has a number of features, including steep channel gradients, numerous shallow zones at the river mouth and the wharf and fluctuating depths within the channel.

For more detail refer to the Marine Solutions Report in Appendix C.

Figure 14 Bathymetric mapping zones





8.4.9 Acid Sulfate Soils

To characterise the marine sediments, and subsequent environmental risk of dredging the existing port channel and creating a new river entrance, Marine Solutions completed field investigations and analysis of the marine sediment. Marine samples were collected for Potential Acid Sulfate Soils analysis.

This testing regime identified the presence of acid sulfates in benthic sediments within the proposed dredging alignment. However, due to naturally high levels of calcium carbonate (likely in the form of marine shell deposits) sediments exhibit a high acid neutralising capacity and correspondingly a low liming rate requirement to render them a minimal environmental risk.

8.4.10 Geoconservation

A search of the Tasmanian Geo-conservation Database (TGD,) highlighted that one (1) listed geo-conservation sites resides within Bridport. The Northeast Tasmania Pleistocene Aeolian System is some 400m to the South East of the project study area. As there are listed geo-conservation sites within 1 km of the project study area, an assessment and subsequent report of potential impacts/threats to the listed sites and the geology, geomorphology and soils of the surrounding area is required (DPIPWE, 2015).

8.4.11 Landslide Risk

A search of the Land Information System Tasmania (The LIST) Map, produced by Department of Premier and Cabinet, indicates that all proposed marine infrastructure sites have not had any known landslides.

8.4.12 Sediment Contamination

To characterise the marine sediments, and subsequent environmental risk of dredging the existing port channel and creating a new river entrance, Marine Solutions completed field investigations and analysis of the marine sediment.

Marine samples were collected for contaminant analysis and tested for a variety of analytes. Results were compared against the Interim Sediment Quality Guidelines (ISQGs) from the Australian and New Zealand Environment Conservation Council (ANZECC) Water Guideline (2000) trigger values for Southeast Australian estuaries that have 'slightly to moderately disturbed ecosystems'.

Levels of contaminants, including tributyltin and copper, were all below ANZECC ISQG low trigger values, at all sites tested (refer section 4.3 of Marine Solutions Report), except SQ04, which had an elevated level of zinc above the ISQG high trigger value. Although zinc concentrations are considered moderately high at this site relative to natural background levels, a large fraction of this is likely not bioavailable and most species are tolerant of higher zinc levels.

8.4.13 Cultural Heritage (European and Aboriginal)

Barnbogle Beach (area of the proposed new entrance) may contain features of aboriginal heritage significance. Accordingly, an Aboriginal Heritage Desktop review will need to be undertaken to determine the sites cultural values.

8.4.14 Environmental Conclusion

The proposed development of marine infrastructure at Bridport presents some potential environmental and heritage challenges, principally due to the presence of Acid Sulfate Soils and verified records of threatened species in the marine environment, and the unknown details around the terrestrial natural values.



Any proposed marine infrastructure would need supplementary assessments to be conducted and any potential impacts of the proposed structures on the existing environment would need to be detailed within a Development Application (DA).

To provide a more accurate and comprehensive understanding of the environmental conditions at the proposed infrastructure sites, particularly in regard to deficiencies in information on terrestrial natural values, and cultural heritage, it is recommended that supplementary environmental investigations and analysis could be required where deemed necessary, including:

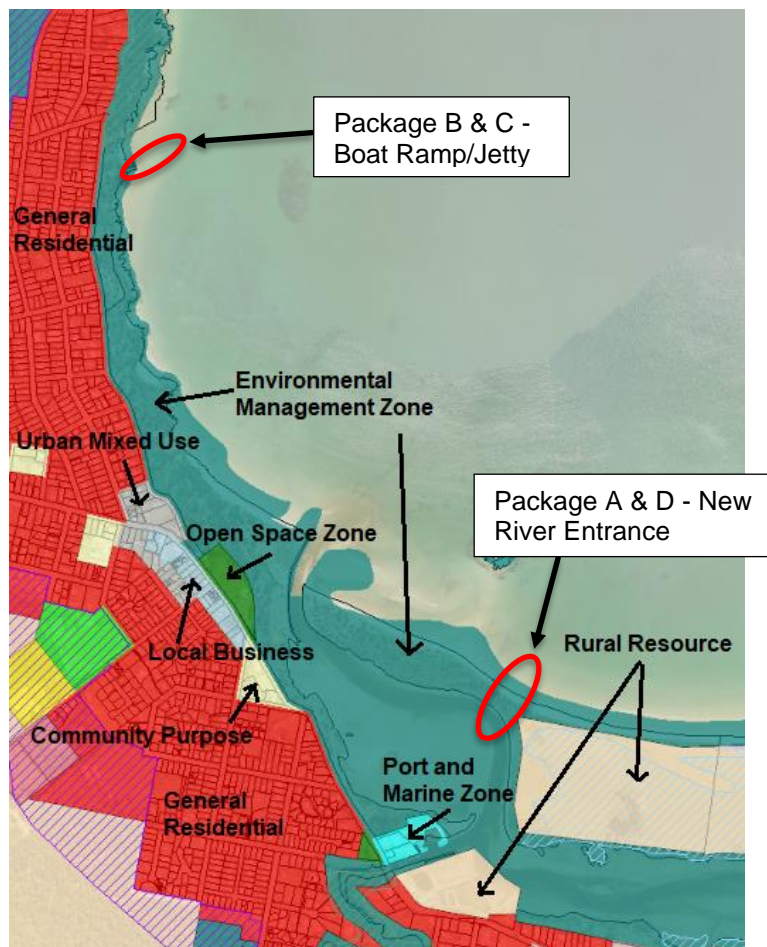
- Targeted (species-specific surveys) Marine Natural Values Survey for all marine infrastructure packages;
- Terrestrial Natural Values Survey; including:
 - Flora & Fauna (specifically for new entrance, new road access/bridge for Package A & D, any landside works & amenities zones);
 - Geo-conservation; and
- Cultural Heritage Assessment.

8.4.15 Planning Considerations

To provide MAST with advice on matters relating to Statutory Planning and Land Tenure requirements on the preliminary designs for the new marine infrastructure and associated land-based infrastructure proposed for Bridport, we have outlined the pertinent planning issues.

Given the focus of this study is on the marine zone the extent of the land within the Environmental Management Zone, of the Dorset Interim Planning Scheme, is most relevant. The below Figure 15 outlines the relevant zoning for the proposed infrastructure options.

Figure 15 Existing zoning of the project area and surrounds



(Source: theList)

The Purpose of the Zone is:

- To provide for the protection, conservation and management of areas with significant ecological, scientific, cultural or aesthetic value, or with a significant likelihood of risk from a natural hazard; and
- To only allow for complementary use or development where consistent with any strategies for protection and management.

Of significance for this project is the Environmental Management Zoning under the Northern Interim Planning Schemes is far more restrictive than the Northwest and Southern Interim Planning Schemes as well as the State Planning Provisions. Accordingly, the existing zoning for the proposed marine infrastructure does not allow for consideration for uses in Port and Shipping or Pleasure Boat Facility, including a wharf or marina and maintenance dredging. Consequently, a re-zoning application would need to be completed to enable the proposed marine infrastructure options to proceed through to a Development Application (DA) with Council.

Reserve Land

The study area involves areas of Public Reserve under the Crown Lands Act as shown in Figure 16 below.

Any works within Crown Land requires landowner consent to proceed. Accordingly, all the proposed marine infrastructure options will need to consult with and acquire landowners consent from the Crown Land Services (CLS). In addition, CLS will also need to provide their approval to lodge a DA.

Figure 16 Areas of Public Reserve (under the Crown Lands Act) within project area

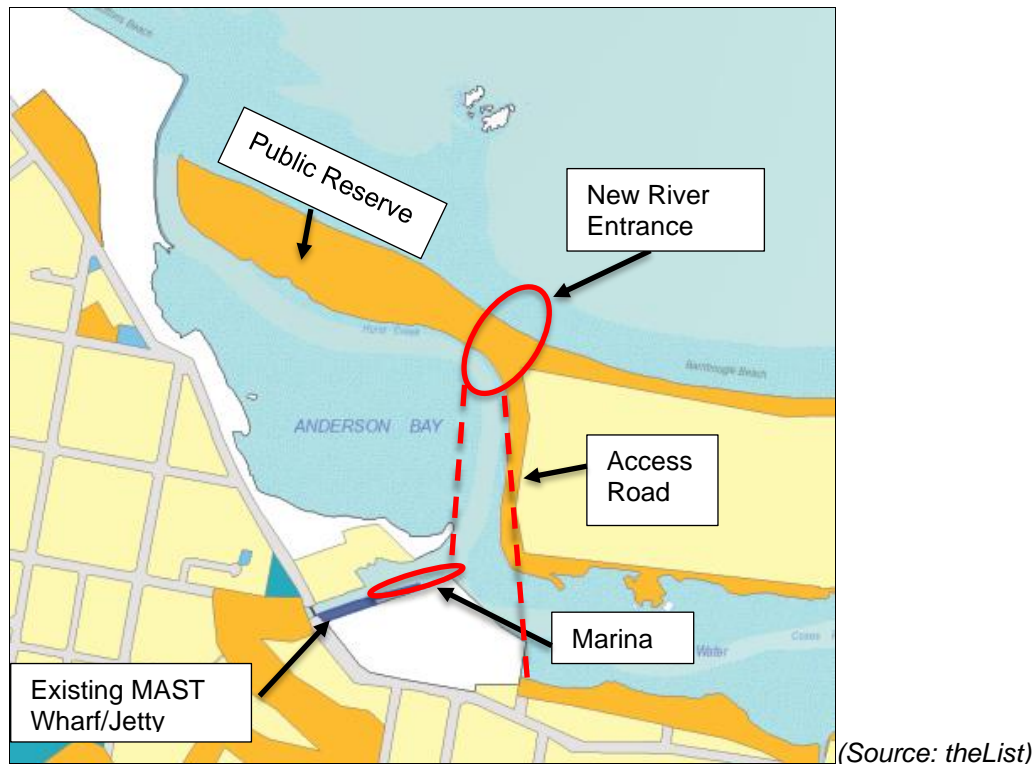
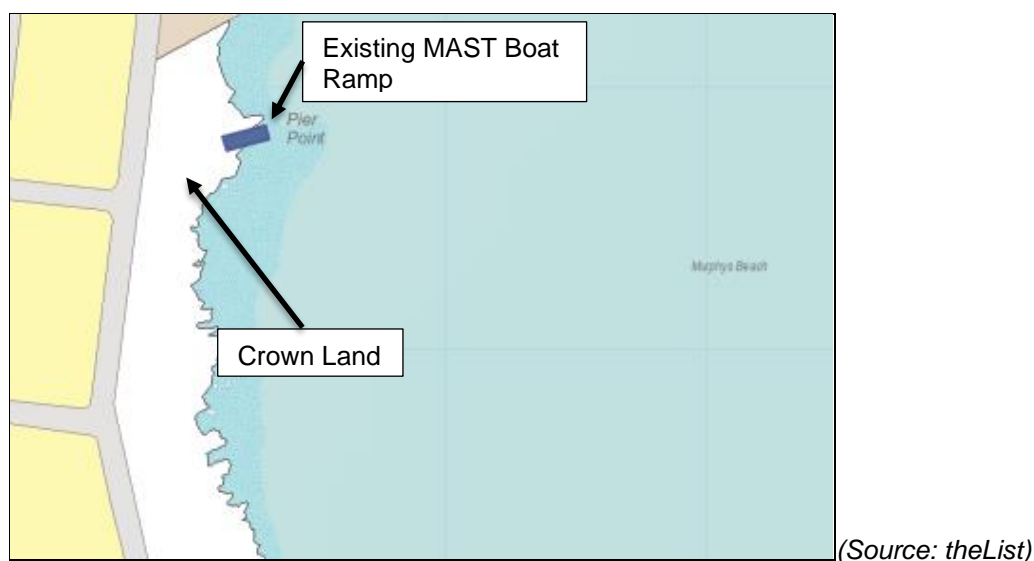


Figure 17 Area of Crown Land surrounding the Package B & C project area





The key issues to be addressed in any Development Application are likely to be:

- Environmental management (impact of proposed development on existing natural values);
- Landowner consent from Crown Land Services;
- Visual Impact;
- Navigation and impact of reduction of navigable water within Trent water and adjacent Anderson Bay;
- Availability of sewage pump out facilities for vessels and on land management (no infrastructure);
- Lack of water supply infrastructure;
- Traffic impacts associated with the boat ramp upgrade; and
- Coastal vulnerability, including assessment on the potential impacts on inundation and erosion potential for the proposed site.

It is also recommended that any proposed Development Application be preceded by community and stakeholder consultation.

8.4.16 Planning Conclusion

Given that community opinions on the proposed marine infrastructure developments will vary and the assessment of the eventual visual impact will be subjective, it is recommended that the planning concept of the infrastructure options would best be considered at a strategic level. This would initially be done as part of a comprehensive plan that holistically considers the benefits and impacts of the infrastructure proposals.

Assuming all environmental and potential heritage matters can be satisfactorily mitigated it is considered more than likely that the visual impact of the proposals would be of concern to some residents. The DA process enables, either matters of concern or positive attributes of the proposal, to be discussed and allows representations from citizens, so they are empowered to have their voice heard on any proposal submitted to the Council for a planning permit.

8.5 Conclusions and Recommendations

The aim of the environmental site investigations was to facilitate the identification of any potential environmental issues and planning constraints for the concept design options investigated. All identified issues were then considered in the context of applying for project approvals/DA with Dorset Council and regulatory authorities.

Considerations for each site included the potential for impacts to any threatened and protected species, disturbance to coastal processes and any potential impacts to natural values.

The site selection process considered minimising and identifying any adverse impacts on the following:

- Matters relating to statutory planning and land tenure requirements;
- Degradation of social and/or visual amenity;
- Disturbance or destruction of natural values; and
- Adverse impact on heritage values.

No significant planning scheme constraints were identified with the proposed development proposal.



9. Preferred Concept Designs

The recommendation for the following concept designs has been driven through consultation with the public, review and feedback from the project working group and key project stakeholders.

The concept designs were tested against the feedback from the public consultation phase and in particular identifying both critical marine infrastructure as well as aiming to maximise the economic potential for return on capital infrastructure investment.

The key criteria and foundations of the proposed recommended concepts include:

- Improvement to an all tide boat ramp facility;
- Key attraction for maritime connection through new pier;
- Improved port access for safe and greater tidal navigation; and
- Improved commercial and recreational boating facilities for attraction to home ports as well as expanded marine services.

To take advantage of funding opportunities we recommend targeting marine infrastructure in three (3) distinct infrastructure packages of works that outline the design options for each package.

Concept development plans have been prepared for each package (B, C and D), incorporating preliminary engineering design for the proposed infrastructure, engineering construction estimates and economic modelling for each package.

A program for implementation has been developed for the packages to suit potential funding sources however each package has been assessed as a stand-alone business case.

9.1 Package A – New Port Entrance Feasibility & Detailed Studies

Works will include the following detailed site investigations for the feasibility and engineering viability assessment for the development of Package D, including;

- Site investigation assessments – geotechnical studies, terrestrial and marine natural values assessments;
- Environmental, planning and approvals assessments;
- Scoping of approvals and environmental studies for legislative requirements;
- Coastal engineering review including wave modelling, sediment modelling, port entrance design, breakwall design, constructability and temporary works assessment;
- Development of front end engineering design (FEED) for project scope on the basis of the detailed site studies; and
- Refinement of construction & design cost estimates and economic analysis.

9.2 Package B – Old Pier Boat Ramp Extension & New Jetty

The package will include an upgrade to existing boat ramp facilities and providing a Public Jetty at the Old Pier site (Refer to Appendix A for Concept) and will include the following design items:

- Upgrade of existing boat ramp to enable greater tide access;
- Construction of public jetty adjacent to old pier site;
- Low landing with wave attenuating fenders for safe entry/exit from vessels;

- Wave screen attached to Jetty to attenuate wave action; and
- Enable options for extension of the jetty for Package C.

Further modelling and design development is required to determine the feasibility of ramp upgrade and low landing construction.

