

EASTERN BAY SHARED PATH INDICATIVE BUSINESS CASE REPORT

Hutt City Council

December 2016



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Hutt City Council

Eastern Bay Shared Path Indicative Business Case

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Glossary of Terms

| Term | Definition |
|------|----------------------------------------------------|
| BCR | Benefit Cost Ratio |
| CES | Community Engagement Strategy |
| CIA | Cultural Impact Assessment |
| DBC | Detailed Business Case |
| FYRR | First Year Rate of Return |
| HCC | Hutt City Council |
| IBC | Indicative Business Case |
| IAP2 | International Association for Public Participation |
| ILM | Investment Logic Mapping |
| IO | Investment Objectives |
| LoS | Level of Service |
| MCA | Multi-Criteria Analysis |
| MSQA | Management, Surveillance and Quality Assurance |
| pNRP | Proposed Wellington Region Natural Resources Plan |
| SLUR | Selected Land Use Register |
| UCF | Urban Cycleways Fund |

Executive Summary

Project Background

The completion of an Eastern Bays Shared Path has been a regular part of Hutt City Council (HCC) strategies and is a key project in providing a safe and integrated network for commuting and recreational purposes under the current strategy “Walk and Cycle the Hutt 2014 – 2019”.

Initial designs for a shared path were dependent on the replacement of existing seawalls with a modern structure which is more effective at reflecting wave energy, thus reducing potential overtopping during storm events. These designs allowed for the provision of a shared path on top of the structure.

Recent seawall structural assessments have indicated that complete replacements are not economically justified with many sections still having over 20 years residual life, therefore a cycleway cannot be provided on the basis of continuous seawall replacement.

The Eastern Bays Shared Path Indicative Business Case (IBC) has developed options for a shared path connection that is not dependent on the complete continuous replacement of the existing seawalls. The options have been developed and assessed to identify one or two options for further consideration in a Detailed Business Case (DBC). The HCC needed sufficient technical information to enable robust decisions to be made and wanted to avoid unnecessary technical analysis which would be better suited to later phases of project development.

Project Objectives

The objectives for this project are to:

- Identify one or two options for further consideration in the DBC that will address the provision of a safe and continuous shared path.
- Secure NZ Transport Agency and key stakeholder endorsement of the preferred option(s) for further investigation.

Project Area

The IBC focuses on investment that improves the safety for pedestrians and cyclists on Marine Drive between:

- Point Howard and the northern end of Days Bay.
- The southern end of Days Bay (Windy Point) to Eastbourne (Muritai Road / Marine Parade intersection).

Stakeholder Engagement

Stakeholders were engaged with during the Indicative Business Case in helping to generate alternatives and to understand reactions to options and proposals.

Problems, Opportunities and Constraints

A facilitated objectives, constraints and opportunities stakeholder workshop was held on 8 September 2016 with representatives from the core project team, client representatives, NZ Transport Agency

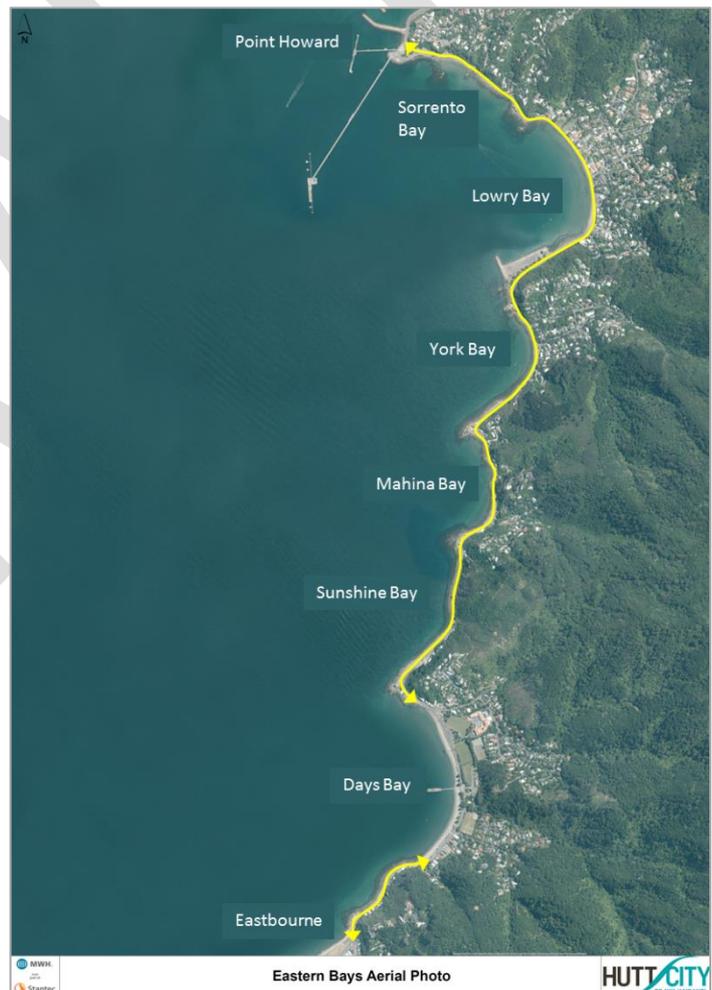


Figure 0-1: Eastern Bays Project Area

representatives (Planning & Investment and cycleway specialist), as well as community group representatives.

The project team and stakeholder panel identified and agreed the following key problems and opportunity:

- **Problem 1:** “Safety of current path and lack of separation prevents walking and cycling and the subsequent health, environmental and economic effects.”
- **Problem 2:** “Current facility is at increasing risk of closure and damage from storms and sea level rise and there is no alternative route.”
- **Opportunity 1:** “The upgrade of the Eastern Bays Shared Path has the opportunity to reinvigorate and enhance the Eastern Bays tourist economy by attracting visitors including long distance cyclists.”

The following percentages represent the level of importance given to the problems i.e. with a limited budget and assuming only one problem can be addressed by this project, how should the available budget be spent?

Overall the **percentage split has been agreed** as:

- Problem 1/ Opportunity 1: 70%
- Problem 2: 30%

The **benefit statements** for the Eastern Bays Shared Path project are presented below:

- Safer journeys for pedestrians and cyclists
- An increased number of pedestrians and cyclists
- Increased availability of the pedestrian and cycle route

The **investment objectives** have been created from these problem and benefit statements and are further detailed in the options assessment section (Section 5).

Constraints

There are a number of constraints and features that were considered while identifying and evaluating options for a shared path, including the following:

- Seawall life
- Road widths
- Existing beaches
- Trees and important structures (such as boat sheds)
- Parking
- Property

Options Development

The options development process includes consideration of a number of components – guiding principles, previous work and proposed improvements, consideration of treatment options (i.e. the methods available to provide additional width), and ultimately, consideration of the general width of the facility to be provided.

This IBC does not specifically identify the exact treatment to be used throughout the entire project length, but determines which treatments should be rejected as unsuitable, and which are appropriate for further consideration at the DBC stage. More importantly, the key outcome of the IBC being to identify the most suitable facility width to take into DBC stage investigations.

Possible Treatment Options

To consider engineering treatment options an MWH internal workshop took place on Wednesday 12th October 2016, where a team of project experts comprising a structural engineer, an engineering geologist and a geometric designer considered possible treatment options.

At this stage of the investigation, the intent was to identify all potential treatments to ensure a robust approach and that treatment options were not dismissed too early without adequate consideration.

Fourteen possible treatment options were considered, including their characteristics, benefits, constraints and possible applications. Four of the possible 12 treatments have been rejected from further consideration and the remaining eight treatments are listed below:

- Carriageway Reallocation
- Placed Rock Revetment
- Double Curved Seawall
- Single Curved Seawall
- Vertical Cantilevered Concrete Wall
- No Fines Concrete Blocks
- Mass Concrete to Existing Pitched Seawall
- Dwarf Mass Concrete Wall

Facility Widths

Further to the consideration of possible treatments, a key component of the IBC is to determine a suitable width for the facility. It is recognised that a single inflexible set width for the entire facility may not be necessary or appropriate given site constraints and specific requirements; however a 'general' desirable minimum width should be established as part of this IBC.

Therefore the options considered, along with the reasoning with the associated widths are shown below.

Option 1 – Only replace seawall with less than 5 years remaining life: This is the 'do-minimum' option and is considered more of a comparison than a realistic option for delivery as it would leave in place sections of the route where there is insufficient width for the passage of a pedestrian or cyclist.

Option 2 – 1.5m facility: Considered as the lowest standard facility and an 'absolute minimum'. Whilst this would improve the existing level of service (LoS) for path users, the increase in LoS would be limited and the path would not meet minimum standards. Such a low standard would necessitate less physical works and have affordability benefits. Similarly, it could potentially be further upgraded in future, and so is considered as a lower standard solution at this stage.

Option 3 – 2.0m facility: Slightly wider than the minimum consideration but still less than ideal level of service for users. Passing cyclists would still be a concern at this width.

Option 4 – 2.5m facility: Meeting minimum standards for a shared path of 2.5m, this width of path is more in-keeping with the standard that should be provided; however such a minimum width would require a more significant amount of physical work and therefore can be expected to increase the physical works cost.

Option 5 – 3.5m facility: The highest standard width option considered, providing a 3.5m width facility throughout. This width would provide a good level of service in terms of width, easily allowing enough space for opposing cyclists to pass or for space for pedestrians or families to walk. This width meets the Austroads standard for a recreational shared path facility.

Options Assessment

High Level Cost Estimation

To undertake the cost estimation it was necessary for the project team to develop an itemised cost estimate for each option. As the specific treatment type for each location on each option has not yet been selected, this makes estimation of the costs challenging. To overcome this, the project team developed design solutions that propose a multitude of different treatment types for each option, based on the team's best judgement. The cost estimates for each of the options are provided in the adjacent table.

Table 0-1: Expected Cost Estimates

| Option | Expected Estimate |
|----------------------------------------|-------------------|
| Option 1 – Replace < 5 years remaining | \$4.3M |
| Option 2 – 1.5m facility | \$7.3M |
| Option 3 - 2.0m facility | \$9.0M |
| Option 4 - 2.5m facility | \$11.0M |
| Option 5 - 3.5m facility | \$15.0M |

The table above shows the expected estimates and includes traffic management, preliminary and general, service relocations, design, MSQA and environmental compliance. A 50% contingency allowance is also included given the limited information available at this stage of project development, including details of environmental mitigation costs which could prove significant.

Multi-Criteria Analysis

A Multi-Criteria Analysis (MCA) was undertaken on the five options in a workshop setting. The attendees included the core project team, plus specialist consultant advisors (such as a structural engineer, ecologist, planning & consenting expert), client representatives, NZ Transport Agency representatives and community group representatives.

The criteria, scores and weightings used in the MCA Assessment were agreed by all workshop participants.

The MCA assessment has been undertaken both with and without costs included in the overall assessment process. The figures below show the outcomes, with the lower scoring options being preferred i.e. a lower score represents less issues or impacts.

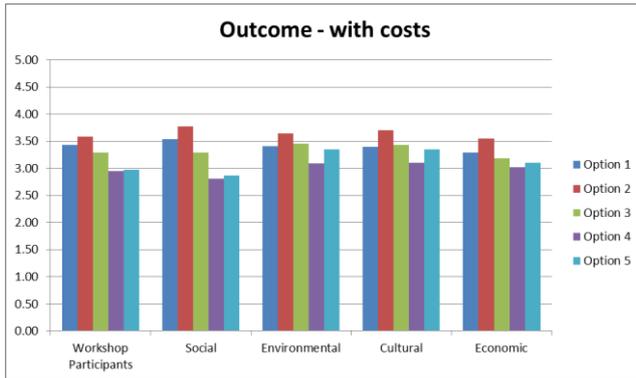
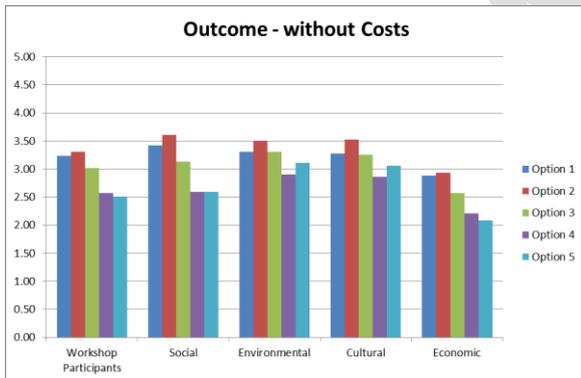


Figure 0-2: MCA Analysis Results – with and without cost. Lower scores indicate better performance.



It can be clearly seen from the MCA charts that Option 4 and Option 5 are favoured, by some margin, in the participant weighting system (both with and without costs included). In all other weighting systems the Option 4 and Option 5 still remain favoured, though the margin of difference to the other options is reduced.

Alignment with Investment Objectives

The agreed investment objectives for the project are reproduced below:

Table 0-2: Project Investment Objectives

| Benefit | Measure | Baseline | Target | By When |
|------------------------------------------------|-----------------------------------------------------------------------------|------------------|--------|---------|
| To improve safety for pedestrians and cyclists | By increasing the perception of safety, as measured by the community survey | From 34% in 2014 | To 50% | By 2019 |

| Benefit | Measure | Baseline | Target | By When |
|-----------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------------------------------------|--------------------------------|--------------------------------------------|
| To increase the numbers of pedestrians and cyclists | N/A | From approx. 125 ¹ per day in 2015 | To 250 per day | By 2019 |
| To increase the availability of the route | By reducing the total number of hours the road is swept (response / emergency sweeping only) | From 81 hours (5 year average, per year) | To 70 hours per year (average) | By 2021 (3 year rolling average, per year) |

An assessment of the five options against the three benefits above has been undertaken:

Table 0-3: Option Alignment to Investment Objectives

| Benefit | Opt 1 | Opt 2 | Opt 3 | Opt 4 | Opt 5 |
|-----------------------------------------------------|---------------------|---------------------|---------------------|---------------------|--------------------|
| To improve safety for pedestrians and cyclists | Limited achievement | Limited achievement | Achieves Objective | Achieves Objective | Achieves Objective |
| To increase the numbers of pedestrians and cyclists | Fails to achieve | Fails to achieve | Limited achievement | Achieves Objective | Achieves Objective |
| To increase the availability of the route | Fails to achieve | Fails to achieve | Limited achievement | Limited achievement | Achieves Objective |

The above assessment against objectives is somewhat subjective and a matter of opinion – however the trend moving left to right across the options showing greater achievement of the investment objectives appears reasonable.

Economic Assessment

This economic evaluation has been undertaken for HCC in accordance with the NZ Transport Agency's Economic Evaluation Manual (EEM 2016) using a customised version of the simplified procedures.

