

**REPORT BY THE DEPUTY CHAIRPERSON OF THE
HAGLEY/FERRYMEAD COMMUNITY BOARD**

7 FEBRUARY 2013

PART A – MATTERS REQUIRING A COUNCIL DECISION

1. COASTAL PATHWAY

General Manager responsible:	General Manager Strategy and Planning, DDI 941 8281
Officer responsible:	City Planning Unit Manager
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PURPOSE OF REPORT

1. To provide details of the concept plan that has been prepared for a Coastal Pathway between Ferrymead and Sumner, and present the Hagley/Ferrymead Community Board's recommendation on the next steps for this project.
2. To recommend a change to the resource consent application to Environment Canterbury (ECan) for the Main Road three laning so that the embankment slope on that project is consistent with this Coastal Pathway concept plan and minimises required reclamation.

EXECUTIVE SUMMARY

3. The Christchurch Coastal Pathway Group has been advocating for the establishment of a pathway between Ferrymead and Sumner. This has gained wide community support, including the Hagley/Ferrymead Community Board. The Council included funding for a coastal path study in the 2012/13 Annual Plan. In late 2012, Council announced that the project would be undertaken as a community partnership between the Council and the Christchurch Coastal Pathway Group.
4. The purpose of the project at this stage is as follows:
 - To design a concept for the pathway to connect Ferrymead to Mt Pleasant and on through Redcliffs, finishing at the end of Scarborough Beach in Sumner, that will cater for children, pedestrians, cyclists, skateboarders and people with impaired mobility such as scooter and wheelchair users. This includes testing the feasibility of options.
 - To provide a concept that can be used to enable an integrated design approach with other projects within the coastal corridor including the phase 2 of the Ferry Road/Main Road Suburban Centre Master Plan and Stronger Christchurch Infrastructure Rebuild Team (SCIRT) programme.
 - To establish a rough order of costs for the pathway to be used to support funding bids.
5. No commitment has been made by any party to the funding or construction of the pathway concept, though the Coastal Pathway Group has indicated that completion of the concept plan would enable them to seek funding from third parties to assist with its construction.
6. Wraight and Associates, a Wellington based landscape architectural practice with experience of coastal projects, have been appointed as the lead consultants to develop the concept design. An intensive phase of community consultation was undertaken between 18 September and 24 October 2012. In total three rounds of meetings were held with the three local communities (Mount Pleasant, Redcliffs and Sumner). Approximately 450 people attended these meetings and provided input into the design process. Direct consultation was undertaken with key stakeholder groups including the Ihutai Trust, yacht clubs and residents associations. The local

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Rūnanga has been consulted via Mahaanui Kurataiao Ltd (MKT). A multi disciplinary staff project team has also provided input into the development of the concept plan, and there has been liaison with SCIRT in relation to projects that they are designing and delivering in the area.

The existing infrastructure projects include: Ferrymead bridge, Main Road three laning, the causeway and Beachville sea wall.