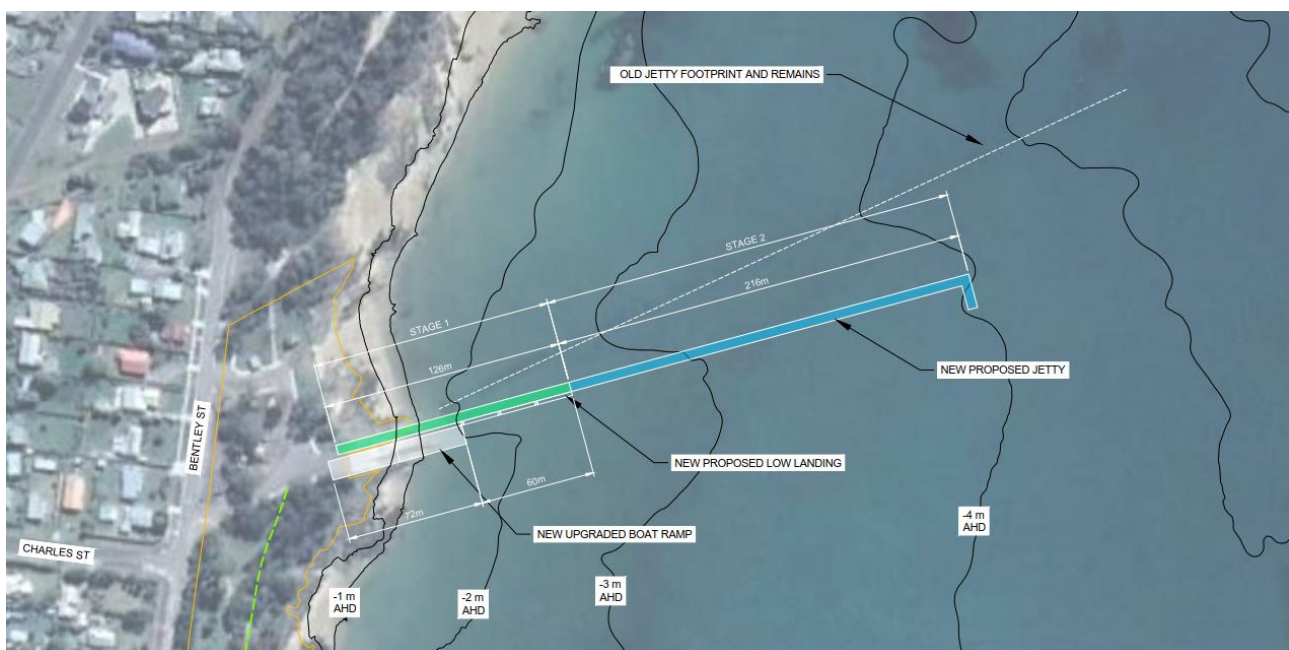
9.3 Package C – Jetty Extension at Old Pier

The package will include the extension of the jetty at the Old Pier site (refer to Appendix A for Concept).

The purpose of the jetty is to increase capacity for recreational and tourism vessels berthing at the site in wider range of tide conditions (particularly when the port access is limited).

The pier is also targeted at providing a central focus for tourism and attraction to Bridport enabling linkages from the town to the old pier site through existing and improved walkways.

Figure 18 General arrangement for Pier and Boat Ramp Extension (Package B & C)



9.4 Package D - New Port Entrance, Commercial Wharf & Port Marina

The package will include a New Port Entrance and Wharf Upgrade (refer to Appendix A for Concept) and will include the following design items;

- New River entrance with increased draft for vessels;
- Outer wharf for commercial or recreational boating – (all tidal access);
- Decommission existing River entrance;
- Maintain existing Boat Ramp, or relocate to Port;
- Options for expanded port berthing; and
- Options for integration with commercial or development activities (e.g. Marina).

9.4.1 New Port Entrance Breakwater

A concept alignment and design for breakwater training walls was developed based on the site analysis, detailed site investigations and design iteration for the entrance, dredging and design function. The design formation for the training walls was based on the existing survey and water depths, wave actions and harbour protection limits.

The outer alignment and hook of the breakwater was designed to provide optimum protection to the outer wharf and new river entrance.

The breakwater could be constructed in stages through back end tipping rock core and secondary rock with placement of armour rock on the seaward face required by a large excavator (30 tonne). The width of the breakwater would be designed for construction as well as providing vehicle/truck access.

Photo 4 Example of Rock Breakwater Construction (St Helens)



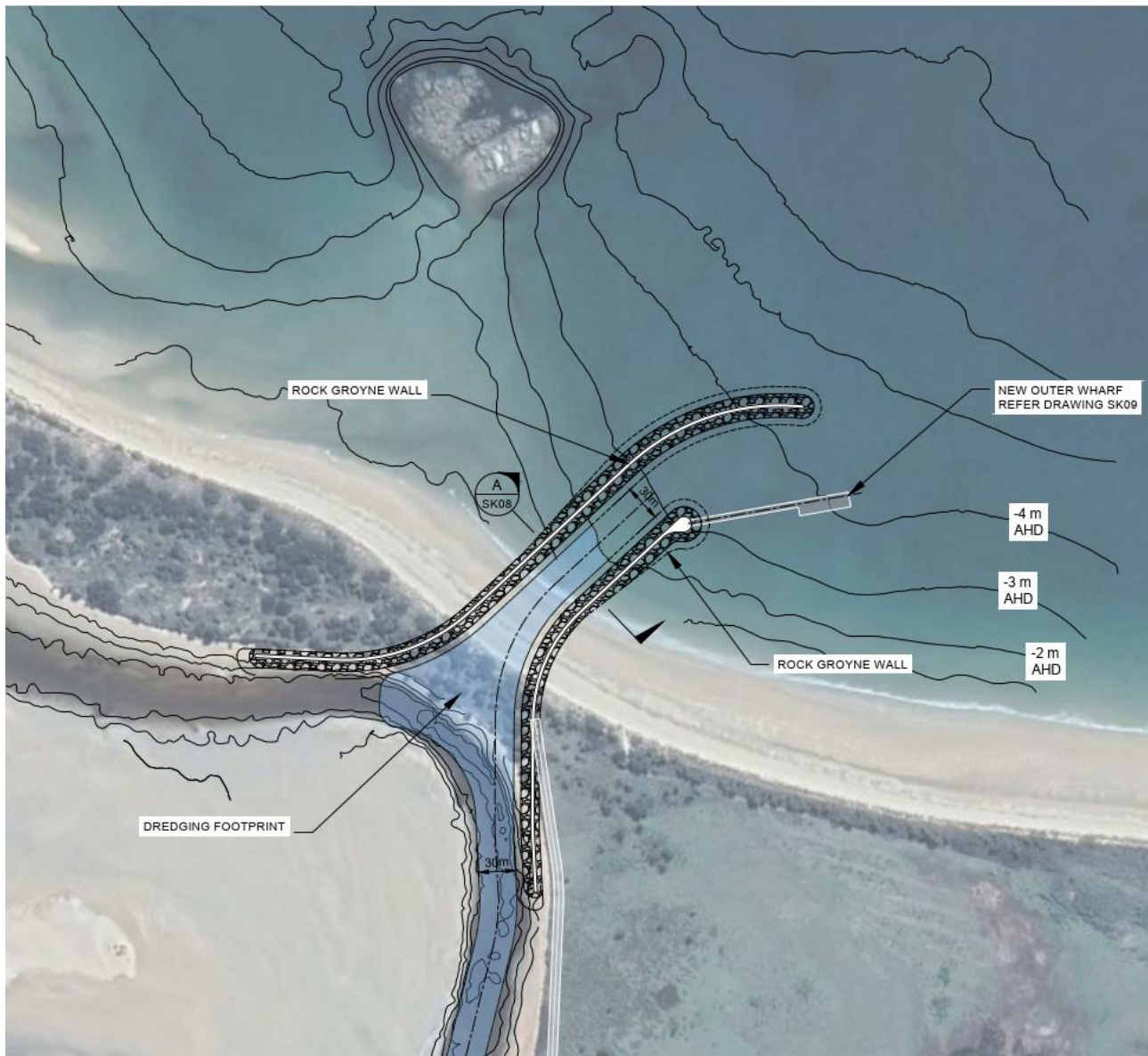
Photo 5 Example of Rock Breakwater Construction (St Helens)



The concept design for the rock breakwater was developed through hindcasting of the wave climate within the site areas and development of the required rock size for the breakwater design. Rock for the site would need to be developed with the following specification:

- Specific density > 2.0 t/m³;
- Core rock for the base formation of the breakwater < 100kg with <20% of rocks greater than 200kg for base formation;
- Secondary rock overlaying the core rock = 200-500kg in weight; and
- Armour rock nominal size (50% over the limit) = 5 tonne.

Figure 19 Breakwater Entrance



The dredging of the new port entrance would enable new sand renourishment of the Barnbougle Beach from the dredged sands (subject to assessments) allowing for approximately 75,000 cubic metres of sand to be placed along the main beach area (equivalent to 5 years sand movement). This initial sand renourishment would still need to be supported with a sand bypass installation to maintain the natural westerly sand movement.

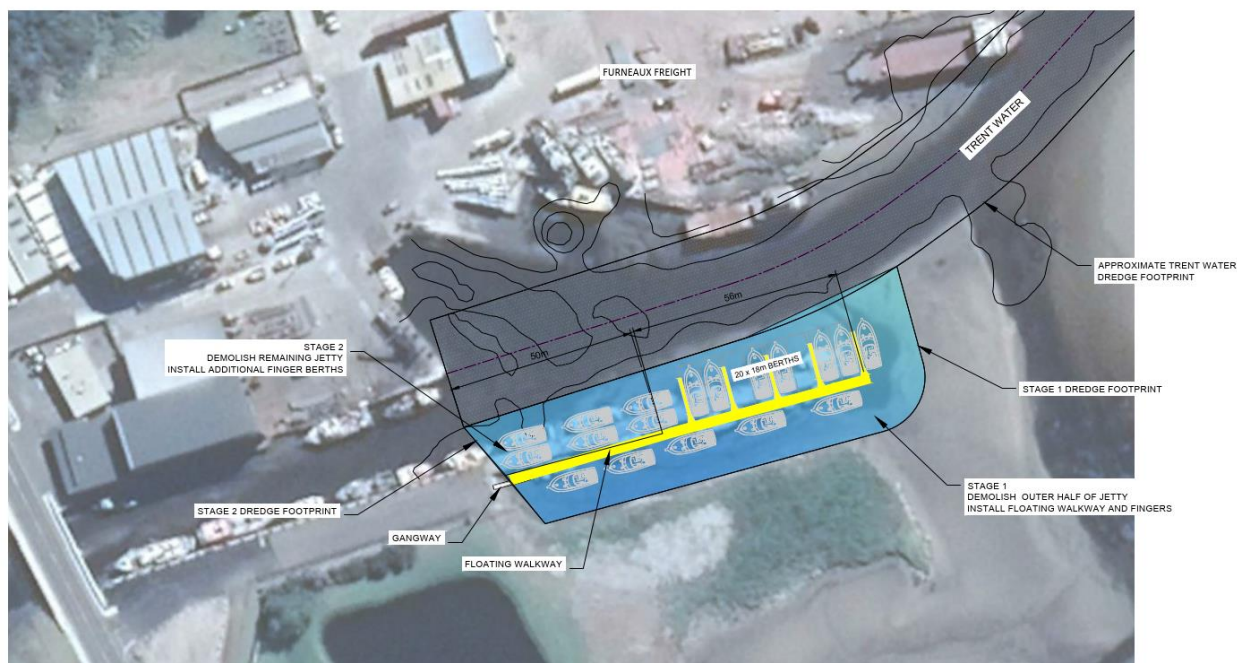
9.4.2 Marina Berth Opportunity

A proposed marina layout has been developed that allows for a staged construction with a mix of recreational and commercial vessels.

Water depths are constrained in the Port. In order to build the marina to achieve a maximum 2 metre draft for vessels dredging will be required.

Demolition of existing the jetty would be required to allow for the installation of floating walkways and berthing fingers. A gangway would be installed to connect users with the marina.

Figure 20 Proposed Port Marina



Generally, a marina mix is subject to demand assessment for the site and can incorporate a range of vessels sizes but for the purposes of the concept design we've adopted the following recommendation:

Figure 21 Proposed Marina Berth Mix

Berth Size	Berth No.
18m	20
TOTAL	20

The marina berth mix provided above is a guide and represents our assessment of an appropriate mix for the usage within the proposed site, current demand, future demand and the design limits for the available protected area. The final size of berths can be adjusted to suit demand but at this stage we recommend a focus on commercial & recreational vessels up to 18 metres in length however with the flexibility to cater for varying sizes subject to demand.

Photo 6 Example of a small scale Marina accommodating larger vessels





9.5 Engineering Cost Estimates

Engineering cost estimates were provided for the marine infrastructure on the basis of:

- Engineering design development completed for this study;
- Quantities for new infrastructure (Pier, boat ramp, marina pontoons, piles, gangway, road access, wharf and service);
- Quantities for rock groyne structure;
- Assumption that a suitable armour rock can be accessed within close proximity to the site (low transport costs);
- Required approvals and investigations to complete the detailed design and statutory approvals;
- Landside quantities and costs for car park, access paths, services, etc.; and
- Rates and construction costs for 2018/19 financial year.

The construction estimates have been detailed in three (3) infrastructure and a total of four (4) packages:

- Package A – New River Entrance & Port Expansion Detailed Feasibility & Studies
- Package B - Boat Ramp & Public
- Package C - Public Pier Extension; and
- Package D – New River Entrance & Port Expansion.



Table 5 Construction Summary

TOTAL PROJECT - Cost Estimate Summary		
	PACKAGE A	
1	Detailed study into port entrance	\$250,000
	TOTAL	\$0.250m
	PACKAGE B	
1	Establishment & preliminaries	\$120,000
2	New elevated ramp and jetty	\$1,884,000
3	New walking tracks & parking areas	\$435,000
5	Permits, engineering, project management, contingencies, etc	\$172,000
	TOTAL	\$2.611m
	PACKAGE C	
1	Preliminaries for construction	\$300,000
2	New pier with low landings, berthing infrastructure, etc	\$7,258,000
3	Permits, engineering, project management, contingencies, etc	\$454,000
	TOTAL	\$8.012m
	PACKAGE D	
	Dredging & reclamation	\$6,870,000
	Beach removal including vegetation	\$2,578,000
	Breakwaters including access, management and bypass & existing entrance closure	\$15, 935,000
	New wharf at port entrance	\$5,760,000
	New port marina	\$1,080,000
	Permits, engineering, project management, contingencies, etc	\$2,901,000
	TOTAL	\$35,124m
	TOTAL OF WORK (EXCL GST)	\$46million



10. Economic Investment and Business Case

This section of the report has been prepared to present the development logic and economic rationale underpinning the planning and engineering design work undertaken to develop a range of design options for marine infrastructure at Bridport.

From the range of design options, an investment analysis has been completed to identify the most appropriate investment option for subsequent, MAST and Working Group review and discussion.

10.1 Strategic Vision and Economic Justification

Northern Tasmania is a vibrant and expanding area of Tasmania. It represents approximately 30% of the total land area of Tasmania and has an estimated population of 145,000. It is comprised of eight Northern Tasmanian councils: Dorset, Break O'Day, Flinders Island, George Town, Launceston City, West Tamar, Meander Valley and Northern Midlands.

Bridport is centrally located on the northeast coast, with a natural coastal endowment appealing to all Northern Tasmanian residents. Bridport has a total resident population of 1,600 (2018 estimate), increasing to 4,000 to 5,000 in summer months. It represents a unique microcosm of Northern Tasmania in terms of:

- a. its unique natural environment, with appealing beaches centred on Anderson Bay and Bass Strait;
- b. a wide range of natural reserves, including fish resources, forests, wine yards, vegetable production;
- c. a pleasant and consistent climate, with stable weather patterns and reliable water resources; and
- d. a high-degree of liveability, with a corresponding enhanced quality of life for its residents and visitors.

As noted in the Northern Tasmania Regional Land Use Strategy, 2018, “Northern Tasmania’s landscape beauty, biodiversity and natural resources are recognised internationally”². By focussing on the enhancement of the foreshore of Anderson Bay, facing Bridport, the significant economic development potential of Bridport and its surrounds can be opened up for the Northern Tasmanian region, in particular, and for Tasmania, in general.

As reported in Section 3.2- The Logical Logframe Analysis, the overarching Goal (Strategic Vision) for the Bridport Foreshore Master Plan, is “to optimise the future infrastructure development of the Bridport foreshore, in terms of economic, social and environmental sustainability over the next 20 years”.

