

The Treasury

Budget 2017 Information Release

Release Document July 2017

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[1]	to prevent prejudice to the security or defence of New Zealand or the international relations of the government	6(a)
[4]	to prevent prejudice to the maintenance of the law, including the prevention, investigation, and detection of offences, and the right to a fair trial	6(c)
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[34]	to maintain the effective conduct of public affairs through the free and frank expression of opinions	9(2)(g)(i)
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[39]	to prevent the disclosure of official information for improper gain or improper advantage	9(2)(k)
[40]	Not in scope	

In preparing this Information Release, the Treasury has considered the public interest considerations in section 9(1) and section 18 of the Official Information Act.

Template 3: Cost Benefit Analysis Template

Section A Descriptive Information

Vote	Internal Affairs
Responsible Minister	Minister of Internal Affairs
Initiative title	Pitt Island Wharf resilience and functionality – stage two

Funding Sought (\$m)	2016/17	2017/18	2018/19	2019/20	2020/21 & outyears	TOTAL
Operating	\$1.785	\$3.120	\$0.079	\$0.079	\$0.079	\$5.142
Capital	-	-	-	-	-	-

Problem Definition

A description of the problem or opportunity that this proposal seeks to address, and the counterfactual.

The proposed initiative will increase the resilience and functionality of Pitt Island wharf.

The current wharf lacks in resilience and is susceptible to the harsh Chatham Islands climate

Pitt Island Wharf was reconstructed in 2014 however, it has subsequently suffered significant damage from successive storm events, including Cyclone Pam, in early 2015. The Wharf is no longer resilient enough to withstand major storm events. The cost of repair from Cyclone Pam was approximately \$0.7 million.

The proposed initiative will address the lack of resilience by providing a breakwater for the wharf which will stop large rocks crashing onto and around the Wharf (which causes significant delays to the Wharf's efficiency and productivity until such time as the rocks are able to be moved). It will also reduce wave energy.

Economic potential on Pitt Island is unrealised

A 2014 Martin Jenkins report commissioned by the Chatham Islands Council found that:

- the Chatham Islands population is steadily declining (1.2 per cent per annum); and
- GDP is steadily declining (4.2 per cent per annum primarily due to falling labour productivity in fishing).

The 2014 report notes the high cost of living and doing business constrains development further exacerbating economic growth.

The area within a 200 nautical mile radius of the Chatham Islands makes up about 10 per cent of the Exclusive Economic Zone (EEZ). It marks the easternmost point of New Zealand's maritime boundary, and includes some of its most productive fishing areas.

Investing in key Chatham Islands infrastructure such as the wharf on Pitt Island (Pitt Island is one of the two inhabited islands on the Chatham Islands) will greatly assist in realising the full economic potential of the Chatham Islands and increase investor and consumer confidence. The proposed initiative provides the opportunity to:

- allow a more secure supply of goods and services (eg household supplies, fruit and vegetables necessary to ensure habitation on Pitt Island) to Pitt Island (estimated saving of \$0.100 million per annum);
- avoid delays (when a ship can't arrive at the wharf due to inadequate infrastructure) for the farming sector and provide farmers with confidence export livestock to and from the Island (estimated saving of \$0.145 million per annum);
- avoid delays (when a ship can't arrive or depart at the wharf due to inadequate infrastructure) for the fishing sector (estimated saving of \$0.050 million per annum);
- increase Pitt Island Wharf tourist revenue NB – Pitt Island offers access to 3000 acres of bush and nature reserves managed by Department of Conservation, Flora and Fauna tours, historic insight into Moriori and European history, Mt Hakepa which is the first place to see the sun (estimated increased revenue of \$0.100 million per annum);
- avoid the costs of storm damage repairs (estimated saving of \$0.700 million per event).

Initiative Description

A description of what the initiative will provide or produce and how this will address the problem or opportunity.

On 25 October 2016 Cabinet confirmed operating funding \$1.785 million for Pitt Island Wharf resilience and functionality – stage one [CAB-16-MIN-0549 refers].

This initiative seeks:

- operating funding of \$3.120 million for stage two of the Chatham Islands' Pitt Island Wharf resilience programme proposal submitted by the Memorial Park Alliance (an alliance of HEB construction, Downer Construction and engineering firms AECOM and Tonkin & Taylor); and
- \$0.079 million per annum from 2018/19 onwards to safeguard the investment by ensuring the asset is maintained.