7. The draft concept plan has established a vision for the pathway of 'a necklace of jewels connecting communities'. It sets out a series of strategies that will help to enhance the character and amenity of the area and achieve an integrated approach to design. A range of outcomes have been identified, and the goals aim to deliver the widest possible benefit for the community, achieve community resilience, and provide multiple benefits that address the needs of multiple groups with one solution. It recognises that there are still some uncertainties along the route, but the concept provides suggested treatments that offer flexibility to respond to issues that are identified at the detailed design stage. The draft concept plan is presented in **Attachment 1**.
8. In broad terms the route will start in Ferrymead and cross the new Ferrymead bridge to Scott Park. It proposes to run adjacent to Main Road across the Causeway, with an additional inner loop around McCormacks Bay providing a link with community facilities and recreational opportunities as well as offering more shelter from the easterlies. One of the major new features proposed along the route is the naturalisation of the waters edge at Redcliffs Park, which could incorporate a boardwalk over a salt marsh wetland. From here there are two options, either to continue along Beachville Road, or around the waters edge adjacent to the deep water channel. These routes rejoin at the eastern seawall and progress southwards through a new linear park that is currently part of the road reserve. At Beachville Reserve there is another choice, either to continue along the waters edge to the tram stop, or to rejoin Main Road on a loop that passes through Redcliffs village centre and provides a link with Barnett Park. From the tram stop the route skirts around Moncks Bay on boardwalks, with provision being made for it to run between the road and the yacht club and rebuilt boat shed. At Shag Rock a new lookout structure is proposed to provide dramatic views across the estuary mouth. The pathway continues along boardwalks at the back of the beach, and then follows the contours of the dunes as it approaches Sumner. Through Sumner village centre the pathway proposes to integrate with the existing memorial walk and proposal in the draft Master Plan. The route continues along the esplanade, with improved features and beach access, culminating at a new deck next to the lifeboat shed at Scarborough Beach.
9. The draft concept plan explains the specific design treatment for each of these sections and recognises that a number of further stages are required in order to progress the project. These include funding, site investigations, detailed design, consents and construction. It is envisaged that there would be further community consultation as part of this process.
10. The estimated rough order of costs is \$26 million. This does not take into account work currently underway as part of Council projects (Ferrymead bridge and Main Road three laning), and SCIRT's repair and rebuild programme, however, where relevant it identifies additional betterment costs. Some costs are excluded in this estimate, including GST, inflation and abnormal ground conditions.
11. A phased approach to implementation is suggested, with initial priority being co-ordination with the rebuild projects between Ferrymead and the Causeway and at Beachville sea wall. Integration with works proposed through the Ferry Road/Main Road and Sumner Village Centre Master Plans is also promoted to achieve increased efficiency and to enhance outcomes. The Coastal Pathway Group has indicated that their priority is to give equal weight to the two routes through Redcliffs (water's edge and inland). It is recognised that the waterfront routes are likely to be more contentious and expensive. However, there is opportunity for the water's edge routes through the two sections at Beachville Road and Main Road to be considered a longer term aspiration. This would allow for more time to consult with directly affected local residents and enable approximately \$8 million of the estimated cost to be deferred.

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12. The concept plan provides a basis for considering the implications and benefits of a coastal pathway. It also provides a vehicle for the Coastal Pathway Group to seek external funding, including sources such as the Prime Minister's Christchurch Earthquake Appeal fund. The Coastal Pathway Group has indicated that they will be targeting several million dollars of external funding.
13. Whilst staff have contributed to the preparation of the concept plan, the plan sets out the proposals of the consultant firm based upon their analysis and the feedback from community consultation. Staff have identified some aspects of the proposal that are considered to require further consideration, in particular the implications of the naturalisation of Redcliffs Park on the sports facilities and local transport network. There are also issues with respect to co-ordinating the timing and integration with the current SCIRT infrastructure programme which is aiming to progress construction of the three laning of Main Road and repairs to the Causeway early in 2013. The executive committee of the Coastal Pathway Group will be considering the concept plan in early February 2013. Following consideration by the Hagley/Ferrymead Community Board, this report will be taken to the Council meeting on 14 February 2013.
14. The draft plan provides a comprehensive overview of the concept design and establishes the rough order of cost for the delivery of a coastal pathway. It recognises that more detailed work is required prior to implementation. As a next step in this process it is considered appropriate for Council to undertake wider consultation with the community, to ascertain the commitment of external funders to the project via the Coastal Pathway Group, and to peer review the concept design and costs. This additional information will help to guide decisions on how the project should be progressed.

FINANCIAL IMPLICATIONS

15. \$50,000 has been allocated in the 2012/13 Annual Plan for a coastal path study. This sum has been used to fund the development of the concept plan through the engagement of landscape design consultants. Staff resources have been provided through the budget for the Phase 2 of the Ferry Road/Main Road Master Plan. The Coastal Pathway Group has contributed to the cost of consultation, including venue hire.
16. At present there is no funding for the implementation of the Coastal Pathway, and even if endorsed by the community and the Council, funding will need to be identified and approved before any commitment to implementation can be given. The \$26 million capital price tag provided is preliminary, and excludes a number of elements. It is also likely to be all considered as a form of betterment, accordingly does not include any cost associated with SCIRT based repairs. Council will therefore need to ultimately make a decision on funding implementation. As noted earlier the Coastal Pathway Group have indicated that they will seek funding from third party sources, whilst this might be substantial, the community and Council are still likely to be the major funders of any implementation. The final issue/unknown is one of timing. It would certainly be possible to progressively implement the concept over a number of years, and over a series of logical steps, and while this may spread the funding it does not make the project any more affordable.
17. Accordingly there are a significant number of affordability constraints to implementation. While the draft LTP in February will include some nominal funding amount for the project, Council will need to, as part of the LTP, determine its commitment to implementing the concept. As part of any final decision the Council will need to consider the cost and timing of implementation.

Do the Recommendations of this Report Align with 2009-19 LTCCP budgets?

18. Yes, see above.

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19. None arising at this stage. Consideration of property issues and consenting process will need to be considered at future stages.