10.2 Economic Objectives

Major development targets have been identified. Each are to be supported by specific infrastructure investments for the commercial fishing sector and for recreational tourism activities. These include:

- (i) Revitalise/expand the existing commercial fishing operations;
- (ii) Expand the capacity of the existing commercial wharf facilities;
 - Extend the length of existing wharf;
 - Berth spaces for 6 – 8 homeported fishing/trawler boats;
 - Berth spaces for up to six (6) additional spaces to unload fish products over four (4) hours. Up to 20 tonnes per catch can be expected;
 - Water depth for access/egress needs to be an additional 1 – 2 metres;

¹ Northern Tasmania Land Use Strategy, p. 4



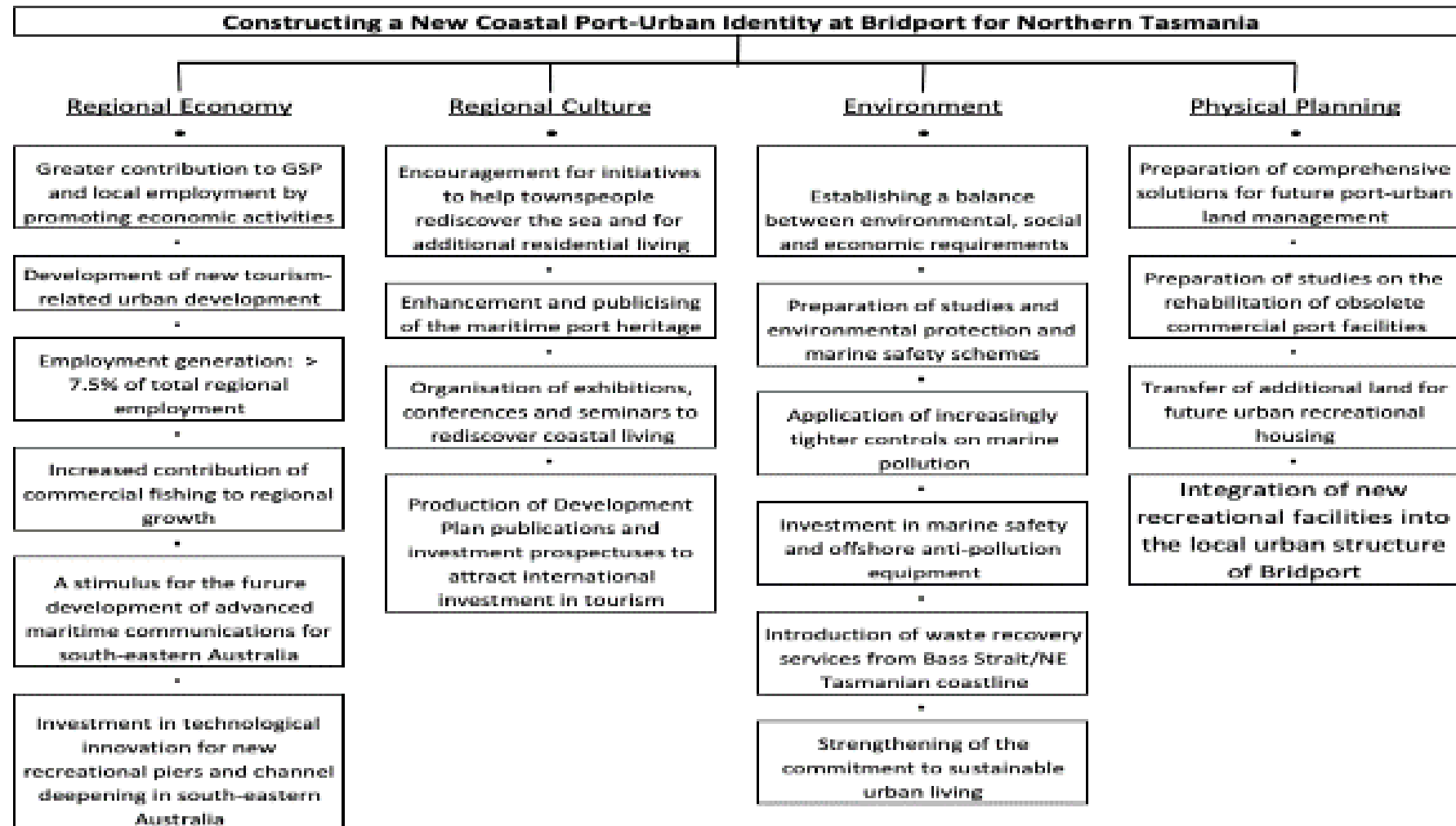
- (iii) Expand processing/packaging and despatch of a range of fish products;
 - scallops
 - octopus
 - abalone
 - shark
 - orange roughy (now available)
 - salmon (from Devonport area)
 - crayfish (west coast and Bass Strait)
- (iv) Opportunity to attract for homeporting/calls for Victorian and NSW trawlers with new berth/fish catch handling facilities;
- (v) Construction of a new recreational pier (replicating the historic pier) to encourage day visitors, and the expansion of additional foreshore recreation activities;
- (vi) Opportunity to increase the seasonal workforce for fishing/processing/servicing of vessels;
 - Could have 40 to 50 additional personnel for processing/support during May to December;
- (vii) Possible to develop further technical support activities for the commercial vessels;
 - hull maintenance;
 - engines;
 - hydraulics;
 - communications/electronics/electrical;
- (viii) Immediate infrastructure upgrading, to include;
 - Small boat ramp (relocation) or upgrading of existing ramp; and
 - Board walks and benches for walking along the foreshore (for seniors/ retirees).

The below Figure 15 provides a diagrammatic overview of the interactive nature of the proposed redevelopment of the Bridport foreshore/marine zone. Four (4) interlocking themes can be identified relating to likely future socio-economic and environmental impacts:

- Regional Economy
- Regional Culture
- Environment
- Physical Planning



Figure 22 Diagrammatic overview of proposed redevelopment at Bridport





10.3 Alternative Future Economic Scenarios

10.3.1 Development Status

In order to develop an economic justification for proposed foreshore investment in new infrastructure, and prior to the development of a Business Case, it has been necessary to consider what may be alternative future socio-economic scenarios.

Given the need for a long-term perspective for Commonwealth, State and Local Government public sector investment in public infrastructure (a minimum of 20 years), future economic scenarios need to reflect existing committed and planned infrastructure projects.

Key public sector infrastructure components currently completed or planned for the Bridport area of influence include:

- Development of the western road access.
- Water supply capacity expansion (additional task).
- Sewerage treatment capacity upgrading (additional).
- Caravan park improvement (environs and foreshore).

Major committed private sector development/investments include:

- Development of a major boutique hotel at the Lavender Farm.
- Expansion of the Barnbogle golf facilities (additional 9 or 18 holes).
- Construction of accommodation units for the Derby Bike Tracks.
- Construction of an additional 30 new residential homes.

The following Table provides a summary of the alternative future socio-economic development scenarios for Bridport.

Table 6 Alternative Future Economic Growth Scenarios: Evidence-Based

(i) Strong Economic Growth	(ii) 'Steady State' Economic Growth	(iii) Slow Growth ("As-Is")
<ul style="list-style-type: none"> • Strong investor interest from mainland states • Externally-driven by tourism investment • Further Barnbogle investment • Additional smaller resorts/tourist accommodation • Increased levels of retiree housing construction • Expansion in commercial fishing, with additional homeporting/landed fish volumes 	<ul style="list-style-type: none"> • Consolidation of existing tourism base • St. Helens and Triabunna divert commercial fish development from Bridport • Further retiree housing • Slower mainland interest • 'Steady' population growth: <ul style="list-style-type: none"> – 0-5 years: 3%-4% p.a. – 6-10 years: 2% 	<ul style="list-style-type: none"> • Limited further tourism development • Limited mainland interest • 'As-is' population growth: <ul style="list-style-type: none"> – 0-5 years: 1%-1½% p.a. – 6-10 years: 1%

<ul style="list-style-type: none"> Significant population growth: <ul style="list-style-type: none"> 0-5 years: 5%-6% p.a. 6-10 years: 4% 11-20 years: 4% 		
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Based on field interviews with commercial fishing, real estate and tourism sector representatives, Scenario (i), Strong Economic Growth is considered to be the 'Most Likely' future economic growth scenario for Bridport.

10.3.2 Demand for Bridport Recreation, Tourism and Commercial Fishing

Detailed and current data on the utilisation of Bridport's foreshore & marine zone for a range of outdoor recreation was unavailable from published or web-based sources. Similarly, detailed commercial fish catch data was unavailable. State-based data on commercial fishing was published for historic years to 2017/2018 by UTAS and IMAS by DPIW and by the Commonwealth DAWR³. However, for the purpose of the economic assessment of the likely viability of investing in new infrastructure for both enhanced outdoor recreation and expanded commercial fishing, the published data was of little practical value. Hence, a series of detailed rapid appraisal data collection methods were undertaken.

During the past decade, development practitioners have developed, tested and refined many rapid appraisal methods to gather information and ideas for the design, implementation and evaluation of projects.

For the Bridport economic appraisal of proposed investment options and components, a range of core rapid appraisal methods were adopted. These covered:

10.3.2.1 Key informant interviews

These involved qualitative interviews with specific questions listed for response. The aims were to elicit specific market-related data to develop estimates for future demand, 'with' and 'without' proposed new infrastructure along the foreshore and at the existing commercial port. Direct interviews in Bridport with key informants yielded names and telephone numbers of additional relevant personnel. Extensive telephone conversations were subsequently undertaken during the period late December 2018 to April 2019.

The accuracy and depth of the information obtained depended on (i) the care taken to select the informants, (ii) the use of a written checklist of questions to record key data, and (iii) use of repeat phone calls and emails to expand and clarify earlier data.

Approximately 22 key informant interviews were completed. These covered Bridport residents/Action Group personnel, Dorset Council personnel, commercial sea freight personnel, commercial fishing operators and fish processors, real estate personnel, Tasmanian and Northern Tasmanian tourism representatives, Barnbougle representatives, Flinders Island and King Island Council personnel, and yachting personnel based in Victoria, NSW and Queensland. All informants were fully familiar with existing Bridport port and seafront conditions.

³ Various reports from the University of Tasmania and the Institute for Marine and Antarctic Studies; the Tasmanian Department of Primary Industries, Parks, Water and Environment; and the Commonwealth Department of Agriculture and Water Resources.



10.3.2.2 Focus Group Interview

Focus group discussions were held in Bridport in conjunction with the distribution of a survey form to obtain inputs/interest in the future development of Bridport's foreshore. The composition reflected a wide range of interests and socio-economic backgrounds. Commercial fishing operators were also interviewed in several group discussions.

10.3.2.3 Community Interviews

Public meetings have been held over the past six years in relation to the future of the Bridport foreshore. A large community discussion was held in mid-2013 in relation to the redevelopment of a pier, organised by the Bridport Pier Restoration Committee (PRAC).

Following the conduct of later community interviews, a Letter of Support for the development of a new pier was circulated throughout the Bridport community. A total of 1,700 signatures were obtained in relation to the Letter/Expression of Support. This community petition of 1,700 signatures represents a very clear expression of demand for the pier, in terms of potential community ownership and utilisation. The total of 1,700 signatures exceeded the existing residential population.

10.3.2.4 Structured Direct Observations

At the existing commercial wharf, along Trent Water, at the existing boat ramp and alongside the existing pier relics, detailed inspections have been made. Relevant Council and private sector interests have been interviewed during the inspections. Photographs and notes reporting the comments/answers to questions were taken. These have been found to be highly relevant to the various planning and design activities, and to the development of the economic appraisal.

10.3.3 Forecast Tourism and Outdoor Recreation Growth Estimation

Given the natural beauty of Bridport, centred on Anderson Bay, and major iconic tourist attractions (internationally-acclaimed golf facilities and a lavender farm), tourism and outdoor recreational demand continues to grow seasonally/annually.

Table 10.2 (refer Appendix B) provides a detailed set of forecast estimates for the future demand for a range of tourism and recreation activities. Specific categories include visits to/enjoyment of:

- The historic Bridport pier relics;
- The Barnbougle golf courses/accommodation facilities;
- Bridport and district motel/hotel/apartment accommodation;
- Camping (summer, off-peak, winter) at the bayside camping grounds; and
- Bridport overnight and day visitors (including those visiting local residents).

Total day visits for the financial year to June 2018 were estimated at 41,500 visits. Of this total, it is further estimated that 37,700 visitors stayed a minimum of one night.

In terms of total economic impact, the demand for golf/accommodation at the Barnbougle facilities represent the single most important economic 'driver' for the local/regional economy. During summer months, the demand for accommodation (in motels, apartments, hotels and with residents) increases significantly (ranging from 4,000 to 6,000 per season). October recreational activities extend from the leisurely visits, to the pier relics, walking along the beach paths, to yachting, outbound fishing, and beach surfing. Hence, the planning for additional foreshore infrastructure has considered the widest range of activities.



The forecast estimates for tourism and outdoor recreation activities have been developed for the 20-year period 2018 to 2037. Footnotes at the bottom of Table 10.3 provide guidance to the individual forecast demand estimates. By 2037, it is most likely that total day visits to Bridport will reach 105,000.

The subsequent development of Cost-Benefit Analyses (CBA), to examine the likely economic viability in investing in additional foreshore recreation and commercial fishing infrastructure, has relied upon the forecast demand estimates provided in Table 10.3. (refer Appendix B)

10.4 Project Appraisal Methodology

In order to identify the likely economic contribution of the proposed infrastructure investment for the Bridport foreshore, to underpin the BFMP, detailed Cost-Benefit Analyses (CBA) have been undertaken. CBA typically focusses on determining if development initiatives, by the public sector, are likely to be (i) efficient, in terms of the funds/resources to be committed, and (ii) equitable, in terms of generating 'good and/or bag' consequences for communities.

CBA, as developed for the Bridport Master Plan, has been a 'with and without analysis'. It began with understanding the 'do-nothing' or existing baseline scenario, i.e. what would happen without any new foreshore infrastructure investment. It then proceeded to identify and calculate (quantify and monetise) the incremental benefits or gains by comparing consequences 'with' the developments and 'without' the developments.

CBA is the most used of the analytic techniques, which exist for the appraisal and evaluation of infrastructure programs and projects. Its widespread appeal as an investment methodology lies in its technocratic acceptance, its financial orientation, apparent simplicity, neatness/methodological rigour, its emphasis on logic and rationality, and its underpinning of welfare economics principles, in terms of focusing on improving total community welfare.

Project choice to invest in new public infrastructure can be made without CBA. However, for Bridport in particular, and for Tasmania in general, it is fundamental that international and Australian best practices and procedures be available and that fundamentally sound projects (in economic and financial terms) are prepared and presented.

The completion of the separate investment analyses, which have been undertaken, has followed the broad principles and procedures, which are found throughout Australia, at the Commonwealth and State level. These are as specified in the Council of Australian Governments (COAG) public sector investment guidelines. For Tasmania, the Department of Treasury and Finance (DTF) project analysis guidelines are outlined in the Project Initiation Process (PIP) document dated April 1997. This document, in referring to the PIP, "establishes a structured framework to be followed by agencies in presenting projects proposed for inclusion in the Capital Investment Program".⁴

Public sector project investment appraisals differ from private sector investments in that the former require time periods of up to 20 years. All annual operating and maintenance costs need to be estimated and included. No taxes are paid on the project costs and benefits. There is no repayment of the capital investment in a typical public sector project. The benefits, thus, represent gains to communities/regions/states, and in some cases, also to the Commonwealth.

⁴ As contained in the Foreword to the PIP Guidelines Document, April 1997.



10.5 Project Analysis Questions

The following key issues or questions have been addressed in the preparation of the economic appraisal and Business Case. They include:

1. What is the objective(s) of the project?
2. What is the situation 'with' and 'without' the project?
3. Does the project represent the best alternative?
4. Who are the beneficiaries?
5. What is the structure/component mix for the project?
6. Is the project justifiable on broad economic, social and environmental grounds?
7. Is the project financially sustainable?
8. What is the most appropriate timing for implementation and delivery?
9. What investment performance measures will be generated and what discount rate should be used?
10. Is the project a risky investment?

In completing the CBA spread sheet modelling, which underpins the subsequent Business Case, the following specific assumptions and procedures were followed:

1. A time period of 20 years (2018-2037) was covered, with a residual or salvage value for relevant remaining assets included as a benefit in the 20th year. Package A and B is scheduled to start in July 2020. Package C is scheduled later, after 5 years, and Package D is scheduled for 10 years after the Package A.
2. Benefit streams only forecast to commence after the project investment has been completed, to allow benefits to be fully generated.
3. All cost and benefit items were estimated in 2018/2019 constant prices, to avoid forecasting inflationary effects over 20 years.
4. All capital development costs and O & M costs were net of GST, unless otherwise specified.
5. Benefit estimates were forecast to grow on the basis of 'most likely' demand and/or tourism demand. Hence, the benefit forecasts are conservative.
6. Additional commercial fishing vessels servicing Bridport, are assumed to be operational by 2034 or 2035 (after development of the new port facilities).
7. A social discount rate of 6.5% has been used for all project viability estimation (the 6.5% has been assumed as the minimum accepted or hurdle rate for all projects). Net present values (NPVs) have been estimated using this discount rate. NPVs, economic internal rates of return (EIRRs) and benefit-cost ratios (BCRs) have been separately estimated. Project selection and project risk analysis have been based on all three (3) criteria.
8. A series of sensitivity tests or 'what-ifs' have been completed to identify the relative levels of project robustness and viability, under alternative possible future cost and benefit outcomes.