Stage two will improve the resilience of Pitt Island Wharf to future storm events through the provision of:

- repair of storm damaged concrete wharf pavement; and
- a breakwater along the ocean facing side of the wharf.

The breakwater will prevent rocks from the existing breakwater from being picked up in storm events and thrown onto and over the Wharf structure. The break water will also reduce wave energy at the Wharf during storm events.

Please note that while the funding sort is for stage two only, this cost benefit analysis has been modelled using both stage one and two costs.

Alternative Options Considered

Prior to Cabinet confirming funding for stage one of the Pitt Island Wharf resilience and functionality programme, four options were considered:

- 1) Do nothing – \$0: retain an unsafe, uncompliant wharf with a lack of resilience.
- 2) Two stage proposal (preferred option) - \$5.142 million (\$1.785 million for stage one, and \$3.357 million for stage two): the two stage proposal is preferred as it provides maximum opportunity to realise cost efficiencies associated with the Waitangi Wharf redevelopment (on Chatham Island), and it reduces risk associated with adverse weather by spreading physical works over two summer-autumn periods which is important as weather is the most significant risk identified for this initiative.
- 3) Single stage proposal - \$5.430 million: there would be more risk associated with adverse weather (as the work would stretch from summer through winter months (winter weather on Chatham Islands is characteristically volatile and unpredictable), and a reduced ability to realise cost efficiencies associated with the Waitangi Wharf redevelopment.
- 4) Full redevelopment of Pitt Island Wharf - \$20.000+ million (this option would construct a more substantial break water however the financial cost would outweigh the benefits).

Section B Impact Analysis

Impact Analysis

An explanation of who is impacted (winners and losers), what the impacts are (costs and benefits), and when the impacts will be realised and for how long. The impacts should be quantified and monetised if possible.

Financial and/or environmental impacts – a description of each of the following identified benefits is outlined further below:

- costs of storm damage repairs are avoided;
- better wharf facilities will allow more secure supply of goods and services;
- fewer delays for the farming sector (breeding stock imports, sale stock exports);

- fewer delays for commercial fishing sector (sale stock exports); and
- increased revenue from tourism.

Benefit: Costs of storm damage repairs are avoided

- Estimated saving of \$0.700 million per event.

Assumption

A severe storm event is estimated to occur every 3 years.

Evidence

The evidence to support the assumptions and costing is medium as this figure was the cost of clean-up following storm damage sustained in early 2015.

Benefit: Better wharf facilities will allow more secure supply of goods and services

- Estimated saving of \$0.100 million per annum.

Key assumptions

Information from Pitt Island residents is that a boat can come to the Island and not be loaded or unloaded on average about three to four times a year. The longest period where there was no freight service due to an inability to unload was 22 months. The ship will usually allow a three-day window for loading and unloading before departure. Not all failures to load or unload can be attributed to the Wharf as conditions in Pitt Strait can be very demanding.

The cost of not loading or unloading costs approximately \$13,000 a day or \$39,000 a visit for direct shipping costs. In addition there are other costs;

- loss of productivity on the Island in down time such as inability to unload goods eg building materials, fertilizer etc;
- loss of perishable items which cannot be landed;
- cost of using alternative transport options eg by flight, barge or fishing boat; and
- lost opportunity costs in delivery of produce to market at key times when premiums are available.

On an annual basis it would not be unreasonable to consider the benefit from the improved resilience and operation of the wharf to be at least \$100,000 per annum.

Evidence

The evidence to support the assumptions and costing is low as this information has been estimated by contractors (whom have been based on Chatham Island since January 2016) delivering the Waitangi Wharf redevelopment.

Benefit: Fewer delays for the farming sector (breeding stock imports, sale stock exports)

- Estimated saving of \$0.145 million per annum.

Key assumptions

The farming on Pitt Island is undertaken in a conservative manner to make allowance for uncertainty. As a result stock levels are kept low to ensure a reserve of feed is available if stock cannot be transported off the Island. Breeding stock levels are also kept to a minimum. The result of this is that farming potential cannot be realised. In 2016 a number of stock have not been able to be transported off the Island have had to be culled.

The pastoral production on Pitt Island is approximately 15 per cent of the total Chatham Islands production. This equates to approximately \$1,450,000 in exports per year.