Table 0-4: Economic Evaluation Summary

| | Opt. 1 | Opt. 2 | Opt.3 | Opt.4 | Opt.5 |
|-----|--------|--------|-------|-------|-------|
| BCR | 3.2 | 2.6 | 2.8 | 2.6 | 2.5 |

Community Engagement

As per Stakeholder Engagement Plan, Community Engagement has been undertaken through different means on several occasions.

Most members of the public are supportive of the Eastern Bays Shared Path project.

The predominantly preferred options are option 4 and 5 with a preferred widths of 3.5m and preferred minimum widths of 2m or 2.5m. There was some references to having some flexibility and having variable widths to avoid losing beaches, boat ramps and trees.

Most people indicated they would use the path for recreational and commuting trips regularly.

Recommended Option and Next Steps

Based upon the outcome of the community consultation, the MCA process, alignment to objectives and to a lesser extent, economic analysis, the following is recommended:

¹ AM peak period cycling volumes have been input to the NZTA formula which gives an estimation of cyclist AADT being 77. Peak period pedestrian counts (17 users) have also been used to give an approximate existing use of a total of 125 cyclist and pedestrian users per day.

Both Option 4 and Option 5 should be progressed through to Detailed Business Case stage for more detailed assessment and analysis, prior to selecting the single preferred option as part of the DBC process.

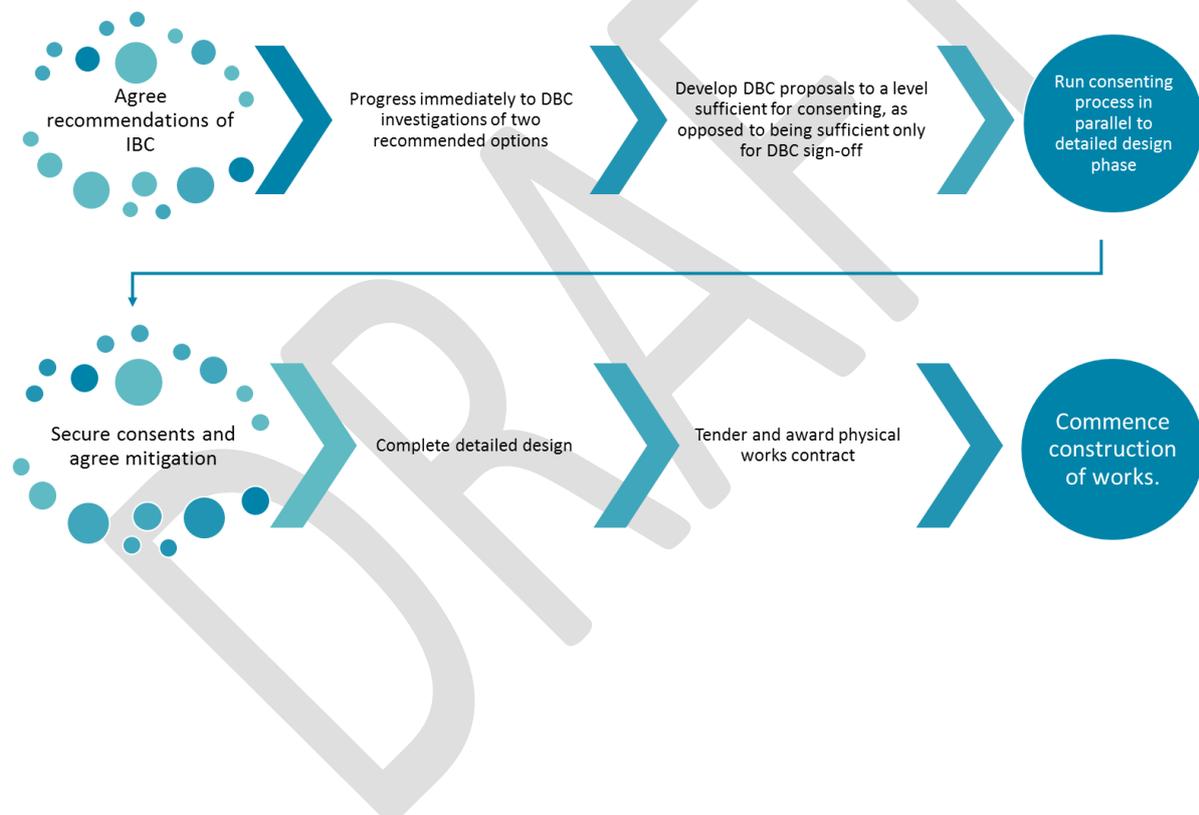
At this stage, it is not advisable to select only one option because there is no clear reason to do so and both are feasible, hence they should both be selected for further assessment during the DBC phase.

The key risks moving forward with the preferred options include cost, construction disruption, public support and acceptance, consenting and timing.

Additionally some statutory approval requirements need to be considered during the next project stage.

In terms of **affordability**, the expected cost estimate for the two recommended options are \$11.0M and \$15.0M at this IBC stage. Currently HCC has allocated \$9M in funding to the Eastern Bays Shared Path. On this basis, it is possible that there is a funding / affordability gap that needs to be resolved. It is recommended that the most appropriate options are taken through to DBC stage and funding conversations continue concurrently to ensure the projects keeps progressing given the tight delivery timeframes.

The next steps in the process are:



1 Project Background

The completion of an Eastern Bays Shared Path has been included in past Hutt City Council (HCC) strategies and is a key project in providing a safe and integrated network for commuting and recreational purposes under the current strategy “Walk and Cycle the Hutt 2014 – 2019”.

The project is considered part of the Great Harbour Way/Te Aranui o Pōneke which is a walking and cycling route around Te Whanganui-a-tara, the harbour of Wellington from Fitzroy Bay in the east to Sinclair Head in the west.

Initial designs for a shared path were dependent on the replacement of existing seawalls with a modern fit-for-purpose structure which is more effective at reflecting wave energy, thus reducing potential overtopping during storm events. These designs allowed for the provision of a shared path on top of the structure.

Recent seawall structural assessments have indicated that complete replacements are not economically justified with many sections still having over 20 years residual life. Several sections however are considered to have less than 5 years and will be programmed for replacement to a modern fit-for-purpose structure.

The Eastern Bays Shared Path Indicative Business Case (IBC) will develop options for a shared path connection that are not dependent on the complete continuous replacement of the existing seawalls. The options have been developed and assessed to identify one or two options for further consideration as part of developing the Detailed Business Case (DBC). The HCC needs sufficient technical information to enable robust decisions to be made and wishes to avoid unnecessary technical analysis which would be better suited to later phases of project development.

1.1 Project Objectives

The objectives for this project are to:

- Identify one or two options for further consideration in the DBC that will address the provision of a safe and continuous shared path.
- Secure NZ Transport Agency and key stakeholder endorsement of the preferred option(s) for further investigation.

1.2 Project Area

The IBC shall focus on investment that improves the safety for pedestrians and cyclists on Marine Drive between:

- Point Howard and the northern end of Days Bay.
- The southern end of Days Bay (Windy Point) to Eastbourne (Muritai Road / Marine Parade intersection).

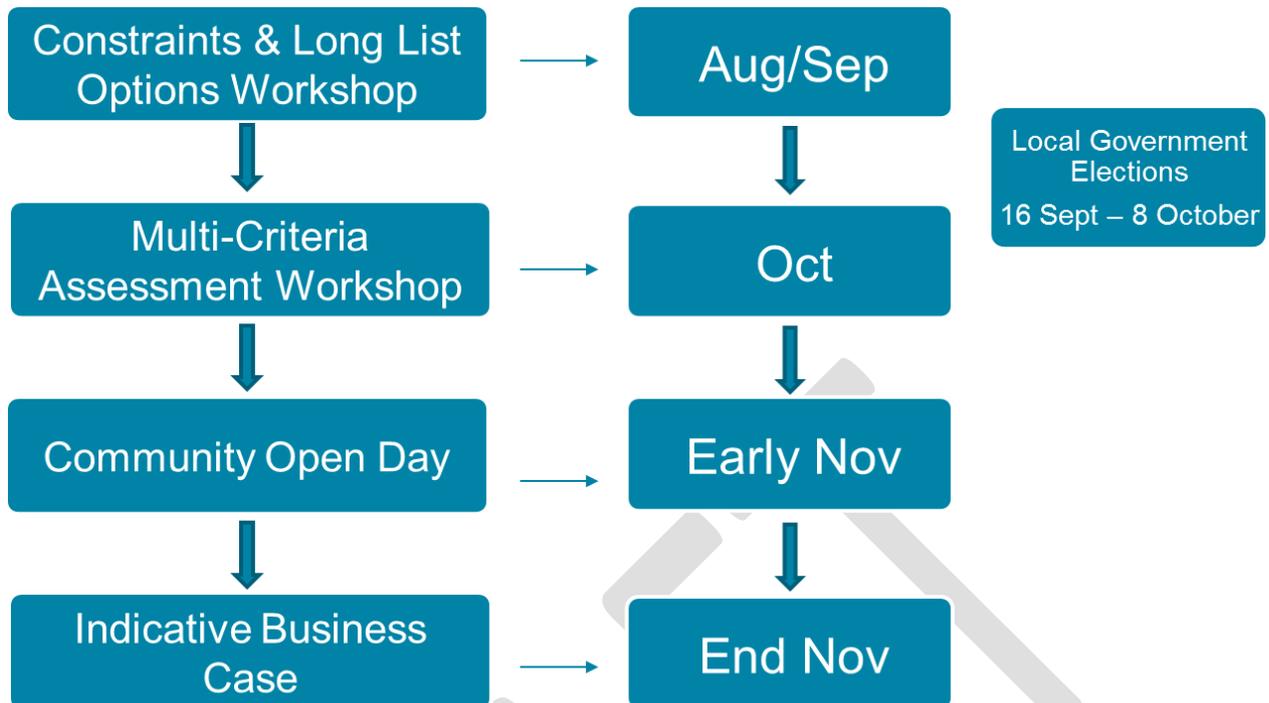
Marine Drive is a Minor District Distributor road which carries between 6,000 – 8,000 vehicles per day and is the only road access to the residential eastern bay suburbs. The road is located adjacent to the coastal environment which winds its way around several headlands and bays between Point Howard and Eastbourne with a posted speed of between 50kph to 70kph.

Between Point Howard and Windy Point, except for Days Bay, there are very limited safe facilities for pedestrians while cyclists are expected to use the road shoulder, which is more often than not very narrow, non-existent, or vehicular lane. In certain limited short locations a shared path exists on the seaward side, these are predominantly in areas where new seawalls have been constructed therefore allowing provision of this facility, or where considerable width already exists.



Figure 1-1: Map of the project area

1.3 Project Timeline



1.4 Methodology

Initial Pre-workshop: The main Strategic Case work begins with a review of the problems – calling on the evidence already available. A brief Investment Logic Mapping (ILM) exercise with HCC will consider the Strategic Case and draft the problem and benefit statements. It involves the HCC and Investor Partners only.

Constraints & Long List Options Workshop: Site visit of the project area, constraints identification and problem definition. Discuss and confirm what has been seen on the visit and record any new constraints the group has identified. Then develop and discuss the problems and benefits and seek buy-in from all parties. Investment objectives (IO) will be developed purely from the problems and benefit statements to ensure that the IOs focus on the right areas. Development and agreement of a long list of potential options for the Eastern Bays path.

Multi-Criteria Analysis Workshop: A Multi-Criteria Analysis (MCA) exercise with key stakeholders to reduce the long list down to a short list for more detailed assessment before identifying one or two options for further consideration as part of developing the DBC.

Community Open Day: Invite local people and others with an interest in the project to view the options and provide feedback.

IBC: Preparing the IBC and feeding back outcomes and decisions to all those involved.

1.5 Work Completed To Date

1.5.1 Graeme McIndoe (1998) – Design Guide

This document was prepared with the Eastern Bays Marine Drive Steering Group (representatives from resident’s groups and council officers) and looked at various design features to protect and contribute to the unique character of the area.

1.5.2 GHD (2009) Shared Path Design Development

A concept design was developed for implementing a seaward side shared path connecting the Eastern Bays. This culminated in the construction of a section of trial shared path, in York Bay, in 2011.

1.5.3 Via Strada (2012) – Marine Drive Separated Patch Safety Audit

The audit states that during the site visit two comments were made by ‘locals’ to the auditor:

“This is the best thing that happened along here.”

“This is the most dangerous thing I have ever seen.”

This indicates the polarity that exists around the new separated shared path. It indicates a very emotive response to this new facility.

1.5.4 Eastbourne Community Survey (2014)

In 2014 the Eastbourne Community Board conducted a survey of Eastbourne and the Bays to gauge the wellbeing and satisfaction of the residents and to identify issues of importance to the community. A total of 624 local people responded to the survey (17% of residents 15 years and over). The most important issue identified was the completion of the Eastern Bays shared walk/cycle way. There were comments around the walk/cycle way being “unsafe” and while a high number of respondents currently use the walk way, people also stated that the current standard of the walk/cycle way deterred them from using it. The walk/cycle way was named as the one thing they would like to see in the Eastbourne and Bays area (81 people).

1.5.5 Walbran Transport Analysis (2015) – Shared Path Funding Application

The report references the community input from the Eastbourne Community Survey and focuses on the support the local community have to complete the path. The report also includes a high level economic analysis.

1.5.6 GHD (2015 / 2016) Pre-Application Engagement

A Cultural Impact Assessment (CIA) for the application has been conducted and recommended that local Māori “are consulted over a suitable element in the development that gives recognition of the Māori connection with this site.” Port Nicholson Block Settlement Trust were given the opportunity to comment on the CIA. Ngāti Toa are very interested in ecological outcomes and Waiwhetu Marae are very positive about the project overall.

Pre-application engagement was conducted with Greater Wellington Regional Council and Resource Consent Planners at HCC.

1.6 Alignment to Existing Strategies

1.6.1 Walk and Cycle the Hutt (2014 – 2019)

The Eastern Bays shared path is featured in the plan as a prioritised key route. The plan states:

“Our principal aim is to encourage more people to cycle and walk more often and further, for commuting and recreational purposes. Engagement with the community clearly shows a desire for Council to increase the priority given to active travel and build new and improved facilities at a faster rate. Safety is cited as a major concern for most people.”

Key factors identified in the plan are to provide travel choice, provide a connected network and to have safe and accessible walking and cycling options that are easy, convenient, attractive and pleasurable for all types of user.