Have you considered the legal implications of the issue under consideration?

20. Yes.

ALIGNMENT WITH LTCCP AND ACTIVITY MANAGEMENT PLANS

21. The Coastal Pathway project is provided for within Activity Management Plan 1.0 City and Community Long Term Policy and Planning.

Do the recommendations of this report support a level of service or project in the 2009-19 LTCCP?

22. Yes, see above.

ALIGNMENT WITH STRATEGIES

23. The Coastal Pathway is consistent with a number of strategies including the Christchurch Transport Strategic Plan and the Public Open Space Strategy.

Do the recommendations align with the Council's strategies?

24. Yes.

CONSULTATION FULFILMENT

25. Consultation has been undertaken with the local communities along the route and with stakeholder groups during the preparation of the draft concept plan. In total nine community meetings/workshops were held over a five week period during September and October 2012. Approximately 450 people attended these sessions and were able to provide input into the process and feedback on the emerging options. In addition the project team has met with SCIRT and ECan staff. Department of Conservation (DOC) has also been consulted. MKT has been engaged to consult with the local Rūnanga. A report setting out the Rūnanga's position, which does not oppose the pathway in principle, was received on 14 December 2012. The Coastal Pathway Group has extended an invitation to the Rūnanga, Community Board and Council to have an escorted site visit in order to improve understanding of the issues. The Hagley/Ferrymead Community Board were briefed on the project on 3 October and 14 November 2012. At this stage there has been no formal community consultation on the draft plan itself. It is possible some people may not have engaged in the consultation undertaken to date as they may have viewed this as being more for those who support the project, and there is an indication that some property owners whose properties front the water's edge in the Beachville area of Redcliffs are concerned about a waterfront route past their properties.

Main Road Three Laning Embankment Slope

26. The resource consent process for this project is underway (ECan Resource Consent number CRC132235). MKT in its submission on the project has opposed the reclamation. In a meeting with MKT and ECan a number of options to minimise reclamation were presented. These have been investigated and only a change in the embankment slope is feasible to reduce the area of the required reclamation.

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27. It is proposed to change the embankment slope from 1 in 3 to 1 in 2, and provide access at appropriate locations by means of steps or ramps. This change will mean that the Main Road three laning embankment slope is consistent with that recommended by the Coastal Pathway Concept Plan, and that recommended by SCIRT in other locations, including along the causeway.

STAFF RECOMMENDATION

It is recommended that the Council:

- (a) Receive the report.
- (b) Adopt the draft concept plan for formal community consultation.
- (c) Endorse the draft concept plan as a basis for the Christchurch Coastal Pathway Group exploring and securing external funding.
- (d) Request as part of a final report on the Coastal Pathway to the Council, following consultation that is undertaken, staff also provide a detailed costing and implementation programme for the Council to consider (including any possible external funding sources) as part of its final consideration of the proposed project.
- (e) Request that staff work with the Stronger Christchurch Infrastructure Rebuild Team to identify the opportunities and cost of giving effect to the draft Concept Plan as part of any proposed earthquake recovery works planned over the next 12 months, and to report back to the Council.
- (f) Amend its resolution so that the resource consent application to Environment Canterbury for Main Road three laning embankment slope be 1 in 2, rather than 1 in 3.
- (g) Note that the Coastal Pathway Group has extended an invitation to the Hagley/Ferrymead Community Board and the Council to attend a site visit.

BOARD CONSIDERATION

The Board received the staff report and the Christchurch Coastal Pathway Concept Design and Feasibility Report. Council staff and the principal consultant from Wraight + Associates provided clarification and responded to questions on the reports, technical and financial aspects, and consultation.

Board members discussed consultation on the Concept Design and Feasibility Report, and that this will enable the whole community to provide its view on the concept and the options within it, including residents with boundaries adjacent to the Estuary and Ngai Tahu. Board members discussed the need for options within the report to be clearly outlined for the consultation, and that all projects, master plans and strategies in this area should be aligned. The Board agreed that by making recommendations to the Council it is not taking a position on the possibility of a pathway on the estuary side of Main Road and Beachville Road water front houses.

The Board also received deputations and supporting information from the Christchurch Coastal Pathway Group, represented by Linda Rutland and Michael Sleigh, and from Chris Doudney and Grant Bargrove, representing residents of Beachville Road and Main Road. Written information from Daryl Sayer, a business owner in Redcliffs, was tabled.