The Martin Jenkins, Chatham Islands Economic Profile, December 2014 (the Profile), identified potential growth in farming production. The Profile identified three possible development scenarios for farming;

- Scenario 1 - Productivity of 25 per cent over the next 10 years based on maintaining current productivity levels;
- Scenario 2 - Stock levels returned to 1994 levels (104,000 sheep); or

- Scenario 3 - New land brought into production and increased productivity.

In the present situation it is unlikely that any of these scenarios would be possible. If there was greater confidence in exporting stock from the Island the following improvements in GDP may be achieved using the information contained in the Profile:

Scenario	Per annum increase	Increased GDP from Pitt Island farming by 2023	Increase jobs
1	2.9%	\$170,000	0
2	4.5%	\$290,000	5
3	13.5%	\$1,300,000	25

If a productivity gain of 10 per cent could be achieved this would equate to improved exports of \$145,000.

Evidence

The evidence to support the assumptions and costing is low as this information has been estimated by contractors (whom have been based on Chatham Island since January 2016) delivering the Waitangi Wharf redevelopment.

Benefit: Fewer delays for commercial fishing sector (sale stock exports)

- Estimated saving of \$0.050 million per annum.

Key assumptions

The market for New Zealand's fish exports is evolving to focus on live and chilled exports as opposed to frozen. The premiums from the live and chilled market are significant. However, establishing reliable live and chilled exports requires good distribution systems. Crayfish from Pitt Island need to be caught and delivered to the mainland in accordance with agreed delivery schedules. Having a boat based on Pitt Island brings greater certainty to utilisation of the fishing resource in the waters around Pitt Island. An estimate of having improved reliability of the Pitt Island Wharf is thought to have a minimum benefit of \$50,000 per annum.

Evidence

The evidence to support the assumptions and costing is low as this information has been estimated by contractors (whom have been based on Chatham Island since January 2016) delivering the Waitangi Wharf redevelopment.

Benefit: Increased revenue from tourism

- Estimated increased revenue of \$0.100 million per annum.

Key assumptions

The Chatham Island Tourism sector is currently worth about \$2 million a year and is seeing significant increases in numbers.

A limited number of people have the opportunity to visit Pitt Island. Pitt Island offers access to 3000 acres of bush and nature reserves managed by Department of Conservation, Flora and Fauna tours, historic insight into Mori and European history, Mt Hakepa which is the first place to see the sun. There is considerable interest in visiting Pitt Island particularly with proposed changes around the accessibility of Pitt Island's nature reserves. Access to these places will have international appeal and will attract a premium as numbers of permitted visits will be limited.

The average visitor to Chatham Island spends in the range of \$3,000 to \$4,000 per visit (includes fares and accommodation). Improved boat access to Pitt Island for tourists could increase numbers of visitors to Pitt Island from 100 to 300 visitors a year. Assuming the average spend per Pitt Island visitor would be \$500 improved boat access to Pitt Island could increase tourist revenues by between \$50,000 to \$150,000 per annum.

Evidence

The evidence to support the assumptions and costing is low as this information has been estimated by contractors (whom have been based on Chatham Island since January 2016) delivering the Waitangi Wharf redevelopment.

Who is impacted positively should this funding bid be successful

The New Zealand Government, Chatham Islands Enterprise Trust, Pitt Island residents, the Chatham Islands fishing and farming communities