Objectives include:

- Safe and integrated networks for commuting and recreational purposes
- High quality facilities for pedestrians and cyclists
- Safety and positive promotion – ‘it’s cool to walk or ride a bike’

1.6.2 Hutt City Council Long-Term Plan (2015)

Detailed in the Long-Term Plan for cycling projects: The city-wide Cycle Network Development (The Beltway) will be accelerated with \$4.5 million allocated in the next four years, the Eastern Bays Shared Path has \$9 million allocated (2015 – 2021/22) and the Wainuiomata Hill Shared Path has \$5.5 million allocated (2015 – 2017). Community feedback is shown below:

Table 1-1: HCC Long Term Plan Consultation Summary

| | Support it | | Do not support it | | Don't mind either way | | Unsure / Don't know | |
|-------------------------------------------------|------------|-----|-------------------|-----|-----------------------|-----|---------------------|----|
| Eastern Bays Shared Path | 231 | 62% | 66 | 18% | 56 | 15% | 22 | 6% |
| Acceleration of cycle network upgrade programme | 257 | 70% | 38 | 10% | 58 | 16% | 14 | 4% |

1.6.3 Wellington Regional Transport Plan 2015

Eastern Bays shared path is identified as a gap in the aspirational network of regionally significant cycling corridors for the Wellington region. In this plan, the Eastern Bays shared path is part of the aspirational utility/ recreational route.

Network Development is the first of four priorities of the Wellington Regional Plan. This includes “improving the strategic cycle network safety and addressing significant infrastructure gaps”.

Furthermore, the Wellington Regional Transport Plan 2017 states that:

“Cycling corridors that make up the regional cycling network should be developed to provide options for less experienced or lower skilled riders. However, these corridors must also provide options for more experienced cyclists who may wish to travel at greater speeds.”

“The regional cycling network should ideally have some degree of separation from traffic. Where full separation is not achievable, partially separated lanes, on-road lanes or quieter parallel routes should be provided. Ultimately the choice of facility will be subject to practical constraints and best-practice guidance.”

1.6.4 Great Harbour Way/ Te Aranui o Pōneke (Issues and Opportunities Analysis, 2009)

The Eastern Bays shared path forms part of the Great Harbour Way – Te Aranui o Pōneke, which aims to develop “a safe continuous route for pedestrians and cyclists around the perimeter of Port Nicholson, Wellington Harbour, with potential connections into the wider regional cycling and walking networks.”

It also states that development options for the Eastern Bays section include:

- Potential to construct the path off Marine Drive using space within Lowry Bay car park and boat launch area. The car park would also benefit from internal planting to enhance its value as a destination rather than just as a large expanse of sealed vehicle space.
- In line with HCC policy wherever possible (incorporated with seawall extension) the seaward hard shoulder be widened, retained free of car parking and separated from carriageway by marker posts.

2 Stakeholder Engagement Plan

The Eastern Bays Shared Path Stakeholder Engagement Plan sets out, and records, the stakeholder and community engagement activities planned for the Eastern Bays Shared Path IBC (the project).

This section summarises the content of the Stakeholder Engagement Plan² for the Eastern Bays Shared Path project and identifies who the stakeholders are; their level of interest, and how and when they will be engaged throughout the project. In addition, it sets out the purpose and objectives for engagement.

The inputs gained from stakeholder engagement and the outputs achieved are incorporated into this report, including in the following sections:

- Section 3 includes information on the Problem, Opportunities and Constraints Stakeholder Workshop undertaken.
- Section 5.2 includes information on the MCA Stakeholder Workshop.
- Section 6 includes information and outcomes of the community consultation, including the community open day.

2.1 Purpose of Engagement

The main purposes for engaging are to generate alternatives (stakeholders) and to understand reactions to options and proposals (community). Relationship building is a secondary purpose – we want to achieve better outcomes for the IBC. With each group of stakeholders, we will:

- Set out expectations
- Be clear and genuine about the appropriate level of engagement
- Let stakeholders know what they can and can't influence
- Close the loop with stakeholders to ensure they understand decisions and outcomes.

2.2 Engagement Objectives / Goals

Hutt City Council needs the stakeholder and public engagement to:

- Gather information that will allow relevant opportunities, constraints and risks to be identified and scoped
- Gather information on the values and priorities of key stakeholders and the community and expand on the reasons for their position
- Provide opportunities for key stakeholders to influence the direction of the investment proposal
- Strengthen existing relationships and maintain open and honest dialogue with key stakeholders and the community.

2.3 Significance and Engagement Policy

2.3.1 Significance

This project is not deemed as being of significance. The threshold and criteria in the policy are not triggered. The matter has been signalled in the HCC LTP and there have been a number of other consultations that have given the community an opportunity to give their views on the shared path.

2.3.2 Community Engagement Strategy (CES)

During this project, the principles as set out in the strategy will be followed:

INVOLVING – Hutt City Council will reach out to a wide range of people to have their say

GENUINE – Hutt City Council will undertake meaningful, open engagement in good faith

SUSTAINING – Hutt City Council will foster long term beneficial connections with our community

² Produced by MWH, September, 2016

2.3.3 Level of Engagement

The framework that will be used for the engagement activities for this project is the IAP2 Public Participation Spectrum. This involves assessing and communicating with stakeholders and the public to the appropriate level of engagement: inform, consult or involve.

When conducting engagement, HCC identifies five main types of community engagement. These are: information, consultation, deciding together, acting together and supporting community initiatives.

The IAP2 levels of engagement have been applied to the identified stakeholders and interested parties – see Table 2-1 below. This project falls under the ‘**consultation**’ type of engagement

2.4 Target Audiences and Channels

2.4.1 Groups to be engaged

Stakeholder engagement runs throughout the IBC. There are three groups to consider:

Investor Partners – Greater Wellington Regional Council, Hutt City Council, the NZ Transport Agency and the Urban Cycleway Funding Team (this group will be key to the project’s success)

Key Stakeholders – i.e. Government departments; local iwi; key community groups

Public/Community.

Elected members will be kept informed at various stages, but within the limits of the Local Government Elections that will be taking place during the course of this project.

2.4.2 Methods of Engagement

A variety of channels have been used a various parts of the project to engage those identified:

- **Workshops** - As set out in Section 1.4 Methodology, there have been two main workshops with investor partners and key stakeholder representatives. Council staff have been involved in selecting the members of those to be invited.
- **Community Board Memo** – To provide updates and invite representatives to workshops.
- **Existing Community Meetings** – To provide updates.
- **Community open day** – Invitations to the local community to view the short list of options and give feedback. This is also an opportunity for the local community to gather information about the project. Refer to Section 6 of this report for further information.
- **Website** - Hutt City Council’s current consultation webpage to be used.
- **Consultation Material** - A variety of consultation material to be developed.
- **Media Releases** - Working with the Hutt News and the Eastbourne Herald to advertise the open day.

Table 2-1 identifies the stakeholder groups, the level of interest they have in the project and to what level they will be engaged and by what channels.

Table 2-1: Level of engagement with stakeholders and potential channels

| Stakeholder | Level of Interest | Level of Engagement | Channels |
|-----------------------------------------------------------------------------------------|-------------------|---------------------|--------------------------------------------------------------------------------------------|
| Elected Representatives (Ward and Board); Eastbourne Community Board | High | Consult | Item on their meeting agenda; memos; client email updates and copies of the media releases |
| Hutt City Council staff | High | Involve | Workshops |
| Steering Group | High | Involve | Representatives will be invited to the workshops |
| NZ Transport Agency | High | Involve | Workshops |
| Greater Wellington Regional Council | Medium | Involve | Workshops |
| Mana Whenua – Taranaki Whānui, represented by the Port Nicholson Block Settlement Trust | Medium | Consult | Face-to-Face meeting |

| Stakeholder | Level of Interest | Level of Engagement | Channels |
|-----------------------------------------------------------------------------------------|-------------------|---------------------|--------------------------|
| Residents and businesses on affected streets | High | Consult | Email; Open Day; Website |
| Interest groups – such as Hutt Cycle Network | High | Consult | Email; Open Day; Website |
| Community groups – such as Eastern Community Committee; Eastern Bays Consultation Group | High | Consult | Email; Open Day; Website |
| Local Schools | Medium | Consult | Email; Open Day |
| Media | Medium | Inform | Media Release |

2.5 Key Messages

The key messages used in the Eastern Bays Shared Path project are as follows:

- Completing Eastern Bays Shared Path is a high priority for HCC as they want to provide a safe and connected network.
- This path is important to the local community. Eastern Bays communities have highlighted the project as the most important issue in the area (Eastbourne Community Board Survey, 2014)
- Initial designs for a shared path were dependent on the replacement of existing seawalls and a shared path on top of the structure. Not all the seawall needs replacing.
- This project will develop options for a shared path connection that is not dependent on the complete continuous replacement of the existing seawalls. We will be holding key stakeholder workshops to identify options.
- Options will be short listed and presented to the community. In October, we want to gather feedback from the public on these options.
- The options will go through more detailed assessment before one or two options are identified for further consideration.
- Hutt City Council will consider these preferred option(s) and are seeking to secure NZ Transport Agency endorsement and funding.

2.5.1 Analysis of feedback

Feedback was captured at the workshops and community open day and fed back to the project team. Comments and views received are incorporated throughout this report and will also feature in a supporting consultation report and stakeholder engagement register.

A copy of the consultation report will be made available on the council's website and will be communicated widely. A summary of 'we asked; you said; we did' will be prepared and sent to those who have been involved throughout the project to ensure we close the loop with interested parties.

2.6 Roles and Responsibilities

The following key personnel have been responsible for the successful stakeholder engagement of the eastern bay Shared Path IBC project.

- **Stakeholder engagement** - Project Manager, Simon Cager (HCC), has been responsible for approving all engagement and being the 'front face' of all stakeholder engagement activities and the quoted officer in media releases. Simon was supported by Phil Peet (MWH), Jamie Povall (MWH), Caroline Van Halderen (MWH) Alma Andrews (HCC, Mana Whenua), Selina Simcox (HCC) and Jo Wilkins (MWH) in the development of plans, messaging and materials.
- **Mana Whenua engagement** - Kaitakawaenga Kaupapa Māori, Alma Andrews (HCC), with support from Selina Simcox (HCC) and Jo Wilkins (MWH).
- **Media management** - Selina Simcox (HCC) with identified spokesperson and final sign off from Simon Cager.

- **Development of communication and engagement materials** - Jo Wilkins drafted communication materials with inputs from the project team. Final sign-off was given by Simon Cager.
- **Recording of engagement activities** – All team members. Collated by Jo Wilkins (MWH)
- **Reporting** - Jo Wilkins produced monthly consultation reports.

2.7 Evaluation

Following the engagement it is useful to note down any learnings:

- What went well?
- What did not work or was missing?
- What could be done differently next time?
- Any follow-up required.

2.7.1 Measures of success

Hutt City Council will have identified one or two preferred options to take through to a further stage of investigation. These options will be agreeable to the key stakeholder and local community. Key stakeholders and the community will have had opportunity to influence the decision and will feel listened to. Relationships will have been strengthened. We will know we are successful when we have:

- Reached all identified stakeholders
- The quality of input reflects an understanding of issue
- We heard from affected groups such as cyclists and walkers
- Mana whenua feel they have been appropriately consulted and their input has been considered
- Feedback is positive and supportive.

3 Problems, Opportunities and Constraints

A facilitated objectives, constraints and opportunities stakeholder workshop was held on 8 September 2016 to:

- agree on problem statements and themes for investment objectives;
- capture known constraints and opportunities; and
- identify a long list of options for investigation.

The attendees included the core project team, client representatives, NZ Transport Agency representatives (Planning & Investment and cycleway specialist), as well as community group representatives.

This section discusses the problems and opportunities, benefits and constraints that have been identified by the study team and key stakeholders for the Eastern Bay Shared Path.

3.1 Problems and Opportunities

At the workshop, the project team and stakeholder panel identified and agreed the following key problems and opportunity:

- **Problem 1:** “Safety of current path and lack of separation prevents walking and cycling and the subsequent health, environmental and economic effects.”
- **Problem 2:** “Current facility is at increasing risk of closure and damage from storms and sea level rise and there is no alternative route.”
- **Opportunity 1:** “The upgrade of the Eastern Bays Shared Path has the opportunity to reinvigorate and enhance the Eastern Bays tourist economy by attracting visitors including long distance cyclists.”

The following sections detail and elaborate on these problems and the opportunity.

3.1.1 Problem 1: “Safety of current path and lack of separation prevents walking and cycling and the subsequent health, environmental and economic effects.”

The **cause** of this problem is the safety of the current facilities.

The **effect** of this problem is that it inhibits walking and cycling.

The **consequence** of this problem is suppressed health, environmental and economic effects.

3.1.1.1 Cause: Safety of current path

The existing facilities feel unsafe for most users. This is demonstrated by the respondents to the Eastbourne Community Survey 2014³, who predominantly (60%) rated the facilities as “unsafe” or “very unsafe”, as shown in Table 3-1.

Table 3-1: How safe survey respondents rate the existing Eastern Bays walking and cycling facilities

| Safety of existing facility | Percentage of survey respondents | Number of respondents |
|-----------------------------|----------------------------------|-----------------------|
| Very safe | 1 % | 7 |
| Mostly safe | 33 % | 206 |
| Unsafe | 43.5 % | 270 |
| Very unsafe | 16.5 % | 102 |
| No response | 6 % | 39 |
| | 100 % | 624 |

³ Eastbourne Community Board, 2014

Source: Eastbourne Community Survey 2014¹

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The key issues attributing to the perceived safety issues were identified by the stakeholder group as follows:

- lack of continuity through the corridor, including
 - some very narrow road/ path sections;
 - wider sections used for parking
 - virtually no existing cycling facilities on the landward side of the road; and
 - existence of obstacles.
- the lack of separation from vehicles, including
 - speed of traffic;
 - difference in travel speeds; and
 - type of traffic (including buses).

It was also noted that vehicle drivers can feel uncomfortable when passing cyclists or pedestrians. Additionally, anecdotal evidence suggests that the frequent buses which travel along the corridor can intimidate vulnerable users.

It is noted that there has not been a large number of recorded crashes involving pedestrians and cyclists for the study length; there has only been one crash involving a cyclist in the previous five years (causing a minor injury). However, this does not mean that the route is safe; it is more likely an indicator that there is a reluctance to use the route and that those that do use it pay particular care to their safety.

There have been a total of 35 recorded crashes on Marine Drive in the project extents (including Days Bay). Of these crashes 12 resulted in minor injury, 1 serious and 1 fatality.

Interestingly, the route is categorised as follows:

- Collective Risk⁴: Medium
- Personal Risk⁵:
 - Point Howard to North of Days Bay: Medium
 - Days Bay to Eastbourne: Medium High

The risk categories don't specifically focus on pedestrian and cyclist risk, nevertheless they are included along with all road users.