10.6 Relationship of Economic Development to Maritime Infrastructure Investment

Worldwide and in Australia, it has been clearly demonstrated over the past 60 years that high quality public infrastructure (public port/wharf facilities, roads/highways, railways, water supplies, sewerage systems, airports and power generation/transmission assets) were essential prerequisites for economic growth and local/regional development. The case for such an assumption has been widely demonstrated throughout all Australian states. More specifically, the belief that public investment in maritime infrastructure, particularly coastal and fishing tourism facilities will generate economic growth, has also been proven. Examples of where State/local governments have invested in new coastal fishing and tourism facilities, and have seen significant local/regional economic growth and investment from commercial fishing, tourism and recreation and population in-migration, with resultant employment growth can be found at:

- Triabunna (under final construction);
- Strahan;
- Launceston, on the Tamar;
- Lakes Entrance, Victoria;
- Coffs Harbour, Northern NSW;
- Eden and Ulladulla, Southern NSW;
- Ballina, Northern NSW;
- Broadwater, Gold Coast, Queensland;
- Mackay, Central Queensland; and
- Airlie Beach, North Queensland.

It is anticipated that Bridport, with new maritime investment, will demonstrate similar economic growth effects.

An important element of the close linkages between coastal foreshores and urban communities has been the development of piers (or jetties) for the purposes of loading/ unloading commercial fishing and freight vessels, for enjoyment by residents and visitors from walking out over the sea, and for use by resident for fishing, recreational boating and other water-based sports.

The below Box 10.1 provides a comprehensive listing of Australia-wide piers (and jetties), which are highly utilised and valued by their local communities. Tasmania does not have a coastal pier, which is larger than 110 metres, in comparison to piers > 400 metres around Australia's coastline. As observed in Bridport interviews, "a coastal community without a pier lacks an inner soul".

**Box 10.1****Summary of Recreational Piers/Jetties Across Australia
(in use, primarily for sightseeing, fishing, boating)****Queensland**

- Shorncliffe, Brisbane (timber, 135 years old)
- Southport, Gold Coast
- Urangan, Hervey Bay (timber, 90 years)

NSW

- Coffs Harbour, North Coast (recreational pier and commercial fishing wharf)
- Kincumber, Central Coast (historic wooden pier remnants)
- Tathra, South Coast (wooden pier, now replaced)

Victoria

- Altona
- Dromana
- Frankston
- Hastings
- Kerferd Road
- Lorne
- Middle Brighton
- Mornington
- Mordialloc
- Point Lonsdale
- Portarlington (newest)
- Rosebud
- Rye Pier (timber, under repair)
- Sorrento
- St. Kilda

SA

- Glenelg, Adelaide
- Tumby Bay, Spencer Gulf (the original timber jetty, built in the 1840s, was replaced in 1999)

WA

- Busselton (timber, second oldest in the world; 1,840 metres long)

Notes:

- (i) The length of piers ranges from less than 180 metres at Portarlington, to 500 metres at Altona, Rye and Frankston, to 870 metres at Urangan, and to 1,840 metres at Busselton.
- (ii) Along Tasmania's coastline, there is no pier longer than 110 metres. The proposed Bridport Pier will be a minimum of 350 metres.

10.7 Forecast Economic Benefits from Foreshore Redevelopment

Across Anderson Bay, from the Dorset Council caravan park (western limit) to the existing commercial port (coastal shipping, fishing catch processing, homeporting), the proposed Master Plan will generate a range of economic, financial and social benefits. Two separate benefit categories are expected to be generated over the 20-year period.

10.7.1 Commercial Fishing

Historically, until 2001/02, Australia was a net importer of fisheries products in volume terms, but a new exporter in value terms. However, for the past decade, imports by value have exceeded the value of exports. Exports are dominated by high-value products – lobster, premium tuna species and abalone. Imports largely consist of lower-value products – frozen fillets, frozen prawns and canned fish.

Tasmania represents a most important source of high-value export fisheries products, to Australian states and to overseas Asian markets. Tasmania's fish production represents an important import substitution effect, in terms of Australia's overall balance of payments.

The below Box 10.2 provides a detailed summary of Australian, Tasmanian, and Bridport-specific estimates of production and exports. In 2017/18, the total value of Tasmanian seafood exports was \$3.15 billion, consisting of salmon, rock lobsters, abalone, scallops and scale fish.

Bridport represents a key source of landed fish and processed products. Based on industry interviews (key informant and focus groups), an estimated 1,260 to 1,300 tonnes of landed production were handled at Bridport's commercial wharf in 2017/18. The estimate for 2018/19 is higher, at approximately 1,350 tonnes, due to an expansion in scallop and other species (octopus, shark, rock lobsters). Total resource value is estimated at \$7.8 million. Its market value in Tasmania, in the mainland states and overseas, is significantly higher.

At issue for the BFMP is how to reduce the limitations of the existing commercial fishing infrastructure located on Trent Water, on the mouth of Brid River, on the southern limit of Anderson Bay in Bridport. [The first jetty at the current wharf site was built in 1855 and operated until 1917, when it was demolished and replaced with remnants of the existing wharf].

The key constraints to the existing commercial wharf may be summarised as:

- Water depth for fishing vessel and commercial freight vessels accessing/egressing the wharf is limited to < 1 metre at low tide. Vessel movements are limited to 1 to 2 hours maximum turnaround at the wharf. This is a critical time/revenue constraint for the fishing sector, and for commercial ship movements to/from Flinders Island; and
- Wharf length and berth capacity. Currently, there is limited wharf length for more than two commercial fishing vessels to unload catches concurrently. Similarly, there is limited berth capacity for fishing vessels to lay up for extended periods. Their homeporting is limited to a small number of commercial vessels (< 12 vessels), with subsequent loss of revenue to the local economy.

Table 10.3 (refer Appendix B) provides a summary of commercial vessels registered with MAST for the Bridport area of influence, and for other locations along the north coast, as far west as Stanley. In Bridport, nine commercial fishing vessels currently operate, with four commercial non-fishing vessels.

With improved water depth for channel access, and an increased wharf length/berth capacity, Bridport can expect to attract and receive regular fishing vessel calls from the estimated 31 fishing vessels, which are currently operating from St. Helens/Binalong Bay, to Flinders and King Island, and further west to Ulverstone.

The current operations of the commercial freight shipping, which services Flinders Island, is expected to benefit significantly also from the improved water depth and thus the ability to operate without penalties from water depth limitations.

Commercial shipping services will benefit from increased water depth from an increased time period for loading/unloading and for the ability to handle additional cargo in both directions. [Data has not been available to quantify/monetise the likely economic benefits].

Table 10.4 (refer Appendix B) provides a detailed analysis of the forecast benefits from the investment in improved wharf length/berth capacity and improved river/channel access. The benefits reflect the economic impacts of one additional water depth/improved access. Increased homeport vessels and visiting vessels



are forecast for the proposed investment. Below the data are a number of footnotes, which provide details of how the forecast estimates were derived.

Table 10.5 (refer Appendix B) reports on the estimates developed for the impact of increased commercial fishing as a result of investment in upgrading the existing wharf, and in increasing water depth, and thus time available for loading/unloading of vessels. The estimated increase in value of fish landed of \$13.23 million represents a significant incremental benefit for the commercial fishing sector. Assumptions underlying the estimate are:

- (i) the additional movement off wharf of the fish products can be undertaken by the existing road access to/from the port;
- (ii) fish species such as Orange Roughy will continue to be available for harvest, under the current licensing/quota limits; and
- (iii) St. Helens and Triabunna-based fishing may increase fish harvesting in and around Flinders Island/the north easterly limit of Bass Strait, in competition with Bridport-based commercial vessels.

In summary, three sets of economic benefits can be anticipated in relation to the redevelopment of the existing Bridport commercial port facilities. These are detailed in Box 10.3. They involve:

- (i) Savings for commercial sea freight services;
- (ii) Improvements in the performance of the commercial fishing sector; and.
- (iii) Benefits from new pier and recreation facilities.

Benefits in relation to (ii), improvements in the commercial fishing operations and for the new marina facilities have been estimated and monetised for the cost-benefit estimates and for the subsequent Business Case.

Box 10.2: Overview of Australian, Tasmanian, and Bridport Fish Production, Consumption and Exports ^{1/}

	2017/18	2018/19	2020/21	2022/23
• Australian fisheries/aquaculture production (\$ billion)	\$2.904	\$2.933	\$3.300	\$3.064
• Australian fisheries/aquaculture products exports (\$ billion)	\$1.503	\$1.533		
• Australian fish product imports (\$ billion)	\$2.28	\$2.340	\$2.482	\$2.633
• Australian consumption of low-value fisheries products	410,000 tonnes	422,000 tonnes		
^{1/} Historically, Australia has been a net importer of fisheries products in volume terms, but a net exporter in value terms.				
• Tasmanian fisheries gross production (\$ million)	\$947.00			
• Tasmanian seafood exports (\$ billion)	\$3.15			
- Overseas	\$2.53			
- Interstate	\$0.62			
• Tasmanian seafood exports (by volume)	4,450 tonnes			
• Tasmanian gross value of seafood production by product (\$ million) [2017/18] ^{2/}				
- Atlantic salmon	\$731.45			
- Rock lobster/crab	\$98.70			
- Abalone	\$86.25			
- Oysters	\$21.82			
- Wild species (scallops, octopus, squid, mussels, shark)	\$12.00			
^{2/} Defined as 'beach value' – no processing or value-adding.				
• Bridport estimated landed production ^{3/} , 2017/18 (constrained by current limited water depth/access to the wharf)				
- Abalone	50 tonnes			
- Octopus	110 tonnes			
- Rock lobster	30 tonnes			
- Scallops	1,000 tonnes			
- Shark	50 tonnes			
- Scale fishery species	20 tonnes			
^{3/} Approximate estimates based on individual industry representatives/fishing personnel.				



11. Cost Benefit Analysis (CBA)

11.1 Initial Development Costs (Capital Investment)

The proposed redevelopment and expansion of outdoor recreational facilities and commercial fishing/commercial sea freight capability is planned to proceed in three packages. These are:

	<u>\$ Million</u>
Package A: Port Redevelopment Feasibility & Detailed Study	\$0.250
Package B: Boat Ramp overlay and extension (approx. 70 metres overall) and Small Pier plus walking tracks and seating	\$2.611
Package C: Pier Extension (Recreational) – 340 metres, low landings and berthing infrastructure, additional car parking	\$8.012
Package D: Port Redevelopment (new river entrance, rock groyne walls, new outer wharf, marina option (20 berths), and dredging of channel and wharf/marina zone	\$35.124

The capital development costs for each package do not include GST or other taxes. They have been estimated at the conventional project appraisal level of +/- 20%.

11.2 Operating and Maintenance Costs (O%M) and Site Management Costs

For all packaged investments, individual annual O&M and individual site management costs have been estimated and included in the CBA. These are assumed maximum annual disbursements, which may not be fully required in any year. However, it is necessary that these costs are reflected in the CBA estimates (as required by the COAG Project Investment Guidelines).

11.3 Periodic Replacement Costs

During the 20-year lives of the individual project components, it is likely that specific additional replacement costs will be incurred. These are additional costs not expected to be covered by the annual O&M costs. Inclusion of periodic replacement costs are also a COAG Investment Guidelines requirement.

11.4 Economic Benefits

11.4.1 Boat Ramp Redevelopment

The following direct benefits from the boat ramp redevelopment are expected to be:

- Increased volumes of recreational fishing trips;
- Improved maritime safety standards at launch/arrival;
- Improved turnaround times for all peak period launches/arrivals;



- Improved 'quality of life' associated with the boating recreational experience (fishing and day trips);
- Incentive to introduce additional water-based sports (kayaking, water skiing, rowing);
- Opportunity to develop small commercial food/drink outlets (fixed or mobile), creating additional employment;
- Increased real estate values for neighbourhood residential properties; and
- Stimulus for additional recreational and commercial game fishing.

Increased recreational fishing activity is forecast to be the most significant direct benefit of the redeveloped boat ramp, and small jetty extension.

Table 11.1 (Appendix B) reports on current and forecast demand for the existing and redeveloped boat ramp, and forecast recreational fishing use, as related to increased boat launches. The current level of demand for the existing boat ramp has been estimated at 6,600 launches/arrivals. Approximately 55% of users were from the Bridport and surrounding area.

Additional demand for fishing has been forecast with the redeveloped boat ramp (1,980 additional launches after commissioning in 2020/21, to an additional 2,185 launches in 2022/23. Average net expenditure per fishing trip has been estimated at \$60.75. These are expenditures expected to be retained in the local economy, after 'leakage' of revenues outside the local area (fuel, soft drinks, beer, etc.).

Table 11.2 (Appendix B) provides a detailed set of cost and benefit items and the results of the cost-benefit analysis for the proposed investment.

11.4.2 New Recreation Pier

In 2013, a detailed demand assessment and economic appraisal was completed for the development of a new pier. A detailed Business Case⁵ was developed for the Pier Restoration Action Committee (PRAC). The findings were widely accepted, resulting in a major petition of support.

The design and costing for the proposed recreation pier is a revised version of the 2013 proposal. The use of local timber has been largely eliminated, together with support for the reopening of local boutique saw-mills.

The economic data, in the 2013 report, has been revised and several benefit groups removed, and others revised.

The range of expected direct financial/economic/social benefits include:

- Sightseeing/photography/day tourism
- Outdoor recreation – supported (fishing, sailing, boating, kayaking)
- Promenading/leisurely walking
- Commercial bus tours (including whale watching, on-pier entertainment/catering)
- Weddings and special social functions
- Small cruise ship visits/calls

Each of the individual benefit items is explained in terms of the underlying assumptions of the CBA completed for the proposed investment (Table 11.3).

⁵ The Business Case was prepared for the Bridport Innovations Pier Restoration Action Committee, July 2013, and presented to State/Local Government representatives subsequently. A comprehensive petition containing 1,700 signatures of support was submitted in 2014.



11.4.3 New Port Entrance and Port Facilities (Expanded)

The existing river entrance to the Bridport commercial port is shallow and is a major constraint to commercial sea freight operations, and for commercial fishing vessels to access/egress the port.

With one hour or less for the turnaround of commercial fishing vessels due to the shallow river depth, and the effects of tidal movements, commercial fishing operations are heavily constrained. This is despite the availability of fish resources in eastern Bass Strait, particularly centred on Flinders Island.

Tables 10.4 and 10.5, (refer Appendix B), have reported on the potential additional fish production/processing, which exists with redevelopment of the port (direct sea access, increased river/channel depth and increased berth capacity). Data relating to the sea freight penalties, associated with less than fully-loaded vessels to/from Flinders Island, has not been verified for inclusion in the separate CBA. These potential sea freight savings have not been included in the 'Most Optimistic Future' development scenario. An estimate of possible future dredge cost savings to the commercial sea freight operation has also been included as a benefit of the new channel entrance and deeper water, in the 'Most Optimistic Future' development scenario.

Box 11.2 provides a summary of maximised minimum potential additional fish landed at Bridport. These alternative estimates are also reflected in alternative BCA estimates for Package D investment.

Table 11.4 (refer Appendix B) provides a detailed summary of the CBA results for the economic appraisal of investing in new port entrance, and new port facilities, under the 'Most Optimistic Future Scenario'. Table 11.5 provides alternative CBA results for the 'Least Optimistic Future Scenario' (where the commercial shipping/sea freight benefits have been deleted, and where the volume of commercial fish landed, the number of fishing vessels using the new facilities, and the levels of related commercial activities from the expanded fishing fleet using Bridport, have been reduced).

11.5 Economic Results/Project Component Viability Estimation

Individual 20-year discounted cash flow (DCF) analyses were completed for each of the three development packages. Tables 11.2 to 11.4 provided details of the individual cost and benefit estimates used to establish the economic viability of each of the options. Each of the estimates used to establish the economic viability of each of the options. Each of the individual tables contain supporting data, which explains the nature of the specific assumptions underpinning the individual cost and benefit columns and estimates.

Conservative assumptions have been adopted for all benefit category estimation. The projected benefits from the infrastructure development have been based on the **most conservative** growth assumptions in demand (based on Tasmanian GSP forecasts, reported in Table 10.1).

The economic analysis yielded the following estimates for each of the three investment components.