Impact Summary Table

Impacts - Identify and list \$m present value, for monetised impacts	Option/scenario		Assumptions and evidence (quantify if possible, and use ranges where appropriate)	Evidence certainty ¹
	1	2		
Estimated impact on key outcomes				
-	-	-		Low
Cost of the Initiative				
Pitt Island Wharf resilience and functionality – stage one	(1.73m)	-		High
Pitt Island Wharf resilience and functionality – stage two	(2.86m)	-		High
Maintenance costs	(0.97m)			High
Government Benefits/(Costs)				
Avoided cost of storm damage repairs	2.97m		Estimated saving of \$0.700 million per event. A severe storm event is estimated to occur every 3 years	High
Total Quantified Government Impact	2.97m	-		High
Wider Societal Benefits/(Costs)				
Better wharf facilities will allow more secure supply of goods and services	1.27m	-	The cost of not loading or unloading costs approximately \$13,000 a day or \$39,000 a visit for direct shipping costs. In addition there are other costs; <ul style="list-style-type: none"> Loss of productivity on the Island in down time such as inability to unload goods eg building materials, fertilizer etc. Loss of perishable items which cannot be landed. Cost of using alternative transport options eg by flight, barge or fishing boat. Lost opportunity costs in delivery of produce to market at key times when premiums are available. 	Low
Avoided delays for farming sector (breeding stock imports, sale stock exports)	1.85m	-	A productivity gain of 10 per cent resulting in improved exports of \$145,000 per annum	Low
Avoided delays for commercial fishing sector (sale stock exports)	0.64m	-	An improved distribution system to meet agreed delivery schedules is thought to have a minimum benefit of \$50,000 per annum.	Low
Increased revenue from Tourism	1.27m		Increase numbers of visitors to Pitt Island from 100 to 300 visitors a year	Low
Total Quantified Wider Societal Impact	5.03m	-		Low
Net Present Value of Total Quantified Societal Impacts	2.44m	-		Low

¹ Rate your level of confidence in the assumptions and evidence as high (green) if based on significant research and evaluations that is applicable, medium (amber) if based on reasonable evidence and data, or low (red) if there is little relevant evidence. Colour the rating box for each impact.

Section C Conclusions

Conclusions

What is being recommended and why?

It is recommended that the Crown fund stage two of the Pitt Island Wharf resilience functionality and resilience programme as it is the key life line for the 50 residents of Pitt Island.

The main sources of income for Pitt Islanders are farming, commercial fishing and tourism which are fully reliant on an operational wharf. Without the Wharf it is very difficult for resources to be transported to and from the Island including livestock and general day to day goods. Other options for resource transportation would be by helicopter or small vessels that do not require a wharf, however this is not a viable option for transporting livestock.

The Chatham Islands are strategically important to the Exclusive Economic Zone and include some of New Zealand's most productive fishing areas. A resilient wharf will increase the efficiency and productivity of the Pitt Island fishing industry (and overall Chatham Islands' fishing industry) which will provide financial benefits to the New Zealand economy.

There are opportunities to gain cost efficiencies associated with the Waitangi Wharf redevelopment scheduled for completion in December 2017. For example savings will be made on procurement, utilisation of administrative resources, utilisation of existing management plans, transport and accommodation arrangements (a high cost due to the remote location of the Chatham Islands). Should the boat haul out area not be funded prior to the delivery of the Waitangi Wharf the cost to deliver a similar initiative would increase the price significantly.

Without Government funding it is unlikely the Pitt Island community could fund the initiative due to the Chatham Islands' small population (approximately 50 people) and the high cost of living (1.5 per cent higher than mainland New Zealand).

Overall Ratings

Value for Money ²	Strategic Alignment ³
3 (TBC as stronger evidence relating to the above mentioned benefits is still in the process of collation)	3
<i>Rating from 0-5. Consider monetised and unquantified impacts and evidence base.</i>	<i>Rating from 0-5. Consider alignment with government strategic direction and priorities, and cross-government action.</i>
<i>5 High value / return confident, 4 High/medium likely, 3 medium/break even confident, 2 medium/break even likely, 1 2 low/break even unclear, 0 no returns / value loss</i>	<i>5 Strong alignment, 4 High alignment, 3 Some alignment, 2 Limited alignment, 1 Low alignment, 0 No alignment</i>

² For guidance on Value for Money ratings see section 3.2.2

³ For guidance on Strategic alignment ratings see section 3.1.5

Summary of monetised results [only fill this out if you have monetised costs and benefits]

Fill this table out with the NPV, benefit cost ratio and return on investment for your initiative. These can all be calculated with the information you included in the summary table above, and is available in the CBAX Output Summary (NB totals can vary due to rounding). We ask you to present all these measures, because they each provide a different perspective.