3.1.1.2 Effect: Preventing walking and cycling

Evidence indicates that the existing facilities are currently not well utilised with a limited number of pedestrians and cyclists known to travel between the bays.

Pedestrian and cyclist counts were undertaken in Sorrento Bay in March 2015. This determined that:

- 9 pedestrians and cyclists were counted on a Saturday morning between 10am and 12pm.
- 45 pedestrians and cyclists were counted on a Tuesday morning between 6:30am and 9am
- 43 pedestrians and cyclists were counted on a Thursday morning between 6:30am and 9am

On average this is only 7 users per direction per hour. This low level of use is supported by the results of the Eastbourne Community Survey 2014⁶ which noted that 54% of the respondents felt deterred from using the existing infrastructure due to its current standard.

Additionally the survey found that just over 10% of the respondents use the facility daily, and more than 25% never use it, as shown in Table 3-2.

⁴ Collective Risk is a measure of the number of high severity crashes that have happened per kilometre of road per year

⁵ Personal Risk is a measure of the number of high severity crashes that have happened per 100 million vehicle kilometres of travel on the road

⁶ Eastbourne Community Board, 2014

Table 3-2: How often survey respondents use the existing Eastern Bays walking and cycling facilities

| Use of existing facility | Percentage of survey respondents | Number of respondents |
|--------------------------|----------------------------------|-----------------------|
| Daily | 13 % | 78 |
| Weekly | 25 % | 157 |
| Monthly | 32 % | 201 |
| Never | 27 % | 168 |
| No response | 3% | 20 |
| | 100 % | 624 |

 Source: Eastbourne Community Survey 2014¹

3.1.1.3 Consequence: Suppressed health, environmental and economic effects

The NZ Transport Agency document entitled “Benefits of investing in cycling in New Zealand communities” lists the benefits of active modes as including:

- more liveable towns and cities
- improved conditions for travelling within towns and cities
- stronger local economies
- reduced costs for councils
- less impact on the environment, and
- healthier and more productive people.

Accordingly, the safety of the current facility is preventing these benefits being realised. More information about these benefits can be found within the above document.

3.1.2 Problem 2: “Current facility is at increasing risk of closure and damage from storms and sea level rise and there is no alternative route.”

The **cause** of this problem is the lack of protection of the walking/cycling facility from the sea and that there is no alternative route.

The **effect** of this problem is that the road is at increasing risk of closure and damage.

The **consequence** of this problem is residents or visitors may be stranded and not be able to reach their destination.

3.1.2.1 Cause: Lack of protection of the facility from the sea and no alternate routes

The existing facilities (both the roadway and the limited walking & cycling facilities) have limited protection from the sea. Whilst seawalls are present along much of the route, many of these are coming to the end of their remaining life.

Hutt City Council commissioned an assessment of 3150 metres of the existing seawalls between Point Howard and the start of Days Bays in March 2016. This assessment found that almost 25% of the existing seawalls have a remaining life of less than 5 years, which equals about 700 metres. An additional 200 metres (or 5%) are anticipated to be due for replacement in the next 5 to 10 years, as shown in Table 3-3.

Table 3-3: Summary of remaining life of seawalls between Point Howard and Days Bay

| Remaining life | Length (metres) | Percentage |
|----------------|-----------------|-------------|
| 0 - 5 years | 720 | 23% |
| 5 - 10 years | 200 | 6% |
| 11 - 20 years | 80 | 3% |
| 21 - 50 years | 1030 | 33% |
| 51 - 100 years | 1120 | 36% |
| Total | 3150 | 100% |

Source: GHD Seawalls Condition Assessment, March 2016

In addition, whilst the seawalls may be protecting the asset from being destroyed, they do little to stop storm and high tide events affecting the usability of the route as many of the sea walls do not redirect wave energy back into the harbour; the waves continue to crash over the road.

Based on the seawall conditions assessment, only 14% of the existing seawall between Point Howard and Days Bay are redirecting wave energy back into the sea. This is summarised in Table 3-4.

Table 3-4: Summary of redirecting sea walls between Point Howard and Days Bay

| | | |
|-----------------------------------|-------------|-------------|
| Redirecting seawalls (metres) | 450 | 14% |
| Non redirecting seawalls (metres) | 2700 | 86% |
| Total | 3150 | 100% |

Source: GHD Seawalls Condition Assessment, March 2016

In the Eastern Bays, reducing the number of road closures and obstructions is particularly important because there are no alternative routes and residents are trapped on either side of the closure or obstruction. Longer term or repeated closures would impact on accessibility of the Eastern Bays and, if not mitigated, could reduce the attractiveness of these bays to residents.

3.1.2.2 Effect: Current facility is at increasing risk of closure and damage

Road closures in recent years have been very limited, predominantly due to HCC's well organised maintenance regime, which is set up to clean obstructed infrastructure of debris at the earliest possible time to minimise impacts to residents. Similarly, damage to the seawall has also been fairly infrequent in recent years.

The two sets of evidence for consideration for risk of damage and closure are as follows:

- Closures or damage requiring sweeping to remove debris and open the road: *Between 2012 and 2016, there have been an average of 81 hours per annum of emergency sweeping required along Marine Parade.*
- Closures of damage requiring HCC maintenance contractors to undertake repair work to the seawall: *Since June 2010, there have been 6 incidents recorded that have required seawall maintenance. Works have included improvements to the seawall, damage to the road shoulder and edging.*

However, this low level of closure is not expected to continue.

Some of the stakeholders have raised that climate change is likely going to worsen the impacts of storm events on the existing infrastructure in the medium to long term. Whilst this is not confirmed, there is a risk of increasing impacts through storm events on existing and proposed future infrastructure⁷.

Overall, larger more frequent storm events, coupled with the current state of the seawalls is likely to result in a significant increase in the number of times the route is affected or closed.

⁷ This project will consider the protection of any new assets and the people using the asset. However, this project does not specifically address issues caused by sea level rise.

3.1.2.3 Consequence: Residents or visitors may be stranded and not be able to reach their destination

Due to the fact that there are no other alternative road routes, the consequences of the route being closed are significant for residents and visitors.

3.1.3 Opportunity 1 “The Eastern Bays Shared Path has the opportunity to reinvigorate and enhance the Eastern Bays tourist economy by attracting visitors including long distance cyclists.”

The upgrade and completion of the Eastern Bays Shared Path provides significant economic opportunities for businesses in Days Bay, Eastbourne and the smaller bays by attracting visitor’s including long distance cyclists.

The facility would be part of the Great Harbour Way and could also link to other regional walking and cycling facilities including the Hutt River Trail and the Rimutaka Incline.

Eastbourne Days Bay Action Group (EDBAG) has vision of a promenade/shared path between Days and Eastbourne connecting the Ferry to the Village. If this was undertaken as part of this project, it could attract many more pedestrian visitors to the bays.

The NZ Transport Agency “Benefits of investing in cycling in New Zealand communities” document states that *good cycling infrastructure also attracts people to visit. Reports from Hastings indicate that visitors are being attracted to the area because of its cycling opportunities and many local businesses are reporting significant growth. More bike-friendly towns and cities would also encourage visitors from the New Zealand Cycle Trail, who spend money in local communities.*

Further it was noted that there is an opportunity for the facility to provide space for recreation as well as movement. Spaces could be created for stopping, viewing, fishing, food gathering or eating.

3.1.4 Description of Percentage Splits

The percentages represent the level of importance given to the problems i.e. with a limited budget and you could only fix one problem with this project, how would you choose to spend the available budget?

As there is currently no regular repair work occurring on the road (i.e. from sea wave action related undermining) – from a climate change point of view, then the weighting for this Problem is lower.

Given the overlap between Problem 1 and Opportunity 1, the two have been combined, incorporating the economic benefits into a safer, higher standard and therefore more desirable and utilised facility.

Overall the percentage split has been agreed as:

- Problem 1/ Opportunity 1: 70%
- Problem 2: 30%

3.2 Benefits

The benefit statements for the Eastern Bays Shared Path project are presented below:

- Safer journeys for pedestrians and cyclists
- An increased number of pedestrians and cyclists
- Increased availability of the pedestrian and cycle route

3.3 Investment Objectives

The investment objectives are a vital part of the business case process. They:

- Express the outcomes sought from investment
- Help direct and guide the study process
- Provide the basis for appraisal of alternatives and options

The investment objectives have been created from the problem and benefit statements and are summarised in Table 3-5 below:

Table 3-5: Draft Investment Objectives

| Benefit | Measure | Baseline | Target | By When |
|-----------------------------------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------|--------------------------------|--------------------------------------------|
| To improve safety for pedestrians and cyclists | By increasing the perception of safety, as measured by the community survey | From 34% in 2014 | To 50% | By 2019 |
| To increase the numbers of pedestrians and cyclists | N/A | From approx. 125 ⁸ per day in 2015 | To 250 per day | By 2019 |
| To increase the availability of the route | By reducing the total number of hours the route is swept (response / emergency sweeping only) | From 81 hours (5 year average, per year) | To 70 hours per year (average) | By 2021 (3 year rolling average, per year) |

These investment objectives were further developed and agreed with HCC and NZTA prior to the option evaluation process.

3.4 Constraints

Key constraints within the corridor are summarised below, and should be read in conjunction with the spatial mapping included in Appendix A.

3.4.1 Seawall Life

The remaining life of the seawalls is an important consideration. There is a large difference in residual life of the existing seawalls throughout the project extent. While some sections have less than 5 years life, others have greater than 80 years. There is little continuity either, with adjacent sections fluctuating greatly.

If a section of seawall has limited remaining life, replacing that section is more cost-effective than replacing sections that do not currently require it.

3.4.2 Road Widths

The road width between the landward side property boundary, and the seaward side pavement edge varies throughout. In some locations this is far greater than others. In a similar fashion, the existing seaward side shoulder width varies throughout the extent, from almost zero width beyond the edgeline to upwards of 3m (particularly in the York Bay section that was installed with a new seawall and shared path facility).

3.4.3 Existing Beaches

Retention of the existing beach areas is very important for the local community. Options for the shared path should attempt to avoid incursion onto the beach areas which could reduce the already limited space available for beach recreation.

This is an important community consideration and therefore options will need to show what can and cannot be achieved in terms of beach encroachment, prior to a decision being made on recommended options.

3.4.4 Trees and important structures (such as boat sheds)

There are a number of trees and seaward side structures that should be considered as project constraints. The Social and Environmental Screen did not identify that any of the trees are protected; however there are known community attachments and there is expected to be a general unwillingness to

⁸ AM peak period cycling volumes have been input to the NZTA formula which gives an estimation of cyclist AADT being 77. Peak period pedestrian counts (17 users) have also been used to give an approximate existing use of a total of 125 cyclist and pedestrian users per day.

see removal. Tree removal would need to be clearly justified and potentially require replacement planting if deemed essential.

A number of structures exist on the seaward side and a shared path will need to be carefully managed in how it passes and interacts with these structures. Two examples of these are shown below.



Figure 3-1: Bus stop, York Bay



Figure 3-2: Boat shed and launch, Lowry Bay

3.4.5 Parking

There is limited parking in most locations along Marine Drive and at times it can be heavily oversubscribed. Where possible, parking should be retained; however it is recognised that available space is significantly constrained and parking may need to be sacrificed to provide the shared path.

3.4.6 Property

There is no desire to purchase property to deliver the shared path. Therefore the project will be delivered using land available within the existing road corridor, or by winning additional width through the design of the seawall (where a replacement seawall is provided).

3.4.7 Summary

There are a number of constraints and features which need to be considered when identifying and evaluating options for a shared path.

These are currently being mapped and will be incorporated into subsequent versions of this report.

4 Options Development

The options development process included a number of components – guiding principles, previous work and desired improvements, consideration of treatment options (i.e. the methods available to provide additional width), and ultimately, consideration of the general width of the facility to be provided.

This IBC will not specifically identify the exact treatment to be used throughout the entire project length, but will determine which treatments should be rejected as unsuitable, and which are appropriate for further consideration at the DBC stage. More importantly, the key outcome of the IBC will be to identify the most suitable facility width to take into DBC stage investigations. This is the most important consideration. The specific treatment options to achieve this, will be refined further during the next stage of investigation.

4.1 Guiding Principles of Options Development

As part of the option development, the wider project team, including community group representatives, were asked to provide recommendations on key or desirable characteristics that a shared path should endeavour to provide.

The following high level design principles were discussed, but it was recognised that it would be challenging for any option to meet all the principles identified. Nevertheless the identification of these features will assist in option identification and assessment. It was also recognised that some of these features would be points of detail that would not be considered or addressed at this early stage of investigation, but that it was still worthwhile to discuss at the early stage for consideration by the project team.

- Consistency in width and surface throughout
- York Bay solution is a good starting point
- Minimum width should cater for two cyclists going in opposite directions
- A shared path is desired
- Single side contraflow shared path, rather than unidirectional on each side of the road
- Parking – cater for the wider community – but lesser priority than the facility itself
- Avoid encroachment on the beaches if possible
- Consider realigning the centre line on the roads to gain additional space
- Retain trees along the route as much as possible
- Avoid legal speed reductions on road – it's been considered previously
- Fencing is undesirable on the seaward side
- Consider options for separating path from traffic lanes
- Avoid point obstacles
- Consider crossing points for accessing the facility
- Accessible for all wheels (e.g. skateboards, scooters, wheelchairs)

4.2 Preferred Final Long Term Option

4.2.1 Previous Final Preferred Option

The previous work undertaken on the project⁹ between 2009 and 2015 considered the provision of a single or double curved redirecting seawall as the most appropriate design solution for creating a shared path solution.