Phases	EIRR (%)	NPV (\$ Million)	BCR (Ratio)
Package A & B: New Port Feasibility and Old Pier Boat Ramp Extension & Jetty	11.20	1.061	1.48
Package C: Jetty Extension	15.21	8.66	2.13
Package D: New Port Entrance, Commercial Wharf & Port Marina:			
Most Optimistic Scenario	30.48	125.32	5.30
Least Optimistic Scenario	12.66	25.34	1.87



Based on the three investment criteria, it would thus appear that only **Packages B and C** development stages meet the minimum public sector investment criteria ($> 6.5\%$ discount rate, a positive NPV, a BCR > 1).

Both **Packages A, B and C** development proposals would appear to have been appropriately scaled and designed in terms of overall demand and potential roles, as the total development costs of the packages can be justified by the public sector criteria.

11.6 Sensitivity Test Results

Table 11.6 (refer Appendix B) provides a summary of the results of the sensitivity tests completed for all packages of development to identify the relative robustness of the economic viability under a range of adverse cost and revenue assumptions. All estimates of the benefit-cost ratios (NPVs of costs versus benefits) indicate that all packages are economically viable. No significant areas of project risk have been identified (technical, economic, social or environmental).

Package D has been found to be viable under the least optimistic conditions.

11.7 Intangible or Non-Quantifiable Benefits

As with all public sector investment projects, there are always additional benefits or impacts which can be identified, which although important, cannot be reliably quantified and subsequently monetised for inclusion in the Business Case. For the proposed Bridport foreshore (Packages A, B, C D) redevelopment, a wide range of significant economic and community benefits were identified from local interviews and discussions. In many ways, this table of potential benefits captures the innermost social gains for the community of Bridport, now and over the next 20 years. Box 11.1 below provides a listing of these intangible benefits.



Box. 11.1: Summary of Key Additional Intangible Benefits of the Bridport Project

- (i) Maintenance of the visual appeal and charm of the old pier relics.
- (ii) Enhanced views of Bridport's coastline (off from 250 metres of the shoreline, by standing on the new pier).
- (iii) Significant improvements in the 'quality of life' of Bridport residents with the new pier providing additional outdoor recreational opportunities.
- (iv) Encouragement of new forms of water-based sports.
- (v) Additional opportunities for day visitors and local residents of the new foreshore walking track.
- (vi) Provision of a safe haven/mooring for damaged ocean-going yachts.
- (vii) Opportunity to focus on an upgrading of the existing caravan park on the foreshore.
- (viii) Provision of incentives for investment in new commercial buildings/upgrading of existing buildings in the Bridport town centre.
- (ix) Encouragement of investment in new forms of vessel maintenance and construction.
- (x) Encouragement of additional investment in fish processing and fish packaging/ exporting.

It is not possible to rank each of these ten key intangible gains. There will be others which may emerge after the review of this report by the community.



11.8 Summary of Economic Results/Business Case Results

The results of the economic and business case are as follows:

- Australia has an insatiable appetite for fish products. Tasmania represents an important and growing source of fish products (wild sea and aquaculture-derived). Based on detailed commercial fishing sector discussions, Bridport has the potential to unload and service fishing vessels in eastern Bass Strait and in the seas to the northeast of Tasmania. These areas represent some of the last remaining sustainable wild fishery resources along Australia's coastline. Bridport is uniquely located to harvest these resources;
- At issue is the development challenge for State and Commonwealth Governments to invest in new port infrastructure in Bridport to enable an expansion of commercial fishing vessel unloading/processing of fish product. Currently, Bridport's access to open seas is highly constrained. Approximately \$13 million of additional commercial fish products, per year, could be delivered to Bridport for subsequent processing, and re-export, if the port's facilities were upgraded;
- Three (3) separate economic analyses and Business Cases for investment, in new Bridport foreshore infrastructure, have been prepared in relation to the three separate coastal engineering studies completed. All packages of Bridport's Master Plan for future maritime infrastructure investment have been demonstrated to be economically viable and sustainable;
- The challenge now is to bring forward the detailed planning and investment for the redevelopment of the commercial port, to allow for a major stimulus to Tasmania's commercial fishing sector, in the near future;
- Bridport's future as an iconic northern Tasmania outdoor recreation and tourism destination can be significantly enhanced with investment in additional boat launch facilities, and in providing a new recreational pier. The proposed pier will provide Northern Tasmanian residents and inter-state/international visitors with a unique foreshore recreational experience. Given the neighbouring worldwide and Australian golf attraction at Barnbougle, the development of a pier (350 m) will allow for significant synergies with Barnbougle. This is in terms of attracting smaller cruise ships to moor in Anderson Bay, with passengers alighting at the pier for local area golfing and sightseeing; and
- Bridport offers a unique and attractive locale for retirement housing, taking pressures off the expansion of Hobart and its environs. Investment in new foreshore recreational assets will, thus, provide a further stimulus to the urban expansion of Bridport, and the attractiveness of its foreshores.



12. Business Summary and Recommendations

The proposed development of new marine infrastructure at **Bridport** is likely to be a highly attractive public sector investment for the Bridport area. It will ensure the increased appeal and sustainability of Bridport foreshore and port accessibility. It will also be a major economic development incentive for the local economy, in particular, and for the Northern Tasmanian economy, in general with the opportunity for expansion of the port access and functionality for commercial fishing.

The proposed Project is expected to be an economically viable public sector investment, with a broad range of forecast benefits. It meets all COAG public sector investment pre-conditions and requirements. The proposed staging of the project allows for technical, economic or environmental risks associated with the project to be further quantified and addressed through the project implementation phases.

The Project represents an investment of State and Commonwealth Government significance, given the uniqueness of its natural environs and site constraints. It meets all necessary preconditions for the development of a 'safe' harbour and regional port for commercial fishing vessels and for local yachting activities.

12.1.1 Key socio-economic benefits

The main socio-economic benefits will include;

- additional day trip and visitor expenditures;
- induced local employment (during construction, maintenance and day-to-day operations), including increased job skills and work experiences;
- improved utilisation of existing public assets;
- induced commercial investment with land sales;
- increased land values and increased rate revenues;
- improved maritime safety; and
- increased maritime activities/revenues.

12.1.2 Key financial benefits

The main financial benefits will include;

- Value of additional commercial investment in new properties and sea-based facilities;
- Opportunities for day charging for asset utilisation;
- Value of new construction and multiplier effects (local materials, local business services);
- Additional expenditures at new facilities/upgraded infrastructure and buildings (catering services, new café activity, day scenic cruises, fishing trips); and
- Additional GST revenue from private sector capital investment (to be returned to the State).



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Appendix A – Preferred Master Plan Infrastructure Drawings

[illegible]

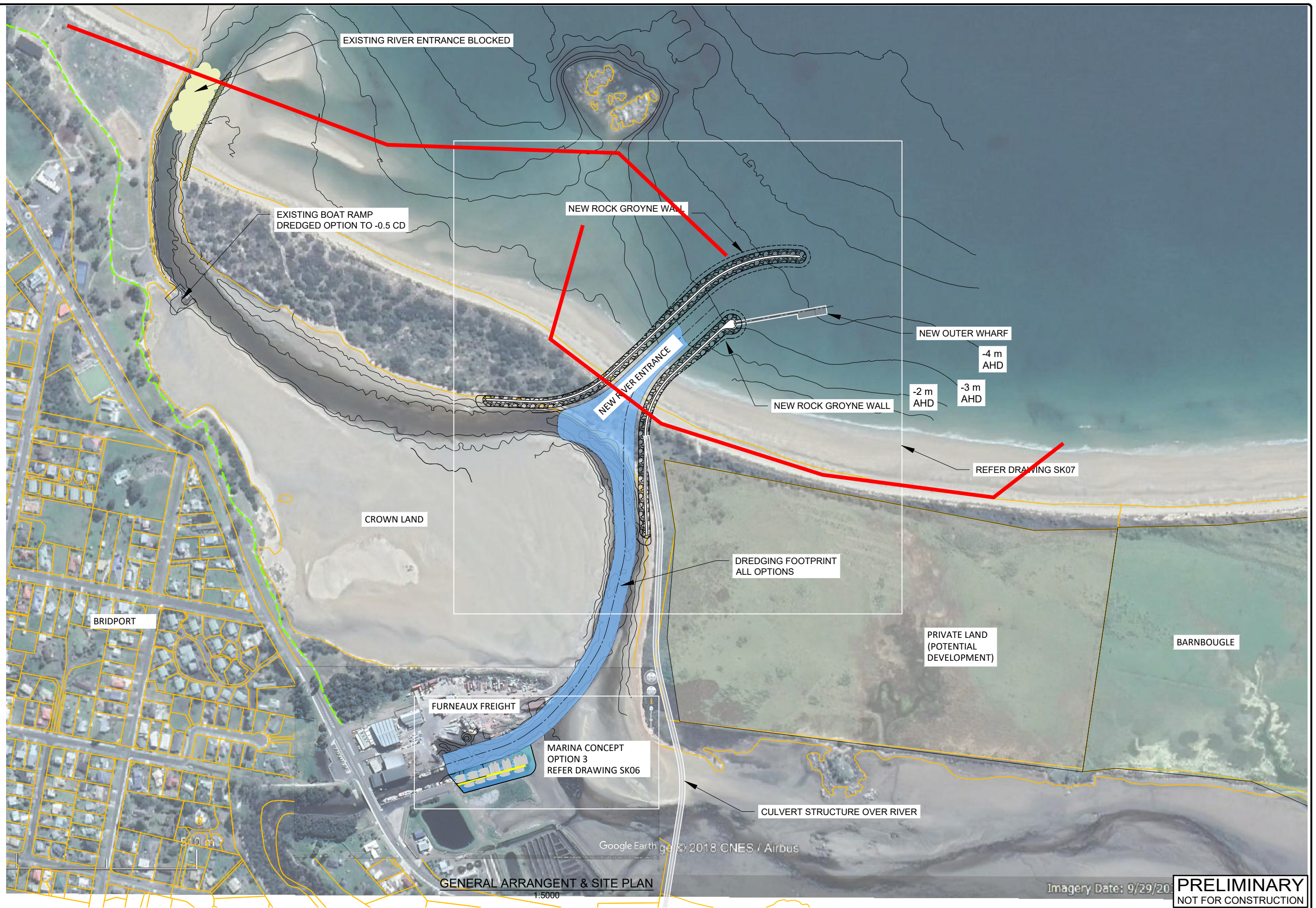


PROPOSED JETTY GENERAL ARRANGEMENT
1:2000

NOTE: FURTHER MODELLING & DESIGN REQUIRED TO DETERMINE FEASABILITY OF RAMP UPGRADE AND LOWER LANDING CONSTRUCTION

PRELIMINARY
NOT FOR CONSTRUCTION

REVISIONS	Rev No	Revision note	Date	Checked	Approved	 BURBURYCONSULTING Engineering & Project Management Civil Structural Marine	 BURBURYCONSULTING Engineering & Project Management Civil Structural Marine	ABN 75 146 719 959 P.O. BOX 354 SOUTH HOBART, TAS 7004 P: (03) 6223 8007 F: (03) 6223 1143 E: admin@burburyconsulting.com.au	COPYRIGHT © "This document is and shall remain the property of Burbury Consulting Pty Ltd. The document may only be used for the purpose for which it was commissioned and in accordance with the terms of engagement for the commission. Unauthorised use of this document in any way is prohibited"	Drawn By:	CK	Date:	JUNE 2019	Client: MARINE AND SAFETY TASMANIA. Project: BRIDPORT FORESHORE MASTER PLAN Title: JETTY OPTIONS GENERAL ARRANGEMENT Scale: 1:1 A3 Drawing No: 1576-SK03 Rev: A
	A	PRELIMINARY FOR REVIEW	11/06/19	NP	JB					Designed By:	DU	Date:	JUNE 2019	
										Checked By:	XXX	Date:	00/00/00	
										Approved By:	XXX	Date:	00/00/00	



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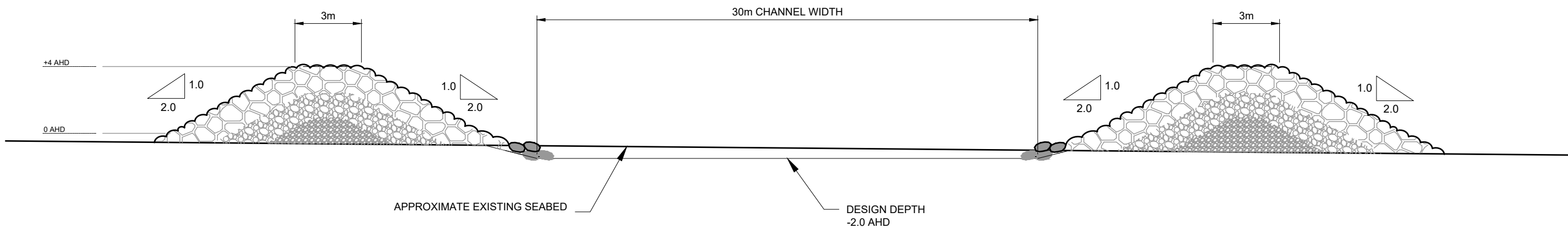
Drawn By: C.KING	Date: JUNE 2019	Client: MARINE AND SAFETY TASMANIA
Designed By: J.BURBURY	Date: JUNE 2019	Project: BRIDPORT FORESHORE MASTER PLAN
Checked By:	Date:	Title: GENERAL ARRANGEMENT AND SITE PLAN NEW PORT ENTRANCE
Approved By:	Date:	Scale: AS SHOWN
		A3 Drawing No: 1576 - SK05
		Rev: A



PROPOSED NEW RIVER ENTRANCE
1:4000

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	A	PRELIMINARY FOR REVIEW	11/06/19	NP	JB		Designed By: J.BURBURY	Date: JUNE 2019	Project: BRIDPORT FORESHORE MASTER PLAN
							Checked By:	Date:	Title: OUTER NEW ENTRANCE
							Approved By:	Date:	Scale: AS SHOWN
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Checked By:		Date:	
Approved By:		Date:	

Client:	MARINE AND SAFETY TASMANIA		
Project:	BRIDPORT FORESHORE MASTER PLAN		
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Rev	A		

ELEVATION
1:500

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Title: OUTER NEW WHARF	
Scale: AS SHOWN	Drawing No.: 1576 - SK09
Rev: A	



Table 10.3: Summary of Commercial Vessels
Within Bridport Area of Influence: 2018

1. Commercial Vessels ^{1/} > 7 Metres

• Bridport	13
• St. Helens/Binalong Bay	34
• King Island	14
• Flinders Island	9
• Launceston	8
• Devonport	6
• Latrobe	4
• Ulverstone	<u>3</u>

Sub-total **91 vessels**

2. Commercial Fishing Vessels > 7 Metres

• Bridport	9
• St. Helens/Binalong Bay	13
• King Island	8
• Flinders Island	5
• Devonport/Hawley Beach	3
• Launceston	2
• Ulverstone	<u>2</u>

Sub-total **42 vessels**

3. Additional Commercial Fishing Vessels ^{2/}

• Stanley to St. Helens	14 vessels
-------------------------	------------

4. Range of Draft Required for Fishing Fleet

- 0.8m – 2.6m (current range)
- Range of additional draft required : 1.2 – 2.6 metres
- Most requested additional draft : 2 metres

^{1/} Total of 232 commercial boats (fishing and non-fishing) as per MAST registration data.