Use ranges for values where appropriate	Discount Rate	
	6% real (default)	3% real (sensitivity)
Net Present Value (NPV) ⁴	\$2.4m	\$5.5m
Benefit Cost Ratio (BCR) ⁵	1.4 (\$8.0 / 5.6)	1.9 (\$11.7 / 6.2)
Return on Investment (ROI) – Societal Total ⁶	1.4 (\$8.0 / 5.6)	1.9 (\$11.7 / 6.2)
Return on Investment (ROI) – Government ⁷	0.5	0.7

Supporting Evidence

ie, the bibliography

Martin Jenkins *Economic Profile of Chatham Islands* (2014):

<http://www.cic.govt.nz/documents/2015/06/economic-profile-chatham-islands-report.pdf>

Ex-post Impact Evaluation Plan

How will you evaluate (after the programme has been rolled out) what the effect of the programme was, particularly on the impacts listed in Section B?⁸

The project's implementation and evaluation would occur in conjunction with the Waitangi Wharf redevelopment. The Department will oversee the project and the Transport Agency provides project management services.

The Department collates data a number of ways, including:

- at the governance level – the board's membership is comprised of representatives of the Department, the New Zealand Transport Agency and Memorial Park Alliance (Tonkin + Taylor, AECOM, HEB Construction and Downer Construction) who meet two-monthly;
- at project management level – weekly teleconference meetings attended by the Department, the New Zealand Transport Agency and Memorial Park Alliance project managers based in both Wellington and the Chatham Island; and
- face-to-face visits to Chatham Island to inspect progress, the Department undertook the most recent site

⁴ **Net Present Value (NPV)** - The NPV is the sum of the discounted benefits, less the sum of the discounted costs (relative to the counterfactual). This gives a dollar value representing the marginal impact on the collective living standards of all New Zealanders of the initiative, in today's dollar terms.

⁵ **Benefit Cost Ratio (BCR)** - The BCR is the ratio of total discounted benefits to the total discounted costs. A proposal with a BCR greater than 1.0 has a positive impact, because the benefits exceed the costs. The BCR is the same as the Return on Investment Societal Total, unless there are negative impacts in addition to the fiscal cost of the initiative. All negative impacts are included in the denominator for the BCR measure.

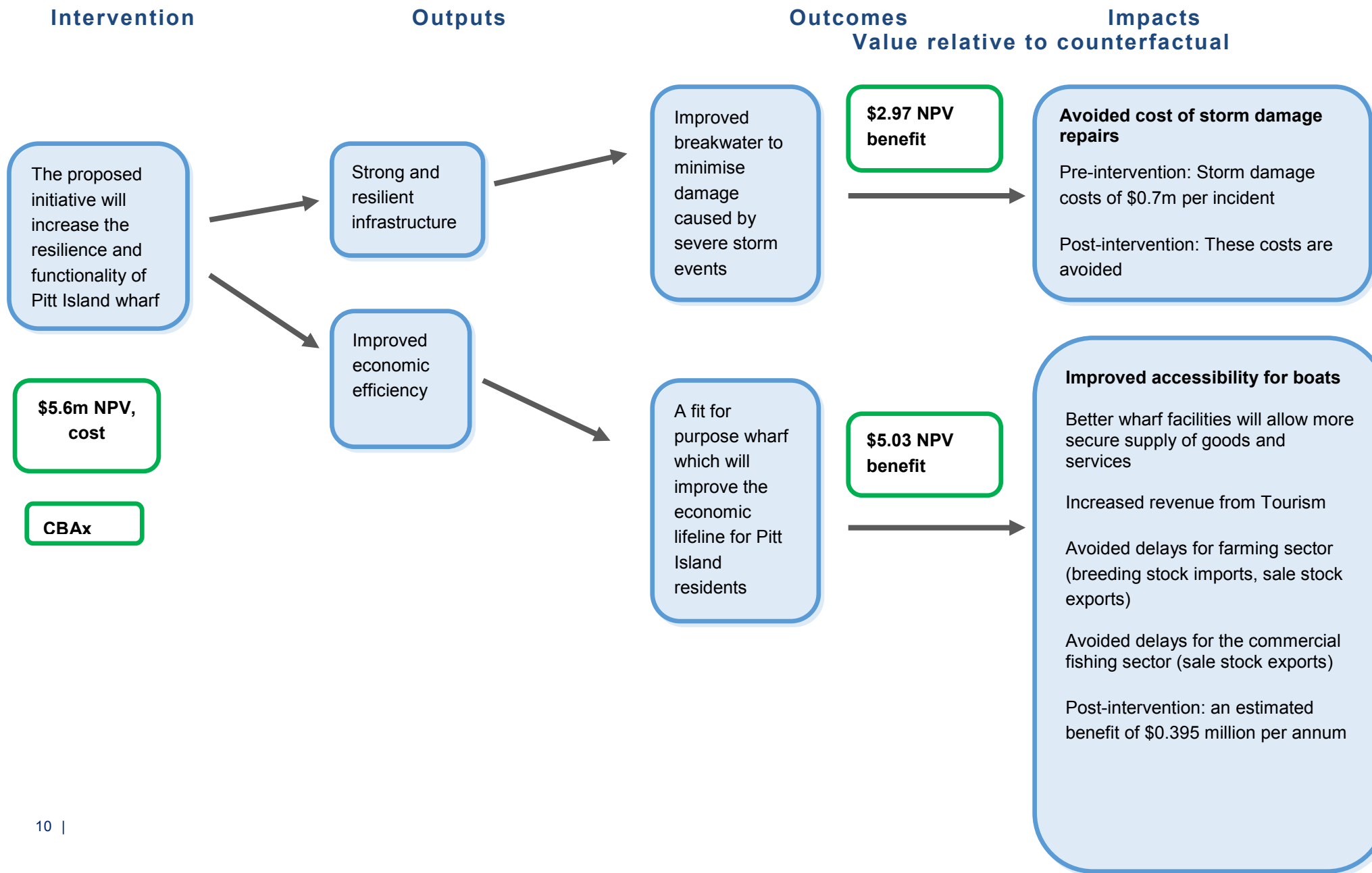
⁶ **Return on Investment (ROI) - Societal Total** - Calculate the ROI by dividing the discounted net change in wider societal impact, including benefits to government, by the discounted cost of the initiative. This can be interpreted as the impact for New Zealanders per dollar the government spends on the initiative, eg, for every \$1 the government spends on this programme, New Zealanders receive benefits of \$3.