An excerpt of the previous concept design work undertaken is shown below:

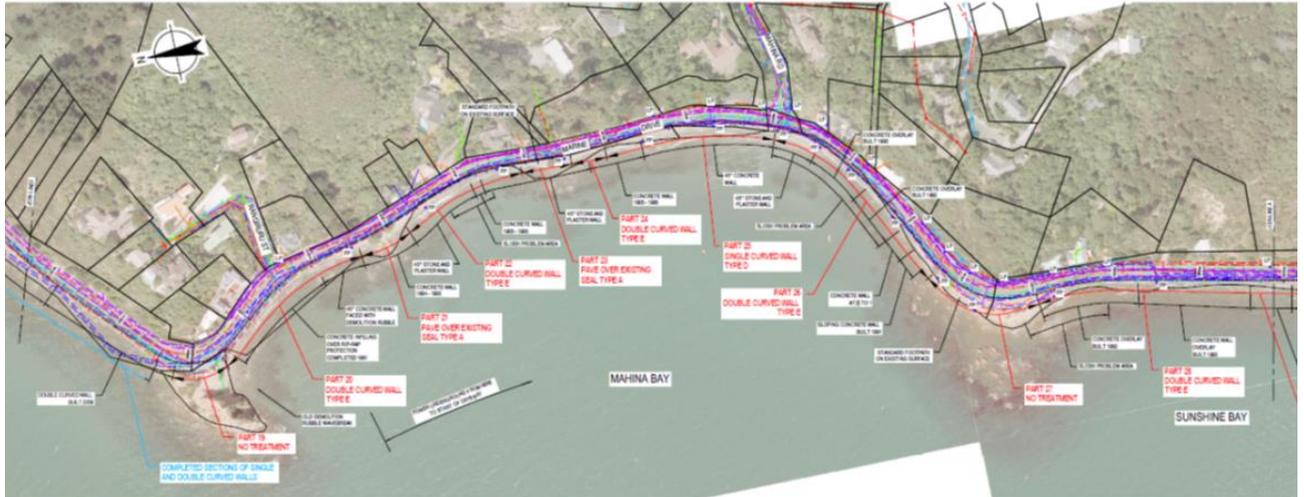


Figure 4-1: Example of previous shared path design undertaken by GHD Consultants

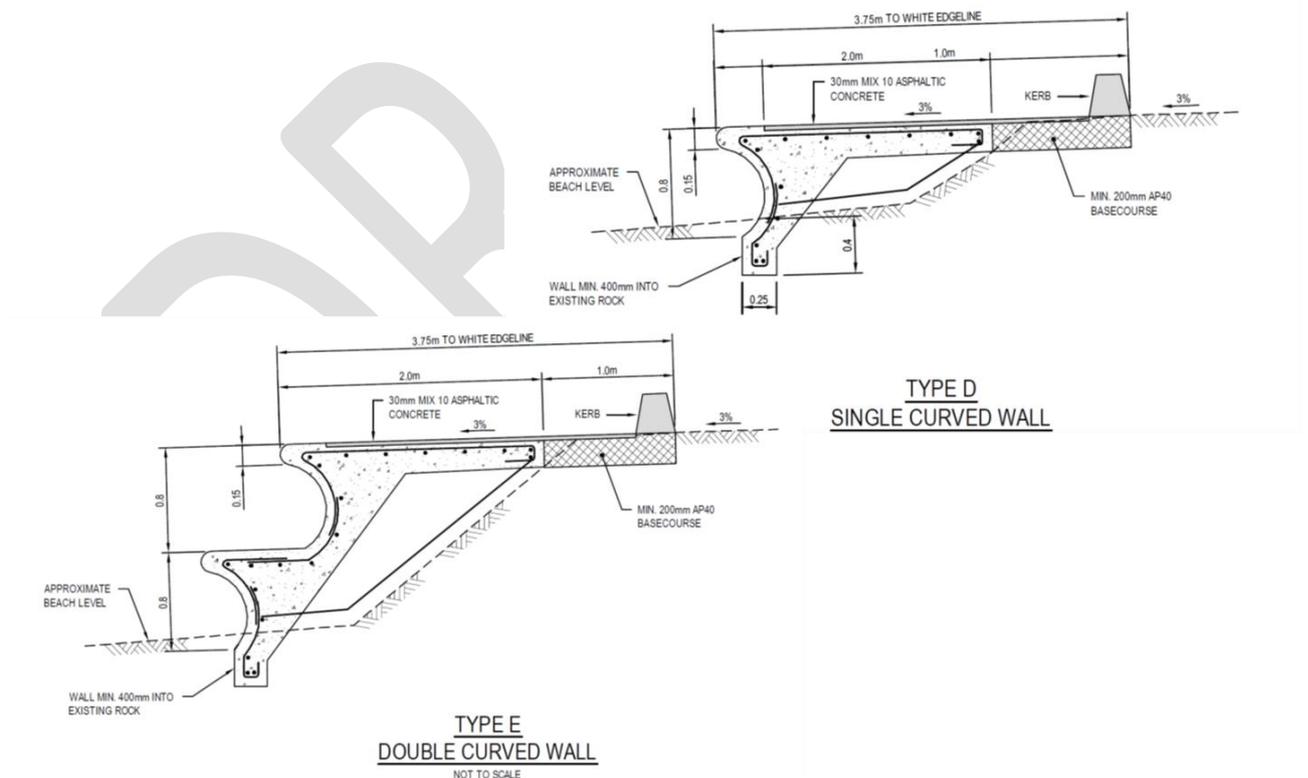


Figure 4-2: GHD Consultants design drawing of single and double curve redirective seawall

⁹ By GHD Consultants and culminating in various technical reports and a concept design for a shared footpath/cycleway.

4.2.2 Assessment of Previous Final Preferred Option

The project team have considered the previous solution and this is considered a reasonable and acceptable 'long term' design solution for providing a seaward side shared path along the project length.

Conversely, it is not necessarily considered the only solution for achieving additional width and this IBC is required to consider alternative options that have different levels of effects and costs to ensure that a suitable assessment of alternatives has been undertaken. Further, consideration of different options will ensure that there is some flexibility within the solutions and that affordability is considered early in the process.

4.3 Existing Seawall Condition

Before this IBC was commenced, considerable previous assessment work had been undertaken on the seawall condition between Point Howard and the northern end of Days Bay. The assessment work was provided by HCC and has not been checked or verified as part of this investigation – however there are no indications that the work is not accurate and cannot be relied upon.

The seawall condition data is provided in Appendix B.

The previous seawall condition assessment undertaken, covered the extent between Point Howard and Days Bay. The geographical scope for the IBC also includes the additional 400-500m between the southern end of Days Bay and the northern end of Eastbourne. Therefore as an additional element of work to supplement the IBC, a visual inspection was also undertaken for this section, so that it can be included in the option considerations.

4.4 Possible Treatment Options

4.4.1 Introduction

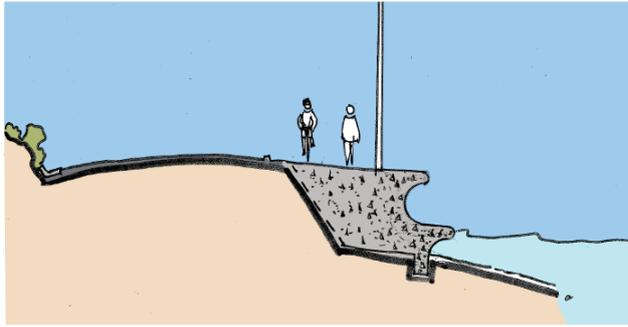
To consider treatment options an MWH internal workshop took place on Wednesday 12 October 2016, where a team of project experts comprising a structural engineer, and engineering geologist and a geometric designer considered possible treatment options.

At this stage of the investigation, the intent was to identify all potential treatments as opposed to just treatments that were likely to be favoured; this was to ensure a robust approach and that treatment options were not dismissed too early without adequate consideration.

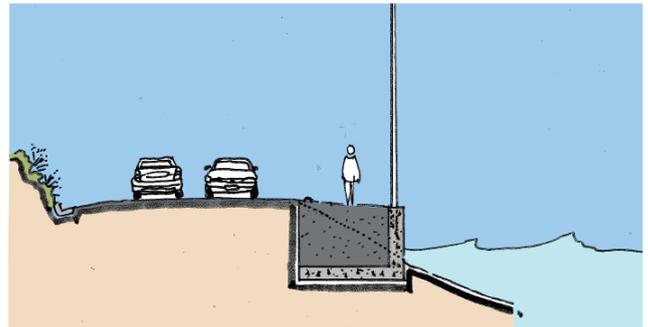
Fourteen possible treatment options were considered and these are briefly described below, along with whether the treatment has been accepted as a possible application moving forward or rejected (and not subject to further consideration).

An example of the types of treatment are shown in the sketched figures below:

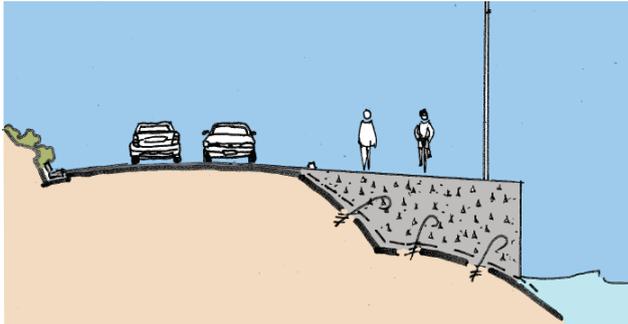
A. Double Curved Sea Wall



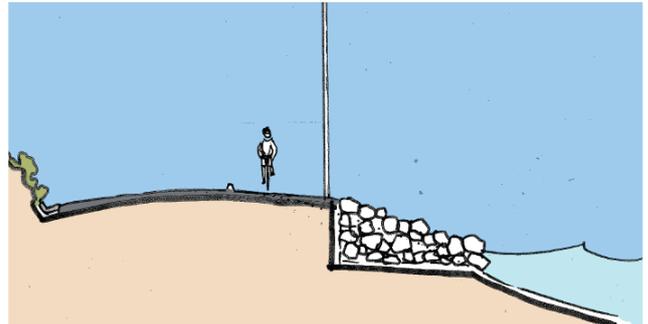
B. New Cantilevered Seawall



C. Flatten Existing Mass Concrete Sea Wall



D. Placed Rock Revetment



Sections not drawn to scale.

Figure 4-3: MWH sketched cross sections of possible treatment options

Further sketch details of treatments are provided in Appendix C.

4.4.2 Carriageway Reallocation

| | |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Characteristics | <ul style="list-style-type: none"> • Reallocates the existing road width • Narrowing of traffic lanes or shoulders |
| Benefits and constraints | <ul style="list-style-type: none"> • Avoids new seawall works • Lower costs • Only possible where existing space permits |
| Possible applications | <ul style="list-style-type: none"> • Where existing road space is available • Unable to be applied extensively in Eastern Bays project due to limited widths available |
| Accepted / Rejected? | <ul style="list-style-type: none"> • Accepted |

4.4.3 Placed Rock Revetment

| | |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Characteristics | <ul style="list-style-type: none"> • Rock 'rip-rap' placed to provide additional width and protection against wave action |
| Benefits and constraints | <ul style="list-style-type: none"> • Lower costs • Requires extensive widths (encroaching into beach or ocean) • Commonly used as seawall type solution |
| Possible applications | <ul style="list-style-type: none"> • Most locations except beaches |
| Accepted / Rejected? | <ul style="list-style-type: none"> • Accepted |

4.4.4 Double Curved Seawall

| | |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Characteristics | <ul style="list-style-type: none"> • Double curved concrete seawall |
| Benefits and constraints | <ul style="list-style-type: none"> • Reflects wave energy • Robust solution, long design life • Consistent with other sections of Eastern Bays • Encroachment • High cost • Can be increased in height |
| Possible applications | <ul style="list-style-type: none"> • Most locations |
| Accepted / Rejected? | <ul style="list-style-type: none"> • Accepted |

4.4.5 Timber Walkway

| | |
|--------------------------|-------------------------------------------------------------------------------------------------------------------|
| Characteristics | <ul style="list-style-type: none"> • Timber piles & deck |
| Benefits and constraints | <ul style="list-style-type: none"> • Low cost • Lower design life / durability |
| Possible applications | <ul style="list-style-type: none"> • Limited applications due to design life / durability concerns |
| Accepted / Rejected? | <ul style="list-style-type: none"> • Rejected |

4.4.6 Single Curved Seawall

| | |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Characteristics | <ul style="list-style-type: none"> • Single curved concrete seawall |
| Benefits and constraints | <ul style="list-style-type: none"> • Reflects wave energy • Robust solution, long design life • Consistent with other sections of Eastern Bays • Encroachment • High cost • Can be increased in height |
| Possible applications | <ul style="list-style-type: none"> • Most locations |
| Accepted / Rejected? | <ul style="list-style-type: none"> • Accepted |

4.4.7 Vertical Cantilevered Concrete Wall

| | |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Characteristics | <ul style="list-style-type: none"> • Cantilevered concrete wall with mass fill behind |
| Benefits and constraints | <ul style="list-style-type: none"> • Keyed into existing pavement structure • Robust solution, long design life • Reduced encroachment • High cost • Does not reflect wave energy |
| Possible applications | <ul style="list-style-type: none"> • Numerous locations including beaches |
| Accepted / Rejected? | <ul style="list-style-type: none"> • Accepted |

4.4.8 Gabions / Reno Mattress

| | |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Characteristics | <ul style="list-style-type: none"> Stone filled wired baskets |
| Benefits and constraints | <ul style="list-style-type: none"> Very poor durability in marine environment Moderate cost Does not reflect wave energy |
| Possible applications | <ul style="list-style-type: none"> Very limited |
| Accepted / Rejected? | <ul style="list-style-type: none"> Rejected |

4.4.9 No Fines Concrete Blocks

| | |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Characteristics | <ul style="list-style-type: none"> Coarse concrete blocks with no reinforcing or fine materials (porous) |
| Benefits and constraints | <ul style="list-style-type: none"> Moderate durability in marine environment Moderate cost Does not reflect wave energy Aesthetically limited |
| Possible applications | <ul style="list-style-type: none"> Most locations |
| Accepted / Rejected? | <ul style="list-style-type: none"> Accepted |

4.4.10 Sheet Piles

| | |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Characteristics | <ul style="list-style-type: none"> Driven sheet piles with mass fill behind |
| Benefits and constraints | <ul style="list-style-type: none"> Poor durability in marine environment High cost Does not reflect wave energy |
| Possible applications | <ul style="list-style-type: none"> None |
| Accepted / Rejected? | <ul style="list-style-type: none"> Rejected |

4.4.11 Timber Pole Wall

| | |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Characteristics | <ul style="list-style-type: none"> Driven timber poles with mass fill behind |
| Benefits and constraints | <ul style="list-style-type: none"> Poor durability in marine environment Low cost Does not reflect wave energy |
| Possible applications | <ul style="list-style-type: none"> Very limited |
| Accepted / Rejected? | <ul style="list-style-type: none"> Rejected |

4.4.12 Mass Concrete to Existing Pitched Seawall

| | |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Characteristics | <ul style="list-style-type: none"> Re-profiling the existing pitched seawall with additional mass concrete and dowels to form a vertical seawall face gaining additional width |
| Benefits and constraints | <ul style="list-style-type: none"> May encroach on perceived beach width if existing shallow angle seawall is covered with beach materials Medium cost Does not reflect wave energy Reliant on existing seawall being structurally sound |
| Possible applications | <ul style="list-style-type: none"> In location where existing seawall is pitched |
| Accepted / Rejected? | <ul style="list-style-type: none"> Accepted |

4.4.13 Dwarf Mass Concrete Wall

| | |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Characteristics | <ul style="list-style-type: none"> • Small vertical faced wall |
| Benefits and constraints | <ul style="list-style-type: none"> • Can limit encroachment on beach • Width gain is limited • Does not reflect wave energy • Not reliant on structural soundness of existing seawall structure |
| Possible applications | <ul style="list-style-type: none"> • Where proposed vertical face will not exceed 0.5m |
| Accepted / Rejected? | <ul style="list-style-type: none"> • Accepted |

4.5 Treatments Summary

In summary, 4 of the possible 12 treatments have been rejected from further consideration for the reasons outlined in the tables above.