^{2/} Not all of these vessels are working for > 6 months per year. A number are awaiting sale

Table 10.4: Forecasts of Commercial Fishing Vessel Homeporting ^{1/} and Arrivals After Lengthened Wharf/Berth Capacity and Improved River Access: Impact of Additional Commercial Fishing Vessel Activities with Improved Water Depth and Access (Most Likely Forecasts: Fishing Sector Interviews) ^{2/}

Year Ended June	With Additional One Metre Depth ^{3/} (Improved Access)			With Additional Two Metre Depth ^{4/} (Improved Access)		
	Homeport Vessels ^{4/} (At Berth After Unloading)	Visiting Vessels ^{5/} (Unloading Catch)	Total Fishing Vessels Using Bridport	Homeporting ^{4/} Vessels	Visiting Vessels (Unloading) Catch	Total Fishing Vessels Using Bridport
1 2018	12	5	17	12	8	20
2 2019	14	6	20	18	8	26
3 2020	16	6	22	20	9	29
4 2021	16	7	23	24	9	33
5 2022	16	7	23	26	10	36
6 2023	16	8	24	26	10	36
7 2024	16	8	24	26	10	36
8 2025	16	8	24	26	11	37
9 2026	16	8	24	26	11	37
10 2027	16	8	24	26	12	38

- ^{1/} Homeporting¹ is defined as vessels using the port on a regular/irregular basis, both for unloading, fuel and for short-term berthing. May be alternatively defined as a minimum number of calls per year (12 - 20), including annual surveying and mechanical/technical servicing.
- ^{2/} Interviews with fishing vessel operators/fishermen indicate that between 24 - 26 commercial fishing vessels operate in the Bass Strait/NE coastal waters, but are **currently** unable to access and discharge at the existing Bridport wharf. Average turnaround time available is 45 - 60 minutes due to depth of water and tidal movements.
- ^{3/} With an additional one metre of depth of river, and direct access to Bass Strait, commercial fishing vessels will have between 3 - 4 hours of working time in the port (with provision of additional berth capacity and extended quay line).
- ^{4/} Estimated number of commercial fishing vessels, which will homeport at Bridport (currently 4 - 5 vessels berth at Bridport for 3 - 4 months yearly), with one metre extra of river depth.
- ^{5/} Estimated number of visiting commercial fishing vessels likely to discharge fish catch/refuel/take provisions - now based in other Tasmanian ports and in Victoria (Paynesville, Metung, Lakes Entrance), Eden (NSW), and Tasmania (Tamar River, Devonport, Stanley, Strahan, Hobart, Triabunna, St. Helens).
- ^{6/} With an additional two metres of depth of river and direct access to Bass Strait, commercial fishing vessels and commercial freight vessels will have between 14 - 16 hours of working time at the expanded wharf facilities.

Table 10.5: Assumptions Relating to Future Potential Additional Fish/Fish Product Catch Landed at Bridport (With Two Metres of Additional River Depth and Extended Wharf Length)

Product	Estimated Current and Forecast Additional Fish Catch		Estimated Maximum Landed Value of Additional Catch ^{3/}	
	Current Volume ^{1/} (2017/2018) (Tonnes)	Potential Additional Future Landed Catch ^{2/} (Tonnes)	\$/kg	\$ Value (\$ million)
Scallops (with shell)	1,000 140 (meat)	140 - 150 (meat)	30.0	4.20
Rock Lobster	30	30 - 40	70.0	2.10
Abalone	50	20 ^{3/}	42.0	0.84
Shark	60	100 - 120	11.0	1.10
Scale species ^{4/}	20	30 - 40	4.0	0.12
Octopus	110	110 - 130	17.0	1.87
Orange Roughy ^{5/}	-	500 - 750	4.0	3.00
		Sub-total		\$13.23 million
Salmon	400 - 420 (handled thru other ports)	400 - 420 (diverted from unloading at other ports, if Bridport is developed)	1.5	

- ^{1/} Estimated by individual fisherman, as to landed volumes.
- ^{2/} Based on expected future catch potential if commercial vessels were able to utilise Bridport (savings in time/costs to access fishing grounds around Flinders Island/eastern Bass Strait, and NE corner of Tasmania, and opportunities to harvest under-utilised fish quotas at least cost.
- ^{3/} Based on current available additional licence volume in the Bridport catchment area (not utilised to-date).
- ^{4/} Wild fish species such as trevalla, blue grenadier, pink ling.
- ^{5/} Orange roughy, now released from quota restrictions for commercial fishing, able to be caught at least-cost distance from Bridport (assumes 50% of the total quota of 1,000T, growing to 1,500T) can be landed in Bridport.



**Table 10.6: Summary of Recreational Boat Ownership
Bridport, Tasmania and Australian States
As a Proportion of Populations
(2017/2018)**

Number of recreational boats registered at Bridport:

- All vessels: 240
- > 7 metres: 36

(includes Tomahawk, water house and Dorset boat owners)

Population	Recreational Boat Ownership Ratio (Boat per Residential Population)
Bridport	1 per 13.7
Tasmania	1 per 17.4
Queensland	1 per 19.1
Victoria	1 per 27.4
NSW	1 per 27.4
Australian Average	1 per 29.8

Source: MAST, ABS.

Table 11.1: Summary of Current and Forecast Demand for Additional Boating Infrastructure at Bridport

Bridport: Public Boat Ramp: Benefit Background

- Estimated current number of boat launches at existing ramp (2018/19): 6,600⁶
- Estimated size of fishing/boating party: 3 persons⁶
- Sources of fishing party/visitors⁶
 - a. Bridport town/local area: 55%
 - b. Launceston/NE Tasmania: 40%
 - c. Hobart/SE Tasmania: 5%
- Current fishing demand: 2018/19

	Boat Launches	Total Fishing Party Numbers
(i) Bridport area	3,630	10,890
(ii) Launceston/NE Tasmania	2,640	7,920
(iii) Hobart/SE Tasmania	330	<u>990</u>
		19,800

- Forecast additional fishing demand/activity with new infrastructure

Additional Fishing Person Days (Participants)

2021/22	1,980	(10% additional demand in Project Year 2)
2022/23	2,080	(5% additional growth in Project Year 3)
2023/24	2,185	(5% additional growth in Project Year 4)
2024/25 – 2039/40		(1% growth per annum)

- Average fishing expenditures per fishing trip

Item	Average Expenditure ^{a/}	Net Benefit to Local/State Economy Per Party ^{b/}	
Bait/Ice	\$18.95	100%	\$18.95
Boat Fuel	\$44.70	15%	\$ 6.70
Food/Drinks	\$50.25	60%	\$30.15
Travel (Fuel)	\$33.00	15%	\$ 4.95
		Sub-total	\$60.75

⁶ Based on local Bridport resident estimates and local recreational fishermen interviews.



^{a/} Based on Lyle J. M., et. al., 2013 Recreational Fishing Survey, indexed to 2018/19 prices (11.7%).

^{b/} Allows for the 'leakage' of inputs not produced and retained at the Local/State level, e.g. fuel production.

- Total additional forecast recreational fishing expenditures (Local/State economy) in local economy (local food outlets, bottle shops, newsagents)

	Additional Boat Ramp Use	Additional Total Expenditures
2021/22	1,980 ^{a/}	\$120,285
2022/23	2,080 ^{b/}	\$126,360
2023/24	2,185 ^{b/}	\$132,740
2024/25 – 2039/40 (to grow by 1% per annum)		

^{a/} Assumed 10% increase in initial annual demand after opening of new ramp/facilities.

^{b/} Assumes further 5% annual growth for subsequent years 2022/23 and 2023/24 (reducing to an annual additional growth rate of 1% per annum from 2024/25 to 2039/40).

Table 11.2 Economic Appraisal of Investment in Redeveloped Bridport Boat Ramp Infrastructure and Small Pier:
(\$ '000s: 2019 Constant Prices: No GST)

		Economic Costs			Economic Benefits				
			2/ Operating	Total Costs	Additional Recreational	Additional 4/ Retail	5/ Additional	Total Benefits	Net
Year Ended	1/ Capital	and Maintenance	Fishing/ Boating 3/		Expenditures (Food)	Local Area Employment	Benefit		
June									Stream
1	2021	2,341.00		2,341.00				0.00	-2,341.00
2	2022			0.00	111.30	49.95	79.20	240.45	240.45
3	2023			0.00	116.85	51.80	81.58	250.23	250.23
4	2024			0.00	122.67	53.70	84.02	260.39	260.39
5	2025			0.00	123.90	55.31	86.54	265.75	265.75
6	2026		10.00	10.00	125.14	56.97	89.14	271.25	261.25
7	2027			0.00	126.39	58.68	91.81	276.88	276.88
8	2028			0.00	127.65	60.44	94.57	282.66	282.66
9	2029			0.00	128.93	62.25	97.41	288.59	288.59
10	2030			0.00	130.22	64.12	100.33	294.67	294.67
11	2031		20.00	20.00	131.52	66.04	103.34	300.90	280.90
12	2032			0.00	132.83	68.03	106.44	307.30	307.30
13	2033			0.00	134.16	70.07	109.63	313.86	313.86
14	2034			0.00	135.50	72.17	112.92	320.59	320.59
15	2035			0.00	136.86	74.33	116.31	327.50	327.50
16	2036			0.00	138.23	76.56	119.80	334.59	334.59
17	2037			0.00	139.61	78.86	123.39	341.86	341.86
18	2038			0.00	141.01	81.23	127.09	349.32	349.32
19	2039			0.00	142.42	83.66	130.91	356.98	356.98
20	2040			0.00	143.84	86.17	134.83	1,593.85	1,593.85
Residual or Salvage Value = \$1,229.00				7/	Economic Internal Rate of Return (EIRR) =				11.20% 6/
					Net Present Value (NPV) of Benefits @ 6.5% =				\$3,276.47
					NPV of Costs @ 6.5% =				\$2,214.98
					NPV @ 6.5% =				\$1,061.49
					Benefit-Cost Ratio (BCR) =				1.48
1/	Based on the construction of a new double concrete elevated ramp, jetty extension, walking tracks and seats, to be completed in less than 12 months.								
2/	Assumes minor repairs and surface treatment after 5 years over the life of the facility (assumed to be 50 years). Replacement of buoys after 10 years (\$20,000).								
3/	Based on estimates in Table 11.1. Additional boat ramp user demand of 10%, 5% and 5% for the first 3 years, with net spending per party of \$60.75 per launch, growing at 1% per annum, after the initial first 3 years of use.								
4/	Based on additional sales revenues (less 'leakage') to generate local additional net income (food, fuel, drinks) on a 7-day/10-hour basis for boat ramp users. Will also result in additional revenues to adjacent businesses (giftware, newsagency, hair salon).								
5/	Based on the generation of additional net income to the Swansea economy from additional food/drink-related retailing employment (full-time and part-time). Gross salaries have been netted of PAYE tax and superannuation. Assumes additional part-time employment in the peak summer months.								
6/	Conventional project investment criteria as required by the Council of Australian Government (COAG) Investment/Business Case Guidelines. Discount rate of 6.5% is used, as recommended by the Office of Best Practice Regulation (OBPR).								
7/	Assumes a Residual or Salvage Value of 60% for the physical components of the capital investment (a conservative estimate): included as a benefit after 20 years.								



10/	Assumes that with each small cruise ship call, 30 passengers and 10 crew (of a total of 80 passengers and 20 crew) will take a day bus tour of the Bridport area (wineries, sightseeing, farm visits, lunch stop), spending an average of \$95 per person. Based on one (1) ship call in Year 4 (2017), growing to 4 ship calls in Year 6 (2019). Assumes 3% real growth in expenditures after Year 6.
11/	Based on the sale of local food/wine/fruit/meat/vegetables to small cruise ships, attracted to Bridport (via Barnbougle marketing) for 4 ship visits per year (10-day voyage from Sydney or Perth to other destinations en-route to Bridport). Estimates of local produce sales of \$202,000 per ship visit are based on actual Kimberley/NT cruise ship food/entertainment requirements, on a per capita basis (80 passengers, 20 crew). Average provision sales of \$169,000 for 80 passengers and \$18,000 for crew, plus \$15,500 surplus (gifts/disposal). Assumes that trip visits (in summer months) will grow from 1 trip in Year 1 to 4 trips after 3 years (a conservative assumption). Assumes a minimum/conservative growth of 3% per annum.
12/	Assumes a demand for commercial fish charters, with pier berthing/passenger landing facilities. Based on total charter fees of \$1,350 per day. A net surplus after taxes and operating costs, housing for management and staff expenditures in the local area of \$290 per charter trip. Assumes a minimum of 95 charter days (peak of 45 days in summer). Assumes a minimum growth of 3% per annum.
13/	Covers the period October-November-December for whale watching charter trips for visitors/residents. Assumes 1 to 2 viewings per week, with gross fees of \$165 per day. Net surplus to the local economy after all taxes, housing, other personnel costs of \$16,500. Forecast to grow at 3% per annum until 2033.
14/	Conventional project investment criteria as required by Council of Australian Government (COAG) Business Case/public sector investment guidelines.
15/	Residual or salvage value of the pier (assumes a sliding annual depreciation rate (60% after 20 years). Included as a benefit in the 20th year of the Business Case.



Table 11.4: Economic Appraisal of Investment in Bridport Port Redevelopment: (New Channel Entrance, Walls, Outer Wharf, Marina and Dredging):

MOST OPTIMISTIC FUTURE SCENARIO:
(\$ '000s: 2019 Constant Prices: No GST)

		ECONOMIC COSTS				ECONOMIC BENEFITS									
					Total Costs	Commercial Shipping Services			Commercial Fishing				Total Benefits	Net Benefit Stream	
						^{4/} Savings in Freight Cost Penalties	^{5/} Savings in Dredging Costs	^{6/} Increased Commercial Vessel Maintenance Activity	^{7/} Savings in Operating Costs	^{8/} Induced Fish Production	^{9/} Increased Employment	^{10/} Increased Home- porting Expenditures			
Year Ended June	Capital Investment	Operating and Maintenance	Periodic Replacement												
1	2030	7,025.00			7,025.00								0.00	-7,025.00	
2	2031	14,050.00			14,050.00								0.00	-14,050.00	
3	2032	10,537.00			10,537.00								0.00	-10,537.00	
4	2033	3,512.00			3,512.00								0.00	-3,512.00	
5	2034				0.00	1,560.00	150.00	13.00	336.00	13,230.00	475.00	360.00	16,124.00	16,124.00	
6	2035				0.00	1,606.80	154.50	13.00	346.08	13,494.60	633.00	480.00	16,727.98	16,727.98	
7	2036				0.00	1,655.00	159.14	13.00	356.46	13,764.49	792.00	489.60	17,229.69	17,229.69	
8	2037				0.00	1,704.65	163.91	18.20	367.16	14,039.78	792.00	499.39	17,585.09	17,585.09	
9	2038				0.00	1,755.79	168.83	18.20	378.17	14,320.58	792.00	509.38	17,942.95	17,942.95	
10	2039		20.00	55.00	75.00	1,808.47	173.89	18.20	389.52	14,606.99	792.00	519.57	18,308.63	18,233.63	
11	2040		20.00		20.00	1,862.72	179.11	18.20	401.20	14,899.13	792.00	529.96	18,682.32	18,662.32	
12	2041		20.00		20.00	1,918.60	184.48	18.20	413.24	15,197.11	792.00	540.56	19,064.19	19,044.19	
13	2042		20.00		20.00	1,976.16	190.02	23.40	425.63	15,501.05	792.00	551.37	19,459.63	19,439.63	
14	2043		20.00		20.00	2,035.45	195.72	24.57	438.40	15,811.07	792.00	562.40	19,859.61	19,839.61	
15	2044		20.00		20.00	2,096.51	201.59	25.80	451.56	16,127.30	792.00	573.64	20,268.39	20,248.39	
16	2045		20.00		20.00	2,159.40	207.64	27.09	465.10	16,449.84	792.00	585.12	20,686.19	20,666.19	
17	2046		20.00		20.00	2,224.19	213.86	28.44	479.06	16,778.84	792.00	596.82	21,113.21	21,093.21	
18	2047		20.00		20.00	2,290.91	220.28	29.86	493.43	17,114.42	792.00	608.76	21,549.66	21,529.66	
19	2048		20.00		20.00	2,359.64	226.89	31.36	508.23	17,456.70	792.00	620.93	21,995.75	21,975.75	
20	2049		20.00		20.00	2,430.43	233.70	32.93	523.48	17,805.84	792.00	633.35	34,620.72	34,600.72	
Residual or Salvage Value:		\$12,169.00 ^{12/}			Economic Internal Rate of Return (EIRR) = 30.48% ^{11/}										
					Net Present Value (NPV) of Benefits (6%) = \$154,455.93										
See Table 11.4a for Footnotes explanation.					NPV of Costs (6%) = \$29,136.59										
					NPV = \$125,319.34										
					Benefit-Cost Ratio (BCR) = 5.30										

Table 11.4a: Footnotes to Table 11.4

^{1/}	Based on redevelopment of the existing Bridport port entrance, with new direct channel access, channel deepening, new wharf capacity, marina pontoons, new services, and construction of outer breakwaters. Assumed period of construction of four years.
^{2/}	Assumes annual O&M costs to maintain all new port facilities, after five years of Contractor warranty support.
^{3/}	Assumes 10-year replacement of marine safety equipment and lighting refurbishment.
^{4/}	Based on telephone estimate of \$1.56 million in annual sea freight cost penalties incurred by Bridport-based Furneaux Freight shipping services. With limited channel depth, shipping services to/from Flinders Island are estimated to limit the volume of freight transhipped three times per week. [No evidence or verification of the cost penalties was provided for the Consultants]. Assumes an annual growth rate of 3%.
^{5/}	Estimated annual channel/river dredging costs to be avoided by Furneaux Freight, with the new and improved channel/water depth. [Telephone estimate of \$150,000 in annual dredging costs. No verification of the estimate was provided or cited]. Assumes an annual growth rate of 3%.
^{6/}	Estimated likely increase in commercial fishing vessel engineering servicing, and survey activities.
^{7/}	Based on interviews with commercial fishing operators currently not utilising Bridport wharf. Estimates are based on savings in time/fuel associated with additional sea travel, which could be generated if Bridport channel depth/port access was two metres deeper. Assumes an annual growth rate of 3%.
^{8/}	Estimated additional commercial fish production/landed catch at Bridport, with increased water depth, allowing additional commercial fish vessel discharge (see Tables 10.4 and 10.5, and Box 11.1). Assumes an annual growth rate of 2%.
^{9/}	Based on estimates of likely additional part-time/seasonal employment (May-December) associated with fish catch handling/fish processing. PAYE taxes have been netted from the PAYE salaries, assumed to be spent in the Bridport local economy.
^{10/}	Estimates provided by existing commercial fishing operators, based in Bridport, as to local expenditures disbursed into the local, regional/state economy (fuel, power, food, liquor, equipment, clothing). Assumed to grow at 2% per annum after 2035, with an increase in homeporting after 2034.
^{11/}	Conventional project investment criteria, as required for public sector Business Cases (for Local/State/Commonwealth agencies). Discount rate of 6.5% has been used.
^{12/}	Assumes a Residual or Salvage Value of 40% for the physical components of the capital investment; included as a benefit in the 20th year.