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BOARD RECOMMENDATION

It was **decided** unanimously on the motion of Tim Carter, seconded by David Cox, that the Board recommend that the Council:

- (a) Receive the report.
- (b) Adopt the draft concept plan for formal community consultation.
- (c) Endorse the draft concept plan as a basis for the Christchurch Coastal Pathway Group exploring and securing external funding.

Note: The Board is not taking a position on the possibility of a pathway on the estuary side of Main Road and Beachville Road waterfront houses. The Board will consider taking a position on this following consultation feedback.

- (d) Request as part of a final report on the Coastal Pathway to the Council, following consultation that is undertaken, staff also provide a detailed costing and implementation programme for the Council to consider (including any possible external funding sources) as part of its final consideration of the proposed project.
- (e) Request that staff work with the Stronger Christchurch Infrastructure Rebuild Team to identify the opportunities and cost of giving effect to the draft Concept Plan as part of any proposed earthquake recovery works planned over the next 12 months, and to report back to the Council.
- (f) Amend its resolution so that the resource consent application to Environment Canterbury for Main Road three laning embankment slope be 1 in 2, rather than 1 in 3.

BACKGROUND (THE ISSUES)

28. For many years consideration has been given to achieving a coastal walkway to Sumner. As a result of the 2010/11 earthquakes significant work is required to repair damaged infrastructure along the coastal corridor between Ferrymead and Sumner. There are a number of Council projects underway in this area, including a Master Plan for the Ferry Road/Main Road corridor. This has created an opportunity to take an integrated approach to project development and delivery.
29. The coastal pathway project is looking to achieve a continuous link along the section of coast between Ferrymead and Sumner. Its purpose is to provide a multi functional pathway suitable for a full range of users. It proposes to connect the communities in the area and provide a link to other existing networks. Whilst the principal use will be recreational it will contribute to the transport network, including providing an alternative connection in the event of a major event. It is consistent with the provisions of the Christchurch Transport Strategic Plan.
30. In addition to the transport and recreational function of the pathway, the draft concept plan has developed a series of strategies that will enhance the character and identity of the area through a series of amenity features. The strategies relate to:
 - Experiences and nodes
 - Geology and edge conditions
 - Signage and interpretation
 - Transport connections
 - Lighting
 - Furniture
 - Planting
 - Textures and materials.

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31. The concept plan seeks to achieve the following outcomes:
- Ecological gain for the estuary
 - Economic gain for the city
 - Cultural gain for Ngai Tahu
 - Social gain for the community
 - Recreational gain
 - Gain in public access to the coastal margin
 - Explicit recognition of the loss that has been suffered and the legacy this provides for future generations
 - No loss of private property where it exists above mean high water springs and no loss of access to the water
32. A desire for the pathway project has been to follow the water's edge. This raises some areas of potential concern with local residents with regards to privacy and amenity issues. There are two sections of the proposed pathway in Redcliffs at Beachville Road and Main Road where properties back on to a narrow coastal strip adjacent to the water's edge. Currently access is not possible over the entire length of the strip. The concept plan identifies a way that access could be achieved without involving private property, but it also recognises that alternative 'in land' routes will provide another option.
33. The proposal to naturalise the coastline at Redcliffs Park raises concerns in relation to the impact on the playing fields and the local road network. The potential loss of playing fields in an area that is already under provided is a significant issue. The implications of closing a section of Beachville Road, between Main Road and Celia Street to vehicular traffic has yet to be fully modelled. The proposed alternative route will encroach upon the reserve and this has implications in respect of the Reserve Management Plan. Either of these roading options could result in a reduction of parking for the park and the jetty. More detailed consideration of access to properties also needs to be undertaken.
34. Along the section from Scott Park to the eastern end of the Causeway land reclamation is proposed as part of the infrastructure rebuild projects. This includes provision for a four metre pathway. The local Rūnanga has raised concerns with respect to reclamation. Some variations to the reclamation are contemplated in the concept plan to allow for improved access to the water and enhancement of rip rap wall to provide greater biodiversity and amenity opportunities.
35. Ngāi Tūāhuriri have manawhenua over, and are kaitiaki for this area. However, Te Hapū o Ngāti Wheke also claim interest in the southern margins of Te Ihutai, but this is contested by Ngāi Tūāhuriri. The Rūnanga have been consulted through MKT. The degradation of the estuary, Te Ihutai, and its tributaries and its loss as a mahinga kai is a significant issue for Rūnanga. The specific values that have been identified are:
- Relationship of tangata whenua with Ihutai and coastal areas
 - Archaeological sites
 - Waterways and springs
 - Foreshore and seabed
 - Taonga species and mahinga kai
 - Restoration of coastal ecology
 - Stormwater
36. The Rūnanga position is that they are not opposed to the coastal pathway in principle. With respect to reclamation, it should be noted that the major component related to the pathway is included within the proposals for the three laning of Main Road and the rebuild and repair of the Causeway which are subject to separate ECan consenting processes under an Order In Council. The Rūnanga has indicated that the occupation of the space and the proposed method for the Causeway infrastructure repair work may be acceptable provided that a net