The remaining 8 treatments are still considered feasible for consideration. The specific treatment to be used at all locations will be dependent upon the preferred width selected for the route. This will be undertaken at DBC stage once a preferred width has been confirmed through the IBC process.

4.6 Facility Width

4.6.1 Guiding Principles

Some key principles were established during the optioneering exercise. The first of these was that, where a seawall had less than 5 years remaining life, then it should be replaced with a new fully redirective single or double curved seawall, as this type of treatment has been used already within parts of York Bay and the northern part of Lowry Bay, and is considered a good long term solution.

The above principle was not applied where a seawall was being replaced within a beach area, as this would likely encroach onto the useable beach area. Instead alternative options would need to be considered.

The second design principle related to avoiding unnecessary works – meaning that if sufficient width was already available in the seaward side road shoulder for the required width for that option, then no seawall upgrade or widening would be proposed. For example if the option required a minimum width of 2.0m and the existing shoulder for a length was 2.3m, then no works would be proposed for that section.

4.6.2 Option Description

Further to the consideration of possible treatments, a key component of the IBC is to determine a suitable width for the facility. It is recognised that a single inflexible set width for the entire facility may not be necessary or appropriate given site constraints and specific requirements; however a ‘general’ desirable minimum width should be established as part of this investigation.

The options considered, along with the reasoning are described below¹⁰:

- **Option 1 – Replace only seawall with less than 5 years remaining life:** This is the ‘do-minimum’ option and is considered more of a comparison than a realistic option for delivery because it would leave in place sections of the route where there is insufficient width for the passage of a pedestrian or cyclist.
- **Option 2 – 1.5m facility:** Considered as the lowest standard facility and an ‘absolute minimum’. Whilst this would improve the existing level of service (LoS) for path users, the increase in LoS would be limited and the path would not meet minimum standards. Such a low standard would necessitate less physical works and have affordability benefits. Similarly, it could potentially be further upgraded in future, and so is considered as a low standard solution at this stage.

¹⁰ It should be noted that the stated widths are minimum widths for the facility throughout and so if the existing shoulder width is wider than the option minimum, it would not be reduced - it is acknowledged that this approach would result in an inconsistent facility width, which may need further consideration at DBC stage to ensure suitable transitions between widths.

- **Option 3 - 2.0m facility:** Slightly wider than the minimum consideration but still a less than ideal level of service for users. Passing cyclists would still be a concern at this width.
- **Option 4 - 2.5m facility:** Meeting minimum standards for a shared path¹¹ of 2.5m, this width of path is more in-keeping with the standard that should be provided; however such a width would require a more significant amount of physical work and therefore can be expected to increase the physical works cost.
- **Option 5 - 3.5m facility:** The highest standard width option considered, providing a 3.5m width facility throughout. This width would provide a good level of service in terms of width, easily allowing enough space for opposing cyclists to pass or for space for pedestrians or families to walk. This width meets the Austroads standard for a recreational shared path facility.

Plans of the options are included as Appendix A.

4.6.3 Options Not Considered

- **Less than 1.5m wide:** No facility less than 1.5m was considered, such as providing a minimum of 1.0m throughout, on the basis that 1.5m is already substandard (and arguably unsuitable / inappropriate), and so adequately covers off the consideration of alternatives at the lower end of the spectrum. The cost outlay for a 1.0m facility would not be expected to generate many benefits and would be unlikely to meet project objectives.
- **3.0m wide:** Initially this was considered as an option to be investigated and assessed. Ultimately it was discounted and not considered further. Working through the options there appeared little difference between 3.0m and 3.5m in terms of locations where physical works were required i.e. there were very few sections where 3.0m was already achievable and would require no physical work – so costs for the options were very similar, and so there was little to differentiate.
- **Greater than 3.5m width:** This option was not considered as 3.5m satisfies the desirable width for a recreational shared path. Additional width would commensurate cost increases that may inhibit affordability. Similarly, the recently completed section of shared path at York Bay would become out of context if the facility was much wider than 3.5m, and there is no desire to provide further upgrade to the improved York Bay section. Nonetheless, it is recognised that there could be a desire to provide some specific sections at greater than 3.5m width, where there may be a need for additional width for congregating, or for enhanced urban design and movement functions (such as between Days Bay and Eastbourne).

4.7 Site Features

The Eastern Bays project length between Point Howard and Eastbourne contains various notable features including beaches and points, fluctuating road widths and varying road and shoulder widths throughout. Footpath provision on the landward side is also highly variable.

Street lighting is provided, mainly on the landward side, but not exclusively. Power poles are sporadic throughout on both sides of the road, and will need to be relocated or undergrounded to allow for the shared path.

There are also a variety of other features that require consideration such as boat sheds, property accesses, trees, features or interests / memorials, bus stops and car parking.

These features have been observed and recorded by the project team when observing the site either on foot, bicycle, motor vehicle or from aerial and street view imagery.

The drawings contained within Appendix A include details of the approximate beach extents, notable features, seawall condition (remaining life), road widths and seaward side shoulder widths.

¹¹ Austroads Aspects of Cycling Guides Table 7.6 notes that a local access path should be 2.5m desirable width, however this could be considered a recreational path which should have a desirable minimum width of 3.5m.

5 Options Assessment

5.1 High Level Cost Estimation

To undertake the cost estimation it was necessary for the project team to develop an itemised cost estimate for each option. As the specific treatment type for each location on each option has not yet been selected this makes estimation of the costs more challenging. To overcome this, the project team developed design solutions that proposed a multitude of different treatment types for each option.

For each option, the project team walked the entirety of the site and collectively agreed a suitable treatment for providing the necessary width for each option. A 'one size fits all' approach was not used for each option as this was considered unrealistic. Instead a number of treatments were used on each option, based on the team's best judgement, to provide a reasonable level of confidence in cost estimation. The treatments included: new double and single curved seawall, new mass concrete to flatten existing pitched seawall, revetment treatment and dwarf walls. These are just some of the treatment methods considered in Section 4.3 but all of the treatment methods that have not been rejected as being unsuitable will continue to be considered during the DBC phase.

The cost estimates for each of the options are provided below:

Table 5-1: Expected Cost Estimates

| Option | Expected Estimate |
|----------------------------------------|-------------------|
| Option 1 – Replace < 5 years remaining | \$4.3M |
| Option 2 – 1.5m facility | \$7.3M |
| Option 3 - 2.0m facility | \$9.0M |
| Option 4 - 2.5m facility | \$11.0M |
| Option 5 - 3.5m facility | \$15.0M |

The monetary figures from the table above are the expected estimates and include items for traffic management, preliminary and general, service relocations, design and MSQA and environmental compliance. A 50% contingency allowance is also included given the limited information available at this stage of project development. Further, this high level of contingency is advisable as no information is currently available on environmental mitigation costs which could prove significant.

Full cost estimates are provided in Appendix F.

5.2 Multi-Criteria Analysis

5.2.1 Process

A MCA was undertaken on the five options in a workshop setting on 7 November 2016. The attendees included the core project team, plus specialist consultant advisors (such as a structural engineer, ecologist, planning & consenting expert), client representatives, NZ Transport Agency representatives (Planning & Investment and cycleway specialist), as well as community group representatives.

The options were supplied separately to all of the group in advance of the MCA to allow time for preparation and consideration.

A loose framework was proposed for the MCA workshop in advance, but the process was kept flexible to allow refinement and improvement during the workshop.

The intent of the process was to ensure an adequate cross section of views were presented and a broad range of issues and considerations put forward.

A number of criteria for assessment were also supplied in advance of the workshop and these are described below.

5.2.2 Criteria

The criteria below were initial suggestions for consideration:

- **Safety** – this focuses on how safe the facility is likely to operate in a practical sense. It is not the perception of safety that users may have, but the actual likely level of safety the facility is expected to offer to users.
- **Attractiveness** – considers the likely attractiveness for users, and specifically how well the facility is likely to be considered by prospective users i.e. how well would the option draw new users to it?
- **Resilience** – this covers multiple factors such as whether the seawalls are redirecting, height, protection for the road structure and ability to be increased in height in future.
- **Upgrade Potential** – this looks at the potential for further upgrade in future and will be particularly relevant for sections that are not subject to any works, or are widened by an interim amount and could require further widening in future to achieve a consistent shared path.
- **Durability** – Consideration of the level of robustness and long term protection that the facility offers, from weather events and wave action.
- **Ecology** – this criterion focused on terrestrial and aquatic ecology values.
- **Visual**¹² – this includes visual impacts for the wider community across the road / shared path facility, visual effects for vehicle occupants along Marine Drive and also visual impacts for users of the facility.
- **Consentability** – this will be an assessment of the level of expected difficulty for achieving the necessary resource consents across each option. It is possible that this may be partially or fully covered off adequately via other criteria (such as visual and ecology) but is nevertheless included as a suggested criteria at this stage.
- **Beach Impact** – considers the level of impact on the existing beaches from a community use perspective.
- **Cost** – takes into account the rough order capital construction costs plus contingencies.
- **Cultural / Iwi** – this is a critical criterion that needs full consideration to ensure these inputs are considered. It is noted that there was previous iwi and cultural inputs around the considerable values of the Eastern Bays coastline.
- **Coastal Processes** – considers the impact of the proposed works on the marine environment and processes such as coastal erosion and movement of materials.

After further consideration it was decided that a number of these criteria would be removed for the following reasons:

- **Cultural / Iwi** – following an initial discussion with a cultural advisor, a decision was made that any options that are shortlisted following the MCA workshop would be discussed with Iwi representatives to determine the level of acceptability, prior to progressing to DBC phase.
- **Coastal Processes** – limited information is available on specific proposed treatments at all locations and so coastal processes will be fully considered at the DBC stage.

¹² The visual expert was unable to attend the MCA workshop, but provided scoring and commentary after the workshop.

5.2.3 Scoring Method

The option scoring system that was used during the MCA process was agreed by all workshop attendees and is as follows:

Table 5-2: Agreed MCA Scoring Method

| Score | Description |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | The option presents few difficulties on the basis of the criterion being evaluated, taking into account reasonable mitigation proposals. There may be significant benefits in terms of the attribute. |
| 2 | The option presents only minor areas of difficulties on the basis of the criterion being evaluated, taking into account reasonable mitigation proposals. There may be some benefits in terms of the attribute. |
| 3 | The option presents some areas of reasonable difficulty in terms of the criterion being evaluated. Mitigation is not readily achievable at reasonable cost, and there are limited apparent benefits. |
| 4 | The option includes some extensive areas of difficulty in terms of the criterion being evaluated, which outweigh perceived benefits. Mitigation is not readily achievable. |
| 5 | The option includes major difficulties / issues in terms of achieving the project on the basis of the criterion being evaluated. |

5.2.4 Option Scoring & Summary

Scoring for the options was agreed during the MCA workshop by participants as follows:

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Table 5-3: MCA Summary Table: Scoring & Commentary