Table 11.5: Economic Appraisal of Investment in Bridport Port Redevelopment: (New Pier Entrance, Walls, Outer Wharf, Marina and Dredging):

CONSERVATIVE/LEAST OPTIMISTIC FUTURE SCENARIO

(\$ '000s: 2019 Constant Prices: No GST)

		ECONOMIC COSTS				ECONOMIC BENEFITS									
						Commercial Shipping Services			Commercial Fishing				Total		
						^{4/} Savings		^{6/} Increased Commercial				^{10/} Increased		Benefit	
			^{2/}			In Freight	^{5/} Savings	Vessel	^{7/} Savings	^{8/} Induced		Home-			
		^{1/}	Operating	^{3/}		Cost	in Dredging	Maintenance	in Operating	Fish	^{9/} Increased	porting			
Year Ended	Capital	and	Periodic	Total		Costs	Penalties	Costs	Activity	Costs	Production	Employment			Expenditures
June	Investment	Maintenance	Replacement	Costs											
1	2030	7,025.00			7,025.00								0.00	-7,025.00	
2	2031	14,050.00			14,050.00								0.00	-14,050.00	
3	2032	10,537.00			10,537.00								0.00	-10,537.00	
4	2033	3,512.00			3,512.00								0.00	-3,512.00	
5	2034				0.00			13.00	201.60	4,730.00	237.50	216.00	5,398.10	5,398.10	
6	2035				0.00			13.00	207.65	4,824.60	316.50	288.00	5,649.75	5,649.75	
7	2036				0.00			13.00	213.88	4,921.09	396.00	293.76	5,837.73	5,837.73	
8	2037				0.00			18.20	220.29	5,019.51	396.00	299.64	5,953.64	5,953.64	
9	2038				0.00			18.20	226.90	5,119.90	396.00	305.63	6,066.63	6,066.63	
10	2039		20.00	55.00	75.00			18.20	233.71	5,222.30	396.00	311.74	6,181.95	6,106.95	
11	2040		20.00		20.00			18.20	240.72	5,326.75	396.00	317.98	6,299.64	6,279.64	
12	2041		20.00		20.00			18.20	247.94	5,433.28	396.00	324.33	6,419.76	6,399.76	
13	2042		20.00		20.00			23.40	255.38	5,541.95	396.00	330.82	6,547.55	6,527.55	
14	2043		20.00		20.00			24.57	263.04	5,652.79	396.00	337.44	6,673.84	6,653.84	
15	2044		20.00		20.00			25.80	270.93	5,765.84	396.00	344.19	6,802.76	6,782.76	
16	2045		20.00		20.00			27.09	279.06	5,881.16	396.00	351.07	6,934.38	6,914.38	
17	2046		20.00		20.00			28.44	287.43	5,998.78	396.00	358.09	7,068.75	7,048.75	
18	2047		20.00		20.00			29.86	296.06	6,118.76	396.00	365.25	7,205.93	7,185.93	
19	2048		20.00		20.00			31.36	304.94	6,241.13	396.00	372.56	7,345.99	7,325.99	
20	2049		20.00		20.00			32.93	314.09	6,365.96	396.00	380.01	19,657.98	19,637.98	
Residual or Salvage Value:			\$12,169.00 ^{12/}							Economic Internal Rate of Return (EIRR) =				12.66% ^{11/}	
										Net Present Value (NPV) of Benefits (6%) =				\$54,483.11	
See Table 11.5a for Footnotes explanation.										NPV of Costs (6%) =				\$29,136.59	
										NPV =				\$25,346.52	
										Benefit-Cost Ratio (BCR) =				1.87	

Table 11.5a: Footnotes to Table 11.5

^{1/}	Based on redevelopment of the existing Bridport port entrance, with new direct channel access, channel deepening, new wharf capacity, marina pontoons, new services, and construction of outer breakwaters. Assumed period of construction of four years.
^{2/}	Assumes annual O&M costs to maintain all new port facilities, after five years of Contractor warranty support.
^{3/}	Assumes 10-year replacement of marine safety equipment and lighting refurbishment.
^{4/}	Benefit is deleted in the Conservative/Least Optimistic Future Scenario as no evidence or verification of the cost penalties was provided for the Consultants.
^{5/}	Benefit is deleted in the Conservative/Least Optimistic Future Scenario as no evidence or verification of the cost penalties was provided for the Consultants.
^{6/}	Estimated likely increase in commercial fishing vessel engineering servicing, and survey activities.
^{7/}	Based on interviews with commercial fishing operators currently not utilising Bridport wharf. Estimates are based on savings in time/ruei associated with additional sea travel, which could be generated if Bridport channel depth/port access was two metres deeper. Lower levels of future commercial vessel visits have been assumed.
^{8/}	Estimated reduced additional commercial fish production/landed catch at Bridport, with increased water depth, allowing additional commercial fish vessel discharge (see Tables 10.4 and 10.5, and Box 11.1). Assumes strong competition from St. Helens and Triabunna ports.
^{9/}	Based on reduced estimates of likely additional part-time/seasonal employment (May-December) associated with fish catch handling/fish processing. PAYE taxes have been netted from the PAYE salaries, assumed to be spent in the Bridport local economy. Assumes St. Helens and Triabunna fishing employment will grow in competition with Bridport.
^{10/}	Revised estimates provided by existing commercial fishing operators, based in Bridport, as to local expenditures disbursed into the local, regional/state economy (fuel, power, food, liquor, equipment, clothing). Reflects a lower level of homeporting, compared to the Most Optimistic Future Scenario.
^{11/}	Conventional project investment criteria, as required for public sector Business Cases (for Local/State/Commonwealth agencies). Discount rate of 6.5% has been used.
^{12/}	Assumes a Residual or Salvage Value of 40% for the physical components of the capital investment; included as a benefit in the 20th year.



Table 11.6: Summary of Results of Sensitivity Testing for all Three Construction Packages of Development
(Variations to Benefit-Cost Ratios)

	Base Case
Package A & B: Boat Ramp/Small Pier	<u>Benefit-Cost Ratio (BCR)</u>
What if:	1.48
Capital Costs are increased by 10%	1.34
Capital Costs are increased by 20%	1.27
Benefits are decreased by 10%	1.33
Benefits are decreased by 20%	1.18
Package C: New Recreational Pier	
What if:	2.13
Capital Costs are increased by 10%	1.93
Capital Costs are increased by 20%	1.77
Benefits are decreased by 10%	1.91
Benefits are decreased by 20%	1.70
Package D Port Development: (a) Most Optimistic Future Scenario	
What if:	5.30
Capital Costs are increased by 10%	4.82
Capital Costs are increased by 20%	4.41
Benefits are decreased by 10%	4.77
Benefits are decreased by 20%	4.24
Package D Port Development: (b) Least Optimistic Future Scenario	
What if:	1.87
Capital Costs are increased by 10%	1.70
Capital Costs are increased by 20%	1.55
Benefits are decreased by 10%	1.68
Benefits are decreased by 20%	1.49

Note: The results of the sensitivity tests for all Packages indicate that the Benefit-Cost Ratios (BCRs) all well exceed 1 (all are well in excess of break-even, when discounted benefits = discounted costs).



Appendix C – Marine Natural Values Report (Marine Solutions)

Refer Separate Report.



Table 10.3: Summary of Commercial Vessels
Within Bridport Area of Influence: 2018

1. Commercial Vessels ^{1/} > 7 Metres

• Bridport	13
• St. Helens/Binalong Bay	34
• King Island	14
• Flinders Island	9
• Launceston	8
• Devonport	6
• Latrobe	4
• Ulverstone	<u>3</u>

Sub-total **91 vessels**

2. Commercial Fishing Vessels > 7 Metres

• Bridport	9
• St. Helens/Binalong Bay	13
• King Island	8
• Flinders Island	5
• Devonport/Hawley Beach	3
• Launceston	2
• Ulverstone	<u>2</u>

Sub-total **42 vessels**

3. Additional Commercial Fishing Vessels ^{2/}

• Stanley to St. Helens	14 vessels
-------------------------	------------

4. Range of Draft Required for Fishing Fleet

- 0.8m – 2.6m (current range)
- Range of additional draft required : 1.2 – 2.6 metres
- Most requested additional draft : 2 metres

^{1/} Total of 232 commercial boats (fishing and non-fishing) as per MAST registration data.

^{2/} Not all of these vessels are working for > 6 months per year. A number are awaiting sale

Table 10.4: Forecasts of Commercial Fishing Vessel Homeporting ^{1/} and Arrivals After Lengthened Wharf/Berth Capacity and Improved River Access: Impact of Additional Commercial Fishing Vessel Activities with Improved Water Depth and Access (Most Likely Forecasts: Fishing Sector Interviews) ^{2/}

Year Ended June	With Additional One Metre Depth ^{3/} (Improved Access)			With Additional Two Metre Depth ^{4/} (Improved Access)		
	Homeport Vessels ^{4/} (At Berth After Unloading)	Visiting Vessels ^{5/} (Unloading Catch)	Total Fishing Vessels Using Bridport	Homeporting ^{4/} Vessels	Visiting Vessels (Unloading) Catch	Total Fishing Vessels Using Bridport
1 2018	12	5	17	12	8	20
2 2019	14	6	20	18	8	26
3 2020	16	6	22	20	9	29
4 2021	16	7	23	24	9	33
5 2022	16	7	23	26	10	36
6 2023	16	8	24	26	10	36
7 2024	16	8	24	26	10	36
8 2025	16	8	24	26	11	37
9 2026	16	8	24	26	11	37
10 2027	16	8	24	26	12	38

^{1/} Homeporting¹ is defined as vessels using the port on a regular/irregular basis, both for unloading, fuel and for short-term berthing. May be alternatively defined as a minimum number of calls per year (12 - 20), including annual surveying and mechanical/technical servicing.

^{2/} Interviews with fishing vessel operators/fishermen indicate that between 24 - 26 commercial fishing vessels operate in the Bass Strait/NE coastal waters, but are **currently** unable to access and discharge at the existing Bridport wharf. Average turnaround time available is 45 - 60 minutes due to depth of water and tidal movements.

^{3/} With an additional one metre of depth of river, and direct access to Bass Strait, commercial fishing vessels will have between 3 - 4 hours of working time in the port (with provision of additional berth capacity and extended quay line).

^{4/} Estimated number of commercial fishing vessels, which will homeport at Bridport (currently 4 - 5 vessels berth at Bridport for 3 - 4 months yearly), with one metre extra of river depth.

^{5/} Estimated number of visiting commercial fishing vessels likely to discharge fish catch/refuel/take provisions - now based in other Tasmanian ports and in Victoria (Paynesville, Metung, Lakes Entrance), Eden (NSW), and Tasmania (Tamar River, Devonport, Stanley, Strahan, Hobart, Triabunna, St. Helens).

^{6/} With an additional two metres of depth of river and direct access to Bass Strait, commercial fishing vessels and commercial freight vessels will have between 14 - 16 hours of working time at the expanded wharf facilities.

Table 10.5: Assumptions Relating to Future Potential Additional Fish/Fish Product Catch Landed at Bridport (With Two Metres of Additional River Depth and Extended Wharf Length)

Product	Estimated Current and Forecast Additional Fish Catch		Estimated Maximum Landed Value of Additional Catch ^{3/}	
	Current Volume ^{1/} (2017/2018) (Tonnes)	Potential Additional Future Landed Catch ^{2/} (Tonnes)	\$/kg	\$ Value (\$ million)
Scallops (with shell)	1,000 140 (meat)	140 - 150 (meat)	30.0	4.20
Rock Lobster	30	30 - 40	70.0	2.10
Abalone	50	20 ^{3/}	42.0	0.84
Shark	60	100 - 120	11.0	1.10
Scale species ^{4/}	20	30 - 40	4.0	0.12
Octopus	110	110 - 130	17.0	1.87
Orange Roughy ^{5/}	-	500 - 750	4.0	3.00
		Sub-total		\$13.23 million
Salmon	400 - 420 (handled thru other ports)	400 - 420 (diverted from unloading at other ports, if Bridport is developed)	1.5	

^{1/} Estimated by individual fisherman, as to landed volumes.

^{2/} Based on expected future catch potential if commercial vessels were able to utilise Bridport (savings in time/costs to access fishing grounds around Flinders Island/eastern Bass Strait, and NE corner of Tasmania, and opportunities to harvest under-utilised fish quotas at least cost.

^{3/} Based on current available additional licence volume in the Bridport catchment area (not utilised to-date).

^{4/} Wild fish species such as trevalla, blue grenadier, pink ling.

^{5/} Orange roughy, now released from quota restrictions for commercial fishing, able to be caught at least-cost distance from Bridport (assumes 50% of the total quota of 1,000T, growing to 1,500T) can be landed in Bridport.



**Table 10.6: Summary of Recreational Boat Ownership
Bridport, Tasmania and Australian States
As a Proportion of Populations
(2017/2018)**

Number of recreational boats registered at Bridport:

- All vessels: 240
- > 7 metres: 36

(includes Tomahawk, water house and Dorset boat owners)

Population	Recreational Boat Ownership Ratio (Boat per Residential Population)
Bridport	1 per 13.7
Tasmania	1 per 17.4
Queensland	1 per 19.1
Victoria	1 per 27.4
NSW	1 per 27.4
Australian Average	1 per 29.8

Source: MAST, ABS.



Table 11.1: Summary of Current and Forecast Demand for Additional Boating Infrastructure at Bridport

Bridport: Public Boat Ramp: Benefit Background

- Estimated current number of boat launches at existing ramp (2018/19): 6,600⁶
- Estimated size of fishing/boating party: 3 persons⁶
- Sources of fishing party/visitors⁶
 - a. Bridport town/local area: 55%
 - b. Launceston/NE Tasmania: 40%
 - c. Hobart/SE Tasmania: 5%
- Current fishing demand: 2018/19

	Boat Launches	Total Fishing Party Numbers
(i) Bridport area	3,630	10,890
(ii) Launceston/NE Tasmania	2,640	7,920
(iii) Hobart/SE Tasmania	330	<u>990</u>
		19,800

- Forecast additional fishing demand/activity with new infrastructure

Additional Fishing Person Days (Participants)

2021/22	1,980	(10% additional demand in Project Year 2)
2022/23	2,080	(5% additional growth in Project Year 3)
2023/24	2,185	(5% additional growth in Project Year 4)
2024/25 – 2039/40		(1% growth per annum)

- Average fishing expenditures per fishing trip

Item	Average Expenditure ^{a/}	Net Benefit to Local/State Economy Per Party ^{b/}	
Bait/Ice	\$18.95	100%	\$18.95
Boat Fuel	\$44.70	15%	\$ 6.70
Food/Drinks	\$50.25	60%	\$30.15
Travel (Fuel)	\$33.00	15%	\$ 4.95
		Sub-total	\$60.75

⁶ Based on local Bridport resident estimates and local recreational fishermen interviews.



^{a/} Based on Lyle J. M., et. al., 2013 Recreational Fishing Survey, indexed to 2018/19 prices (11.7%).

^{b/} Allows for the 'leakage' of inputs not produced and retained at the Local/State level, e.g. fuel production.

- Total additional forecast recreational fishing expenditures (Local/State economy) in local economy (local food outlets, bottle shops, newsagents)

	Additional Boat Ramp Use	Additional Total Expenditures
2021/22	1,980 ^{a/}	\$120,285
2022/23	2,080 ^{b/}	\$126,360
2023/24	2,185 ^{b/}	\$132,740
2024/25 – 2039/40 (to grow by 1% per annum)		

^{a/} Assumed 10% increase in initial annual demand after opening of new ramp/facilities.