⁷ **Return on Investment (ROI) – Government** – Calculate the ROI by dividing the discounted net change in impact for the government by the discounted cost of the initiative. This measures the discounted net marginal (fiscal) benefits to the government.

⁸ More information on this impact evaluation plan is available in the budget guidance Section 4

inspection in June 2016.

Appendix 1 One-page Intervention Logic



Appendix 2 Attach CBAx Outputs Summary

Outputs Summary

Proposal details

Respondent name						
Intervention details						
Start year	2017	Total population over 30 Years	1			
Period for analysis	30 Years	Discount rate	6%			

Summary metrics

Return on Investment, Societal Total (30y)	1.4	Net economic benefit per cohort member (30y)	\$ 2,435,737
Return on Investment, Government only (30y)	0.5	Initiative NPV costs per cohort member (30y)	\$ 5,563,074

Net benefit summary

Category	5-Year NPV \$m	10-Year NPV \$m	30-Year NPV \$m	Unit: 2017 (\$m)				
				2017	2018	2019	2020	2021
Total marginal impact	1.6	3.7	8.0	-	-	0.7	0.7	0.7
Total cost of initiative	(4.8)	(5.0)	(5.6)	(1.8)	(3.1)	(0.1)	(0.1)	(0.1)
Net economic benefits	(3.2)	(1.3)	2.44	(1.8)	(3.1)	0.6	0.6	0.6

Word summary/comment field

This is an area to explain key modelling assumptions or anything important individuals looking at the model should know.
 Have assumed the costs for storm damage repair of \$0.7m (based on the cost of clean up following a series of storms including Cyclone Pam in early 2015) would be avoided and included as a benefit every 3 years over the 30 year period are avoided. This has been shown as a 33.33% probability of occurring every year

Cost summary

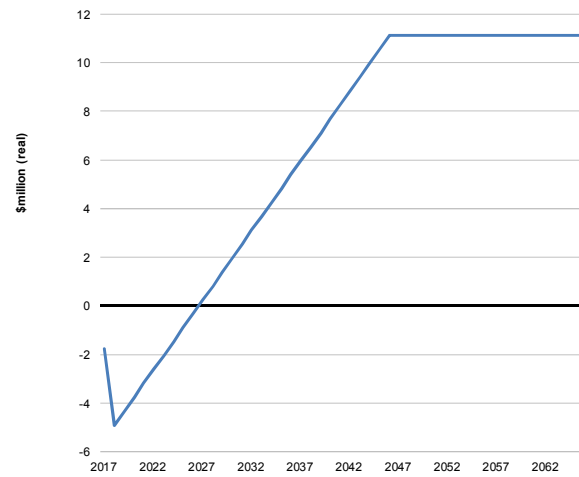
Cost category	30-Year NPV \$m	Unit: 2017 (\$m)				
		2017	2018	2019	2020	2021
Fiscal cost of initiative						
Operating expenses		(5.6)	(1.8)	(3.1)	(0.1)	(0.1)
Capital expenses		-	-	-	-	-
Total fiscal cost of initiative		(5.6)	(1.8)	(3.1)	(0.1)	(0.1)