| Option 1 < 5 years life | | Option 2 – 1.5m | Option 3 – 2.0m | Option 4 – 2.5m | Option 5 – 3.5m | |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| Safety | Unlikely to draw many new users and so little different to existing. Slightly safer in some locations because a new facility would be provided, though fragmented. Could encourage more crossing of the road to get to and from new facility. | 4 Improvement on existing with continuous facility provided. Space constraints in many locations making passing difficult and conflicts between users. With additional users at peak periods this could create safety problems however, given it is narrow, users expected to adapt behaviour accordingly - stop to allow passing etc. | 4 Improvement on existing situation and good facility for pedestrians. Safety concerns as width could be in 'dilemma zone' for some cyclist users though this is not expected to result in actual injuries to users (instead they would adapt their behaviour). | 3 Significant safety improvement for all users. 2.5m facility providing good space for passing other path users. Some congestion during busy peak periods but not considered to be a safety risk. | 2 Extremely safe for all users with ample room to pass even in busiest periods. | 1 |
| Attractiveness | Very poor and unlikely to be attractive to potential users, either pedestrians or cyclists. No continuity and fluctuating width will be poor for users and unlikely to be much change from existing. Very poor width consistency along route. | 4 More attractive than existing situation, particularly for more confident cyclists, but less confident and younger/older may still not want to use. Clear improvement for pedestrians. Concern for congestion / overcrowding in busy / peak summer periods with limited space. Poor width consistency . | 3 Step change in level of attractiveness for pedestrian users but not ideal for cyclists. Still tight for busy situation or cyclists to pass with traffic on one side and drop off on other. Despite obvious shortcomings, would still attract new users. Improved width consistency but still not ideal. | 3 Step change in level of attractiveness for all users as 2.5m provides reasonable width for a shared path facility. Still a level of constraint here, particularly for cyclists with a drop off on one side and traffic on the other, but very attractive still. Moderate to good width consistency. | 2 Extremely attractive to all users, generating most numbers of new cyclists and pedestrians to the facility. Excellent width consistency. | 1 |
| Resilience | Scored based on proportion of new seawall and, remaining older seawall: New 3.5m curved seawall: 600m New seawall: 400m Other treatment: 0m Retained wall <20 years life: 400m | 4 Scored based on proportion of new seawall and, remaining older seawall: New 3.5m curved seawall: 950m New seawall: 600m Other treatment: 0m Retained wall <20 years life: 250m | 4 Scored based on proportion of new seawall and, remaining older seawall: New 3.5m curved seawall: 1250m New seawall: 500m Other treatment: 650m Retained wall <20 years life: 150m | 3 Scored based on proportion of new seawall and, remaining older seawall: New 3.5m curved seawall: 1250m New seawall: 1150m Other treatment: 100m Retained wall <20 years life: 150m | 3 Scored based on proportion of new seawall and, remaining older seawall: New 3.5m curved seawall: 2300m New seawall: 450m Other treatment: 50m Retained wall <20 years life: 0m | 2 |
| Upgrade Potential | This was debated at length but as this could mean width or height for future upgrade, as well as whether upgrading nothing now was actually better as avoided any spend, then agreed that a mid-point score would be applied to all. | 3 This was debated at length but as this could mean width or height for future upgrade, as well as whether upgrading nothing now was actually better as avoided any spend, then agreed that a mid-point score would be applied to all. | 3 This was debated at length but as this could mean width or height for future upgrade, as well as whether upgrading nothing now was actually better as avoided any spend, then agreed that a mid-point score would be applied to all. | 3 This was debated at length but as this could mean width or height for future upgrade, as well as whether upgrading nothing now was actually better as avoided any spend, then agreed that a mid-point score would be applied to all. | 3 This was debated at length but as this could mean width or height for future upgrade, as well as whether upgrading nothing now was actually better as avoided any spend, then agreed that a mid-point score would be applied to all. | 3 |
| Durability | Less seawall replaced so on a sliding scale score improves. | 4 Less seawall replaced so on a sliding scale score improves. | 4 Mid-range level of replacement. | 3 More seawall replaced so on a sliding scale score improves. | 2 More seawall replaced so on a sliding scale score improves. | 2 |
| Ecology | Potential construction effects including sedimentation, release of cementitious products, and direct disturbance of habitat effects is minimal and readily managed. Operational effects are unlikely to result in any substantial change in community composition. | 3 Potential construction effects including sedimentation, release of cementitious products, and direct disturbance of habitat effects is minimal and readily managed. Operational effects are unlikely to result in any substantial change in community composition. | 3 Potential construction and operational effects increase as the width of the pathway increases: greater encroachment into more natural habitats and increased potential for adverse effects during construction. Overall risks are no more than minor. | 4 Potential construction and operational effects increase as the width of the pathway increases: greater encroachment into more natural habitats and increased potential for adverse effects during construction. Overall risks are no more than minor. | 4 Potential construction and operational effects increase as the width of the pathway increases: greater encroachment into more natural habitats and increased potential for adverse effects during construction. Overall risks are no more than minor. | 4 |
| Visual | Requires minimal change to the existing residential character of each bay. The visual effects of the proposed structures are low across the overall Eastern Bays, particularly at the coastal edge with minimal disturbance to the beach. However it does nothing to improve the hodgepodge mix of seawall structures and makeshift improvements which adversely affect the existing visual amenity of residents and road users alike. | 4 Retains much of the existing makeshift detailing and mix of materials in combination with a variety of new walls. Every new section of wall creates additional effects in terms of the interface of the new and old structures. The overall lack of cohesion and consistency increases impact of both the new and old walls. In short, this appears to be the worst of all options with little benefit in increased visual amenity and potential adverse effects due to the complexity of integrating the old and new seawall structures. | 5 The proposed changes create longer stretches of new seawall and shared path construction. This reduces the variety of structures, simplifying the detailing required to integrate the new seawalls into the existing coastal edge. The final 2.0m shared path is in scale with the existing road corridor although is visibly different from the existing upgraded 3.5m path in York Bay. | 3 Similar to Option 3 at a local/bay scale in terms of the number and location of changes to the seawall and shared path. The 2.5m wide shared path extends the overall road corridor without dominating the coastal edge. The proposed works have the potential to integrate with existing seawall and shared path upgrades. Overall the adverse effects of loss of local nuance and identity are balanced against the positive effect of a more cohesive coastal edge and consistent width shared path around the Eastern Bays. | 2 Has the potential to establish a single consistent shared path and coastal edge around the Eastern Bays. The width of the path affects the visual amenity of beach users and local residents, as it not only extends further out over the coast but also competes with the road, effectively establishing a third lane of traffic, albeit cycling and pedestrian traffic rather than vehicles. This increased scale of the road corridor removes road users further (in terms of both horizontal distance and height) from the beach and the water. | 3 |
| Consentability | Environmental effects of the proposed works on the foreshore and coastal | 3 Environmental effects are considered minimal, although consents will still be | 3 Environmental effects become progressively adverse as the width | 4 Environmental effects become progressively adverse as the width | 4 Extensive widening of the pathway will result in | 5 |

| | Option 1 < 5 years life | | Option 2 – 1.5m | | Option 3 – 2.0m | | Option 4 – 2.5m | | Option 5 – 3.5m | |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| | marine area are considered minimal, although consents will still be required to undertake maintenance on the existing seawalls. Effects can be easily mitigated. | | required to undertake maintenance on the existing seawalls and minor additions to existing structures. Effects can be mitigated. | | of the pathway is increased. Requires encroachment onto the foreshore with resulting loss of amenity, increasing risk of contamination during construction. Greater interest from the community and the potential for some objections. | | of the pathway is increased. Requires encroachment onto the foreshore with resulting loss of amenity, increasing risk of contamination during construction. Greater interest from the community and the potential for some objections. | | significant environmental effects and permanent changes to the foreshore. Requires encroachment onto the foreshore with resulting loss of amenity, increasing risk of contamination during construction. Likely to attract strong objections from sectors of the community, especially the beach users. | |
| Beach Impact | Scored based on initial high level concept design and expected beach impact: <ul style="list-style-type: none"> • Encroachment in beach area: 400m • New 3.5m seawall in beach area: 50m | 3 | Scored based on initial high level concept design and expected beach impact: <ul style="list-style-type: none"> • Encroachment in beach area: 850m • New 3.5m seawall in beach area: 250m | 4 | Scored based on initial high level concept design and expected beach impact: <ul style="list-style-type: none"> • Encroachment in beach area: 1200m • New 3.5m seawall in beach area: 300m | 4 | Scored based on initial high level concept design and expected beach impact: <ul style="list-style-type: none"> • Encroachment in beach area: 1200m • New 3.5m seawall in beach area: 350m | 4 | Scored based on initial high level concept design and expected beach impact: <ul style="list-style-type: none"> • Encroachment in beach area: 1200m • New 3.5m seawall in beach area: 850m | 5 |
| Cost | Range of \$3M-6M | 2 | Range of \$6M-9M | 3 | Range of \$6M-9M | 3 | Range of \$9M-12M | 4 | Range of \$12M+ | 5 |

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5.2.5 Weighting of Criteria

During the MCA workshop the attendees also agreed how each criteria should be weighted relative to the others. This was in recognition that the workshop attendees believed some criteria were more important than others and this should be recognised.

The agreed weightings are as follows, out of a possible 10:

Table 5-4: Workshop participants MCA weightings

| Criteria | Weighting |
|-------------------|-----------|
| Safety | 10 |
| Attractiveness | 10 |
| Resilience | 6 |
| Upgrade Potential | 7 |
| Durability | 6 |
| Ecology | 8 |
| Visual | 7 |
| Consentability | 6 |
| Beach Impact | 8 |
| Cost | 7 |

5.2.6 Outcome of MCA Process

The MCA assessment has been undertaken both with and without costs included in the overall assessment process.

The figures below show the outcomes, with the lower scoring options being preferred i.e. a lower score represents less issues or impacts.

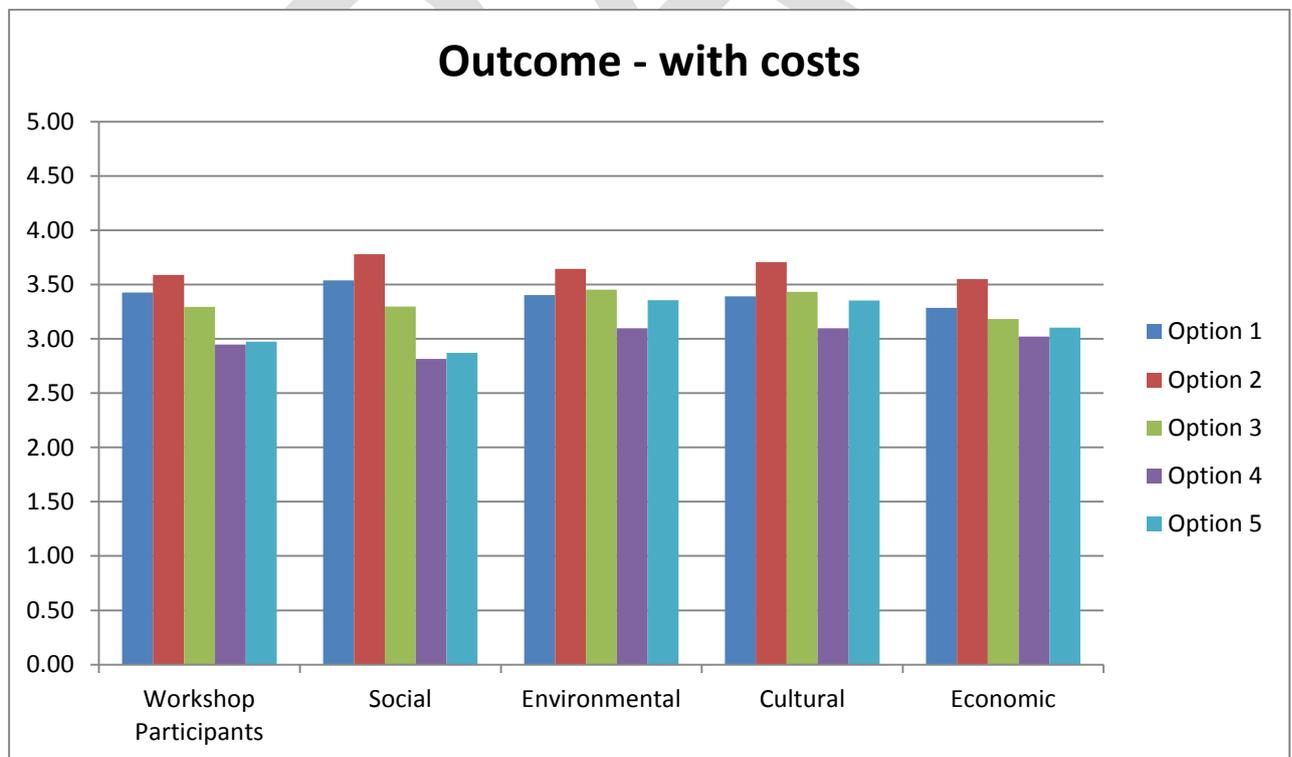


Figure 5-1: Weighted MCA Results (with costs)

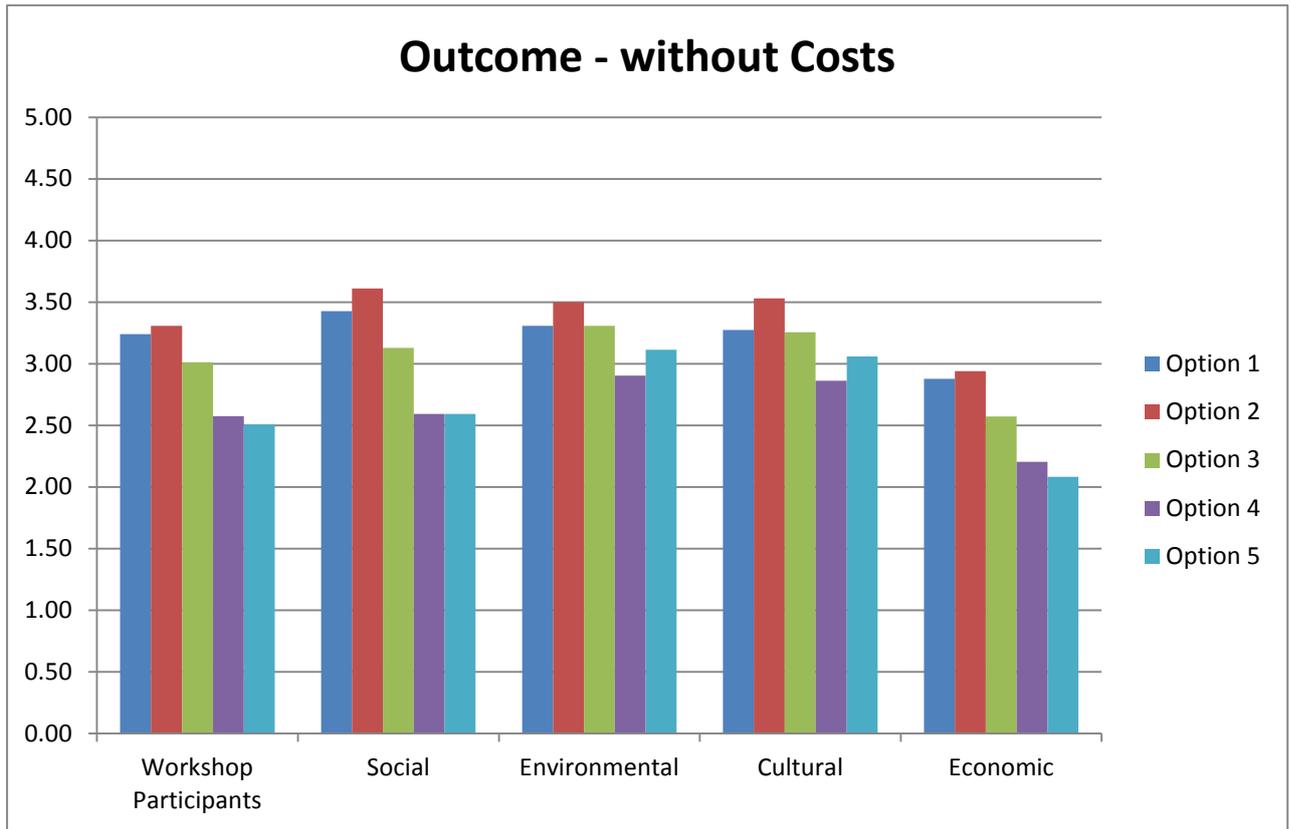


Figure 5-2: Weighted MCA Results (without costs)

The five different classifications shown across the bottom of the charts are the different weighting systems used. ‘Workshop Participants’ refers to the weightings agreed during the MCA workshop with the full group of attendees. The other four groups, namely *Social*, *Environmental*, *Cultural* & *Economic*, are sensitivity tests where the scoring criteria that align to that group are scored artificially higher, and the other criteria are reduced. This is done to ensure that the participants weighting applied at the workshop is robust, and not inappropriately weighted in such a fashion that vastly different results would be produced if weighted in a different manner.

It can be clearly seen from the MCA charts that Option 4 and Option 5 are favoured, by some margin, in the participant weighting system (both with and without costs included). In all other weighting systems the Option 4 and Option 5 still remain favoured, though the margin of difference to the other options is reduced.