^{b/} Assumes further 5% annual growth for subsequent years 2022/23 and 2023/24 (reducing to an annual additional growth rate of 1% per annum from 2024/25 to 2039/40).

Table 11.2 Economic Appraisal of Investment in Redeveloped Bridport Boat Ramp Infrastructure and Small Pier:
(\$ '000s: 2019 Constant Prices: No GST)

		Economic Costs			Economic Benefits				
			2/ Operating and Maintenance	Total Costs	Additional Recreational Fishing/ Boating 3/	Additional 4/ Retail Expenditures (Food)	5/ Additional Local Area Employment	Total Benefits	Net
Year Ended	1/ Capital								Benefit
June									
1	2021	2,341.00		2,341.00				0.00	-2,341.00
2	2022			0.00	111.30	49.95	79.20	240.45	240.45
3	2023			0.00	116.85	51.80	81.58	250.23	250.23
4	2024			0.00	122.67	53.70	84.02	260.39	260.39
5	2025			0.00	123.90	55.31	86.54	265.75	265.75
6	2026		10.00	10.00	125.14	56.97	89.14	271.25	261.25
7	2027			0.00	126.39	58.68	91.81	276.88	276.88
8	2028			0.00	127.65	60.44	94.57	282.66	282.66
9	2029			0.00	128.93	62.25	97.41	288.59	288.59
10	2030			0.00	130.22	64.12	100.33	294.67	294.67
11	2031		20.00	20.00	131.52	66.04	103.34	300.90	280.90
12	2032			0.00	132.83	68.03	106.44	307.30	307.30
13	2033			0.00	134.16	70.07	109.63	313.86	313.86
14	2034			0.00	135.50	72.17	112.92	320.59	320.59
15	2035			0.00	136.86	74.33	116.31	327.50	327.50
16	2036			0.00	138.23	76.56	119.80	334.59	334.59
17	2037			0.00	139.61	78.86	123.39	341.86	341.86
18	2038			0.00	141.01	81.23	127.09	349.32	349.32
19	2039			0.00	142.42	83.66	130.91	356.98	356.98
20	2040			0.00	143.84	86.17	134.83	1,593.85	1,593.85
Residual or Salvage Value = \$1,229.00				7/	Economic Internal Rate of Return (EIRR) =				11.20% 6/
					Net Present Value (NPV) of Benefits @ 6.5% =				\$3,276.47
					NPV of Costs @ 6.5% =				\$2,214.98
					NPV @ 6.5% =				\$1,061.49
					Benefit-Cost Ratio (BCR) =				1.48
1/	Based on the construction of a new double concrete elevated ramp, jetty extension, walking tracks and seats, to be completed in less than 12 months.								
2/	Assumes minor repairs and surface treatment after 5 years over the life of the facility (assumed to be 50 years). Replacement of buoys after 10 years (\$20,000).								
3/	Based on estimates in Table 11.1. Additional boat ramp user demand of 10%, 5% and 5% for the first 3 years, with net spending per party of \$60.75 per launch, growing at 1% per annum, after the initial first 3 years of use.								
4/	Based on additional sales revenues (less 'leakage') to generate local additional net income (food, fuel, drinks) on a 7-day/10-hour basis for boat ramp users. Will also result in additional revenues to adjacent businesses (giftware, newsagency, hair salon).								
5/	Based on the generation of additional net income to the Swansea economy from additional food/drink-related retailing employment (full-time and part-time). Gross salaries have been netted of PAYE tax and superannuation. Assumes additional part-time employment in the peak summer months.								
6/	Conventional project investment criteria as required by the Council of Australian Government (COAG) Investment/Business Case Guidelines. Discount rate of 6.5% is used, as recommended by the Office of Best Practice Regulation (OBPR).								
7/	Assumes a Residual or Salvage Value of 60% for the physical components of the capital investment (a conservative estimate): included as a benefit after 20 years.								



10/	Assumes that with each small cruise ship call, 30 passengers and 10 crew (of a total of 80 passengers and 20 crew) will take a day bus tour of the Bridport area (wineries, sightseeing, farm visits, lunch stop), spending an average of \$95 per person. Based on one (1) ship call in Year 4 (2017), growing to 4 ship calls in Year 6 (2019). Assumes 3% real growth in expenditures after Year 6.
11/	Based on the sale of local food/wine/fruit/meat/vegetables to small cruise ships, attracted to Bridport (via Barnbougle marketing) for 4 ship visits per year (10-day voyage from Sydney or Perth to other destinations en-route to Bridport). Estimates of local produce sales of \$202,000 per ship visit are based on actual Kimberley/NT cruise ship food/entertainment requirements, on a per capita basis (80 passengers, 20 crew). Average provision sales of \$169,000 for 80 passengers and \$18,000 for crew, plus \$15,500 surplus (gifts/disposal). Assumes that trip visits (in summer months) will grow from 1 trip in Year 1 to 4 trips after 3 years (a conservative assumption). Assumes a minimum/conservative growth of 3% per annum.
12/	Assumes a demand for commercial fish charters, with pier berthing/passenger landing facilities. Based on total charter fees of \$1,350 per day. A net surplus after taxes and operating costs, housing for management and staff expenditures in the local area of \$290 per charter trip. Assumes a minimum of 95 charter days (peak of 45 days in summer). Assumes a minimum growth of 3% per annum.
13/	Covers the period October-November-December for whale watching charter trips for visitors/residents. Assumes 1 to 2 viewings per week, with gross fees of \$165 per day. Net surplus to the local economy after all taxes, housing, other personnel costs of \$16,500. Forecast to grow at 3% per annum until 2033.
14/	Conventional project investment criteria as required by Council of Australian Government (COAG) Business Case/public sector investment guidelines.
15/	Residual or salvage value of the pier (assumes a sliding annual depreciation rate (60% after 20 years). Included as a benefit in the 20th year of the Business Case.



Table 11.4: Economic Appraisal of Investment in Bridport Port Redevelopment: (New Channel Entrance, Walls, Outer Wharf, Marina and Dredging):

MOST OPTIMISTIC FUTURE SCENARIO:
(\$ '000s: 2019 Constant Prices: No GST)

		ECONOMIC COSTS				ECONOMIC BENEFITS											
					Total Costs	Commercial Shipping Services			Commercial Fishing				Total Benefits	Net Benefit Stream			
						^{4/} Savings in Freight Cost	^{5/} Savings in Dredging Costs	^{6/} Increased Commercial Vessel Maintenance Activity	^{7/} Savings in Operating Costs	^{8/} Induced Fish Production	^{9/} Increased Employment	^{10/} Increased Home- porting Expenditures					
Year Ended June	Capital Investment	Operating and Maintenance	Periodic Replacement														
1	2030	7,025.00			7,025.00								0.00	-7,025.00			
2	2031	14,050.00			14,050.00								0.00	-14,050.00			
3	2032	10,537.00			10,537.00								0.00	-10,537.00			
4	2033	3,512.00			3,512.00								0.00	-3,512.00			
5	2034				0.00	1,560.00	150.00	13.00	336.00	13,230.00	475.00	360.00	16,124.00	16,124.00			
6	2035				0.00	1,606.80	154.50	13.00	346.08	13,494.60	633.00	480.00	16,727.98	16,727.98			
7	2036				0.00	1,655.00	159.14	13.00	356.46	13,764.49	792.00	489.60	17,229.69	17,229.69			
8	2037				0.00	1,704.65	163.91	18.20	367.16	14,039.78	792.00	499.39	17,585.09	17,585.09			
9	2038				0.00	1,755.79	168.83	18.20	378.17	14,320.58	792.00	509.38	17,942.95	17,942.95			
10	2039		20.00	55.00	75.00	1,808.47	173.89	18.20	389.52	14,606.99	792.00	519.57	18,308.63	18,233.63			
11	2040		20.00		20.00	1,862.72	179.11	18.20	401.20	14,899.13	792.00	529.96	18,682.32	18,662.32			
12	2041		20.00		20.00	1,918.60	184.48	18.20	413.24	15,197.11	792.00	540.56	19,064.19	19,044.19			
13	2042		20.00		20.00	1,976.16	190.02	23.40	425.63	15,501.05	792.00	551.37	19,459.63	19,439.63			
14	2043				20.00	2,035.45	195.72	24.57	438.40	15,811.07	792.00	562.40	19,859.61	19,839.61			
15	2044		20.00		20.00	2,096.51	201.59	25.80	451.56	16,127.30	792.00	573.64	20,268.39	20,248.39			
16	2045		20.00		20.00	2,159.40	207.64	27.09	465.10	16,449.84	792.00	585.12	20,686.19	20,666.19			
17	2046		20.00		20.00	2,224.19	213.86	28.44	479.06	16,778.84	792.00	596.82	21,113.21	21,093.21			
18	2047		20.00		20.00	2,290.91	220.28	29.86	493.43	17,114.42	792.00	608.76	21,549.66	21,529.66			
19	2048		20.00		20.00	2,359.64	226.89	31.36	508.23	17,456.70	792.00	620.93	21,995.75	21,975.75			
20	2049		20.00		20.00	2,430.43	233.70	32.93	523.48	17,805.84	792.00	633.35	34,620.72	34,600.72			
Residual or Salvage Value:		\$12,169.00		^{12/}						Economic Internal Rate of Return (EIRR) =				30.48% ^{11/}			
												Net Present Value (NPV) of Benefits (6%) =				\$154,455.93	
See Table 11.4a for Footnotes explanation.												NPV of Costs (6%) =				\$29,136.59	
												NPV =				\$125,319.34	
												Benefit-Cost Ratio (BCR) =				5.30	



Table 11.5: Economic Appraisal of Investment in Bridport Port Redevelopment: (New Pier Entrance, Walls, Outer Wharf, Marina and Dredging):

CONSERVATIVE/LEAST OPTIMISTIC FUTURE SCENARIO

(\$ '000s: 2019 Constant Prices: No GST)

		ECONOMIC COSTS				ECONOMIC BENEFITS									
						Commercial Shipping Services			Commercial Fishing				Total		
						^{4/} Savings		^{6/} Increased Commercial				^{10/} Increased		Benefit Stream	
			^{2/}			In Freight	^{5/} Savings	Vessel	^{7/} Savings in	^{8/} Induced		^{9/} Home-			
		^{1/} Capital	and Operating	^{3/} Periodic		Cost	in Dredging	Maintenance	Operating	Fish	Increased	porting			
Year Ended		Investment	Maintenance	Replacement		Costs	Penalties	Costs	Activity	Costs	Production	Employment			Expenditures
June															
1	2030	7,025.00			7,025.00								0.00	-7,025.00	
2	2031	14,050.00			14,050.00								0.00	-14,050.00	
3	2032	10,537.00			10,537.00								0.00	-10,537.00	
4	2033	3,512.00			3,512.00								0.00	-3,512.00	
5	2034				0.00			13.00	201.60	4,730.00	237.50	216.00	5,398.10	5,398.10	
6	2035				0.00			13.00	207.65	4,824.60	316.50	288.00	5,649.75	5,649.75	
7	2036				0.00			13.00	213.88	4,921.09	396.00	293.76	5,837.73	5,837.73	
8	2037				0.00			18.20	220.29	5,019.51	396.00	299.64	5,953.64	5,953.64	
9	2038				0.00			18.20	226.90	5,119.90	396.00	305.63	6,066.63	6,066.63	
10	2039		20.00	55.00	75.00			18.20	233.71	5,222.30	396.00	311.74	6,181.95	6,106.95	
11	2040		20.00		20.00			18.20	240.72	5,326.75	396.00	317.98	6,299.64	6,279.64	
12	2041		20.00		20.00			18.20	247.94	5,433.28	396.00	324.33	6,419.76	6,399.76	
13	2042		20.00		20.00			23.40	255.38	5,541.95	396.00	330.82	6,547.55	6,527.55	
14	2043		20.00		20.00			24.57	263.04	5,652.79	396.00	337.44	6,673.84	6,653.84	
15	2044		20.00		20.00			25.80	270.93	5,765.84	396.00	344.19	6,802.76	6,782.76	
16	2045		20.00		20.00			27.09	279.06	5,881.16	396.00	351.07	6,934.38	6,914.38	
17	2046		20.00		20.00			28.44	287.43	5,998.78	396.00	358.09	7,068.75	7,048.75	
18	2047		20.00		20.00			29.86	296.06	6,118.76	396.00	365.25	7,205.93	7,185.93	
19	2048		20.00		20.00			31.36	304.94	6,241.13	396.00	372.56	7,345.99	7,325.99	
20	2049		20.00		20.00			32.93	314.09	6,365.96	396.00	380.01	19,657.98	19,637.98	
Residual or Salvage Value:			\$12,169.00 ^{12/}							Economic Internal Rate of Return (EIRR) =				12.66% ^{11/}	
										Net Present Value (NPV) of Benefits (6%) =				\$54,483.11	
See Table 11.5a for Footnotes explanation.										NPV of Costs (6%) =				\$29,136.59	
										NPV =				\$25,346.52	
										Benefit-Cost Ratio (BCR) =				1.87	

Table 11.5a: Footnotes to Table 11.5

1/	Based on redevelopment of the existing Bridport port entrance, with new direct channel access, channel deepening, new wharf capacity, marina pontoons, new services, and construction of outer breakwaters. Assumed period of construction of four years.
2/	Assumes annual O&M costs to maintain all new port facilities, after five years of Contractor warranty support.
3/	Assumes 10-year replacement of marine safety equipment and lighting refurbishment.
4/	Benefit is deleted in the Conservative/Least Optimistic Future Scenario as no evidence or verification of the cost penalties was provided for the Consultants.
5/	Benefit is deleted in the Conservative/Least Optimistic Future Scenario as no evidence or verification of the cost penalties was provided for the Consultants.
6/	Estimated likely increase in commercial fishing vessel engineering servicing, and survey activities.
7/	Based on interviews with commercial fishing operators currently not utilising Bridport wharf. Estimates are based on savings in time/ruei associated with additional sea travel, which could be generated if Bridport channel depth/port access was two metres deeper. Lower levels of future commercial vessel visits have been assumed.
8/	Estimated reduced additional commercial fish production/landed catch at Bridport, with increased water depth, allowing additional commercial fish vessel discharge (see Tables 10.4 and 10.5, and Box 11.1). Assumes strong competition from St. Helens and Triabunna ports.
9/	Based on reduced estimates of likely additional part-time/seasonal employment (May-December) associated with fish catch handling/fish processing. PAYE taxes have been netted from the PAYE salaries, assumed to be spent in the Bridport local economy. Assumes St. Helens and Triabunna fishing employment will grow in competition with Bridport.
10/	Revised estimates provided by existing commercial fishing operators, based in Bridport, as to local expenditures disbursed into the local, regional/state economy (fuel, power, food, liquor, equipment, clothing). Reflects a lower level of homeporting, compared to the Most Optimistic Future Scenario.
11/	Conventional project investment criteria, as required for public sector Business Cases (for Local/State/Commonwealth agencies). Discount rate of 6.5% has been used.
12/	Assumes a Residual or Salvage Value of 40% for the physical components of the capital investment; included as a benefit in the 20th year.



Table 11.6: Summary of Results of Sensitivity Testing for all Three Construction Packages of Development

(Variations to Benefit-Cost Ratios)

	Base Case
Package A & B: Boat Ramp/Small Pier	<u>Benefit-Cost Ratio (BCR)</u>
What if:	1.48
Capital Costs are increased by 10%	1.34
Capital Costs are increased by 20%	1.27
Benefits are decreased by 10%	1.33
Benefits are decreased by 20%	1.18
Package C: New Recreational Pier	
What if:	2.13
Capital Costs are increased by 10%	1.93
Capital Costs are increased by 20%	1.77
Benefits are decreased by 10%	1.91
Benefits are decreased by 20%	1.70
Package D Port Development: (a) Most Optimistic Future Scenario	
What if:	5.30
Capital Costs are increased by 10%	4.82
Capital Costs are increased by 20%	4.41
Benefits are decreased by 10%	4.77
Benefits are decreased by 20%	4.24
Package D Port Development: (b) Least Optimistic Future Scenario	
What if:	1.87
Capital Costs are increased by 10%	1.70
Capital Costs are increased by 20%	1.55
Benefits are decreased by 10%	1.68
Benefits are decreased by 20%	1.49

Note: The results of the sensitivity tests for all Packages indicate that the Benefit-Cost Ratios (BCRs) all well exceed 1 (all are well in excess of break-even, when discounted benefits = discounted costs).



Appendix C – Marine Natural Values Report (Marine Solutions)

Refer Separate Report.