Impact summary

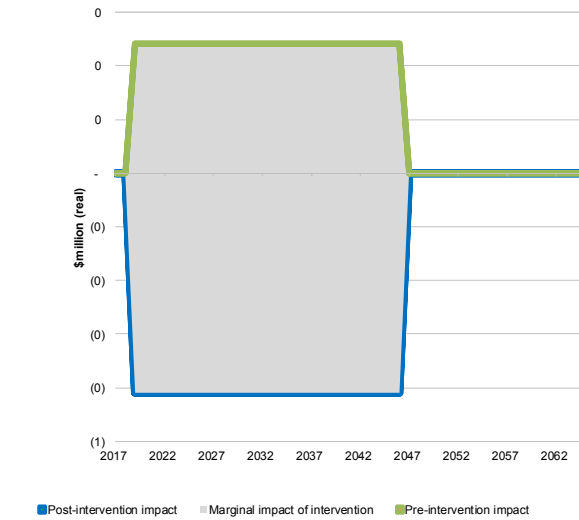
Evidence Quality	5-Year NPV \$m	10-Year NPV \$m	30-Year NPV \$m	Unit: 2017 (\$m)					
				2017	2018	2019	2020	2021	
Impact 1 High	Avoided cost of storm damage repairs	0.6	1.4	2.97	-	-	0.2	0.2	0.2
Impact 2 Low	Better wharf facilities will allow more secure supply of goods and services	0.3	0.6	1.27	-	-	0.1	0.1	0.1
Impact 3 Low	Avoided delays for farming sector (breeding stock imports, sale stock exports)	0.4	0.9	1.85	-	-	0.2	0.2	0.2
Impact 4 Low	Avoided delays for commercial fishing sector (sale stock exports)	0.1	0.3	0.64	-	-	0.1	0.1	0.1
Impact 5 Low	Increased revenue from Tourism	0.3	0.6	1.27	-	-	0.1	0.1	0.1
Impact 6	-	-	-	-	-	-	-	-	-
Impact 7	-	-	-	-	-	-	-	-	-
Impact 8	-	-	-	-	-	-	-	-	-
Impact 9	-	-	-	-	-	-	-	-	-
Impact 10	-	-	-	-	-	-	-	-	-
Impact 11	-	-	-	-	-	-	-	-	-
Impact 12	-	-	-	-	-	-	-	-	-
Impact 13	-	-	-	-	-	-	-	-	-
Impact 14	-	-	-	-	-	-	-	-	-
Impact 15	-	-	-	-	-	-	-	-	-
Impact 16	-	-	-	-	-	-	-	-	-
Impact 17	-	-	-	-	-	-	-	-	-
Impact 18	-	-	-	-	-	-	-	-	-
Impact 19	-	-	-	-	-	-	-	-	-
Impact 20	-	-	-	-	-	-	-	-	-
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Impact 24	-	-	-	-	-	-	-	-	-
Impact 25	-	-	-	-	-	-	-	-	-
Impact 26	-	-	-	-	-	-	-	-	-
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Impact 28	-	-	-	-	-	-	-	-	-
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Impact 34	-	-	-	-	-	-	-	-	-
Impact 35	-	-	-	-	-	-	-	-	-
Impact 36	-	-	-	-	-	-	-	-	-
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Impact 44	-	-	-	-	-	-	-	-	-
Impact 45	-	-	-	-	-	-	-	-	-
Impact 46	-	-	-	-	-	-	-	-	-
Impact 47	-	-	-	-	-	-	-	-	-
Impact 48	-	-	-	-	-	-	-	-	-
Impact 49	-	-	-	-	-	-	-	-	-
Impact 50	-	-	-	-	-	-	-	-	-
Total:	2	4	8	-	-	1	1	1	

Charts

Cumulative net benefit



Marginal impact of intervention



NPV of economic impact across sectors