5.3 Alignment with Investment Objectives

The agreed investment objectives for the project are reproduced below:

Table 5-5: Investment Objective Summary

| Benefit | Measure | Baseline | Target | By When |
|-----------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------|-----------------|------------|
| To improve safety for pedestrians and cyclists | By increasing the perception of safety, as measured by the community survey | From 34% in 2014 | To 50% | By 2019 |
| To increase the numbers of pedestrians and cyclists | N/A | From approx. 125 ¹³ per day in 2015 | To 250 per day | By 2019 |
| To increase the | By reducing the total number | From 81 hours (5 | To 70 hours per | By 2021 (3 |

¹³ AM peak period cycling volumes have been input to the NZ Transport Agency formula which gives an estimation of cyclist AADT being 77. Peak period pedestrian counts (17 users) have also been used to give an approximate existing use of a total of 125 cyclist and pedestrian users per day.

| Benefit | Measure | Baseline | Target | By When |
|---------------------------|-----------------------------------------------------------------|-------------------------|----------------|---------------------------------|
| availability of the route | of hours the road is swept (response / emergency sweeping only) | year average, per year) | year (average) | year rolling average, per year) |

An assessment of the five options against the three benefits above has been undertaken:

Table 5-6: Option alignment to investment objective

| Benefit | Opt 1 | Opt 2 | Opt 3 | Opt 4 | Opt 5 |
|-----------------------------------------------------|---------------------|---------------------|---------------------|---------------------|--------------------|
| To improve safety for pedestrians and cyclists | Limited achievement | Limited achievement | Achieves Objective | Achieves Objective | Achieves Objective |
| To increase the numbers of pedestrians and cyclists | Fails to achieve | Fails to achieve | Limited achievement | Achieves Objective | Achieves Objective |
| To increase the availability of the route | Fails to achieve | Fails to achieve | Limited achievement | Limited achievement | Achieves Objective |

The above assessment against objectives is somewhat subjective and a matter of opinion – however the trend moving left to right across the options showing greater achievement of the investment objectives appears reasonable.

5.4 Economic Assessment

5.4.1 Introduction

This economic evaluation has been undertaken for HCC in accordance with the NZ Transport Agency's Economic Evaluation Manual (EEM 2016) using a customised version of the simplified procedures. A more detailed explanation of assumptions, results and sensitivity analysis is provided in Appendix D.

5.4.2 Key Assumptions

The following key assumption was made in the economic analysis;

The EEM cycle demand tool (Worksheet A20.1) was used to predict new users. The new cyclists generated by this tool were estimated to be those in the immediate Eastbourne catchment (buffer areas were only calculated at 50% in size to allow for the harbour). This equates to 50 new cyclists for four of the five options. It is envisaged that significantly more users will come from further afar (in a recreational capacity) to cycle around the Great Harbour Way cycleway and other planned new cycleways¹⁴. The standard buffer process is assumed to account for all the commuter and work related cyclists but only a small fraction of recreational cyclists.

Each option has a varying degree of attraction due to the width capacity provided. Therefore the maximum new users (as only calculated for Option 5) is based on an alignment with the 80% recreational users in the user cost calculation. Assuming that all commuting, work travel users and 5% of the recreational are local users, it leaves 75% of recreational users as coming from 'further afar'. Therefore if the 50 new users generated by the cycle demand tool equates to 25%, then there are another 150 users per day that are recreational.

5.4.3 Economic Analysis Summary

The results of the economic evaluation are presented in Table 5-7.

Table 5-7: Economic Evaluation Summary

| | Opt. 1 | Opt. 2 | Opt.3 | Opt.4 | Opt.5 |
|--------------------|------------|------------|------------|------------|------------|
| NPV Total Benefits | 11,032,499 | 15,386,598 | 18,121,425 | 20,776,822 | 28,260,885 |
| NPV Costs | 3,440,446 | 5,974,304 | 6,479,825 | 8,096,037 | 11,344,264 |
| BCR | 3.2 | 2.6 | 2.8 | 2.6 | 2.5 |

¹⁴ Other Greater Wellington projects include Wainuomata Hill, Beltway, etc

| | Opt. 1 | Opt. 2 | Opt.3 | Opt.4 | Opt.5 |
|------|--------|--------|-------|-------|-------|
| FYRR | 11% | 9% | 9% | 9% | 7% |

The results of the incremental BCR are presented in Table 5-8. Options 1 to 5 are also ranked in order of least to most expensive capital costs.

Table 5-8: Incremental BCR Summary

| | Opt. 1 | Opt. 2 | Opt.3 | Opt.4 | Opt.5 |
|-----------------|--------|--------|-------|-------|-------|
| Incremental BCR | 3.2 | 1.7 | 5.4 | 1.6 | 2.3 |

The incremental BCR shows that the additional benefits for each option (over its predecessor) are greater than the additional costs, and therefore it is worthwhile spending the additional costs.

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6 Community Engagement

As per the Stakeholder Engagement Plan, Community Engagement has been undertaken through the following means:

1. Presenting at Eastern Bays Consultation Group Meeting on 5 September 2016
2. Email confirming Open Day & project info
3. Website - <http://www.huttcity.govt.nz/Your-Council/Projects/eastern-bays-shared-path/>
4. Community Open Day on 19 November 2016

6.1 Community Open Day

On Saturday 19 November 2016 the project team sought views from members of the public at a community open day, held at Eastbourne Library.

Approximately 60 people attended the session to talk to members of the project team and to view the options. Feedback was captured on feedback forms and on post-it notes around the room.

Community feedback was requested on all 5 options as described in Section 4.6.2. The community feedback has been captured in The Open Day Report (MWH, December 2016) and is summarised in Table 6-1.

Table 6-1: Community Open Day Feedback Summary on Path Options

| Option | Community feedback summary |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Option 1: Replacing the <5 year remaining life seawall This option would look to replace the parts of the seawall that are at the end of their life. | People told us: This option is seen as a short-term fix that people won't use. People mentioned that this type of upgrade should be covered under existing maintenance budgets. |
| Option 2: 1.5m width This option would look to provide a path that is 1.5m wide. | People told us: This option is too narrow, and although it would be better than what exists at the moment, it wouldn't cater for both cyclists and walkers. |
| Option 3: 2m width This option would look to provide a path that is 2m wide. | People told us: People viewed this as a minimum, but this option is still considered too narrow. |
| Option 4: 2.5m width This option would look to provide a path that is 2.5m wide | People told us: This option is more acceptable and has support. Concerns around preserving the beaches/trees/boat ramps and the need to include the southern section of Days Bay |
| Option 5: 3.5m width This option would look to provide a path that is 3.5m wide | People told us: This option is widely supported. People see this as a long-term valuable asset. The idea of 'do it once, do it properly' comes through. There are some questions about sea-level, keeping the beaches intact and the cost. |

Additionally, the community was asked about their view on problems and issues, use for the path and path widths. The summarised responses are included in Table 6-2.

Table 6-2: Community Open Day Feedback Summary on Problems, Use and Widths

| Questions | Community Feedback Summary |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| What are the problems and issues you know about? | Many people talked about safety concerns. Inconsistency was another issues people raised, the path being too narrow at many points along the route. Sea-levels, storm debris and the seawall were important factors too. People want the project team to think about access to the shared path, minimising impact on the beaches and re-visiting speeds along Marine Drive as well. |

| | |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>What would you use the path for?</p> | <p>Those who answered this question indicated that they would use the path every day for recreation and commuting to school and work. While talking about use – people also referred back to safety.</p> |
| <p>How wide should the path be?</p> | <p>The majority of people who commented on this question opted for an “as wide as possible” shared path (3.5m). 2m or 2.5m were seen as a minimum. There were some references to having some flexibility and having variable widths to avoid losing beaches, boat ramps and trees.</p> |

6.2 Community Engagement Summary

Most members of the public are supportive of the Eastern Bays Shared Path project.

The predominantly preferred options are options 4 and 5 with a preferred widths of 3.5m and a preferred minimum widths of 2m or 2.5m. There was some references to having some flexibility and having variable widths to avoid losing beaches, boat ramps and trees.

Most people indicated they would use the path for recreational and commuting trips regularly.

The full Consultation Report is provided in Appendix G.

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7 Recommended Option and Next Steps

7.1 Final preferred option

Based upon the outcome of the community consultation, the MCA process, alignment to objectives and to a lesser extent, the economic analysis, the following is recommended:

Both Option 4 and Option 5 should be progressed through to Detailed Business Case stage for more detailed assessment and analysis, prior to selecting the single preferred option as part of the DBC process.

These two options have greatest alignment with the agreed investment objectives for the project, whilst also being clearly preferred in the MCA process with the weighting applied by the workshop participants. These two options also score well against the other options in the MCA sensitivity testing across the social, environmental, cultural and economic weighted assessments.

The community feedback received also suggests a definite preference for either Option 4 or Option 5.

Lastly, the economic evaluation undertaken identifies a BCR for both options of around 2.5, which, whilst not large, clearly demonstrates a project that results in a positive economic return and is therefore fundable.

At this stage, it is not advisable to only take one option forward as there is no clear distinction between them, hence they should both be selected for further assessment during the DBC phase.

It is worth noting that the final outcome may be a combination of widths when additional work is done on the two preferred options during the DBC phase – because there could be merit in changing the width of the path at key locations, for example, narrower at beaches and sensitive locations, and wider where higher use or stopping and congregating is expected.

7.2 Preferred Option Risk

The key risks moving forward with the preferred options are described below:

- **Cost:** The cost estimation undertaken has been developed based on an elemental, itemised basis. However, there are numerous assumptions included that could create inaccuracies. Furthermore, required mitigation is not yet known and has not been priced. Whilst a sizeable contingency has been included, it is possible cost estimates could be exceeded (threatening affordability).
- **Construction disruption:** Construction of the physical works in many locations will be challenging due to the limited width available. Given this is the only road to the Eastern Bays / Eastbourne, managing traffic during construction needs careful consideration.
- **Public support & acceptance:** Public feedback has been generally positive thus far. However, the expectation is that when proposals are worked into greater details and the community can see the exact detail of what is being proposed in all locations, and in particular at sensitive areas, the level of negative feedback is expected to increase. This could result in diverging views within the community, and a challenge to agree on a solution to progress.
- **Consenting:** an initial assessment of the consenting issues and requirements has been undertaken and is described in greater detail in Section 7.3. Given the sensitive nature of this location and environment, the consenting process has the potential to be complex, creating cost and time implications for delivery.
- **Timing:** To capitalise on the availability of Urban Cycleways Funding (UCF) in particular, there is a real need to accelerate the delivery of the DBC, the consenting and the detailed design so that construction can commence to achieve the spend by the deadline of June 2018. Many of the risks described above have the potential to delay the delivery of the programme and jeopardise funding.

7.3 Statutory Approval Requirements

A Social & Environmental Screen has been undertaken for the project and is included as Appendix E.

The two options selected will require works to the existing seawall, and there are sections of seawall that will need to be extended into the coastal marine area to achieve the width of the shared pathway. The placement of riprap and extensions to the revetments will also require works in the coastal marine area.

Potential effects of the proposed works on the foreshore and coastal marine area are likely to be associated with the following:

- Construction/repair/demolition of the seawalls which may result in the release of fine sediments and the potential release of water contaminated with cementitious-based products (temporary effects);
- Public access/occupation to the foreshore (temporary and/or permanent effects);
- Coastal natural processes, including effects on shoreline stability in the vicinity and adjacent areas (permanent effects);
- Natural habitats, such as the nesting sites of little penguins (east of Marine Drive) (temporary and/or permanent effects); and
- Heritage values, such as heritage structures (boatsheds) (temporary effects).

The Wellington Regional Council and Hutt City Council have planning provisions that will need to be met to allow works to be undertaken, where the effects are avoided, remedied or mitigated.

1 Wellington Regional Council Planning Provisions

Wellington Regional Coastal Plan

The seawalls fall within the “Coastal Marine Area” but do not fall within “Areas of significant conservation value.” The current Wellington Regional Coastal Plan contains rules relating to activities on, and disturbance of, the foreshore and seabed, structures and discharging contaminants. Of relevance to the shared pathway are rules grouped around structures in the coastal marine area and disturbance of the foreshore.

Rules relate to “structures” and not specific to “seawalls”. New rules are being introduced that are specific to “seawalls” (see below).

The Proposed Wellington Region Natural Resources Plan (pNRP)

Rules 165 and 166 apply to the additions/alterations and new seawalls in this area. In summary any works on the seawalls will require a resource consent. The works can be done either as a controlled activity or a discretionary activity.

- Controlled activity - any addition shall add no more than 5m in horizontal projection and 1m in vertical projection to the structure; the addition shall not extend any further seaward than the existing seawall.
- Discretionary activity – new seawall or any addition that is not a controlled activity under Rule R165 is a discretionary activity.

The shared path will require the reconstruction of the seawall in parts to accommodate the width needed for the pathway. Where the seawall toe remains in a similar position, the magnitude of change in habitat type is not great, however where the seawall extends beyond the toe of the wall, the effects will need to be adequately assessed.

2 Hutt City Council District Plan provisions

Rules in the Hutt City District Plan associated with the proposal, relate to historic buildings, trees and contaminated sites. The Skerrett Boatshed (1906) at Lowry Bay is a listed historic building (Heritage Listing #3580) and identified on Map C6 of the District Plan, requiring protection. "Atkins Tree" in York Bay is not listed as a notable tree but has local interest. It has been identified in the landscape assessment to be relocated (closer to the bus shelter which is also to be relocated).

There is a SLUR site (SN/03/188/02) in Marine Drive, Sunshine Bay (Sunshine Service Station). Disturbing soil during construction that has a history of contamination can lead to adverse effects on human health. A consent under the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES) may be required.

7.4 Funding availability

In terms of affordability, the expected cost estimates for the two recommended options are \$11.0M and \$15.0M at this IBC stage.

On the basis that largest of these may eventuate and is the higher of the two, \$15.0M has been considered as the estimate to test affordability.

Currently HCC¹⁵ has allocated \$9M in funding to the Eastern Bays Shared Path. This is 'subject to subsidy funding' and is therefore likely to include the NLTP and UCF share of funding for the project.

On this basis, it is possible that there is a funding / affordability gap that needs to be resolved. It is recommended that the most appropriate options are taken through to DBC stage and funding conversations continue concurrently to ensure the projects keeps progressing given the tight delivery timeframes. This will also allow greater accuracy to be developed around the cost estimate and contingency values.

7.5 Next Steps

The next steps in the process are:



¹⁵ Hutt City Council Long Term Plan 2015-2025:

<http://portal.huttcity.govt.nz/Record/ReadOnly?Query=container:%5Buri:3671182%5D%20&Tab=31&Uri=3815345&Page=0>

Appendix A **Project Plans**

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Appendix B **Seawall Condition**

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Appendix C Treatment Options

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Appendix D **Economic Evaluation**

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Appendix E **Social & Environmental Screen**

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Appendix F **Cost Estimates**

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Appendix G **Consultation Report**

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