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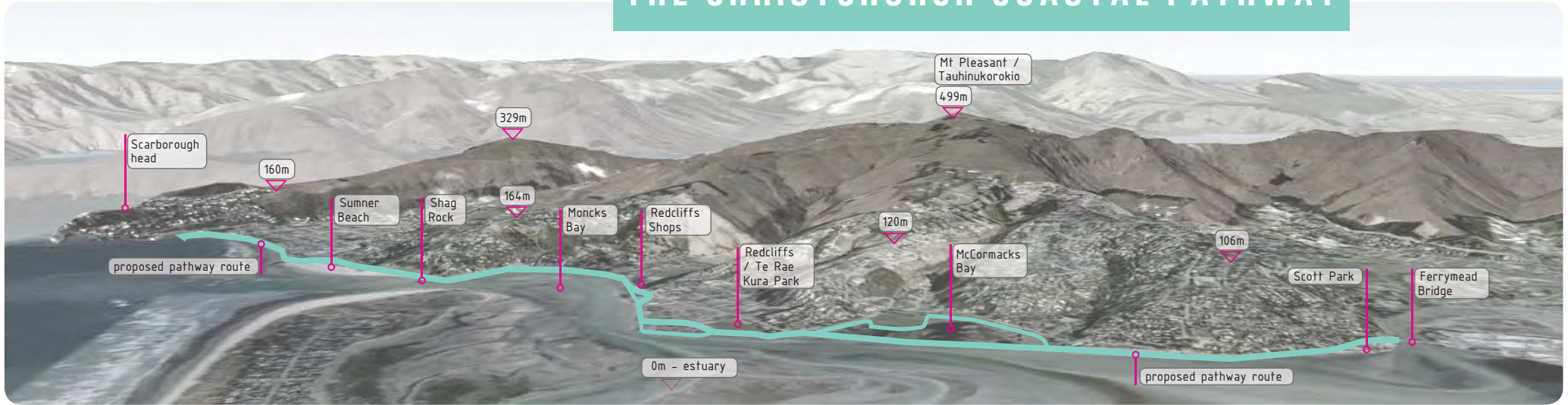
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environmental and cultural benefit is generated through the adoption of culturally appropriate design and mitigation. The concept plan addresses these issues in a number of ways: it includes a proposal for the naturalisation of the coastline and integration with Redcliffs Park; provision has been made in the rip rap revetment for introduction of bio diversity elements such as rock pools and access to the estuary; the project also identifies opportunities for interpretation. This mitigation provides a basis for further discussion with iwi as the design is progressed.

Main Road Three Laning Embankment Slope

37. Council approved the Main Road three laning project to proceed in May 2012, and included a resolution that the embankment slope should be 1 in 3. This resolution was intended to ensure that MKT's desire for access to the water is met. Since then the Coastal Pathway concept has chosen a standard embankment slope of 1 in 2, and SCIRT is using this slope elsewhere. Access to the water is provided by steps or ramps in appropriate locations.
38. The resource consent process for the three laning project is underway (ECan Resource Consent number CRC132235), and the consultation has closed. Only one detailed submission was received. This was from MKT expressing their opposition to reclamation. Staff have met with MKT and ECan officers to understand their concerns and suggestions that they have to minimise reclamation. These suggestions have been investigated and, with the exception of embankment slope, cannot be implemented without compromising the three laning project or the Coastal Pathway project. A change to the resource consent application to propose a slope of 1 in 2 will reduce the extent of the reclamation and so address part of the MKT concern, while the provision of steps or ramps will still allow for public access.

THE CHRISTCHURCH COASTAL PATHWAY



CONCEPT DESIGN & FEASIBILITY REPORT

PREPARED BY:
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FOR:
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&

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The Proposed Christchurch Coastal Pathway project is a partnership project between Christchurch City Council and the Christchurch Coastal Pathway Group. The project has been initiated by the Christchurch Coastal Pathway Group and is funded and project managed by the Christchurch City Council.

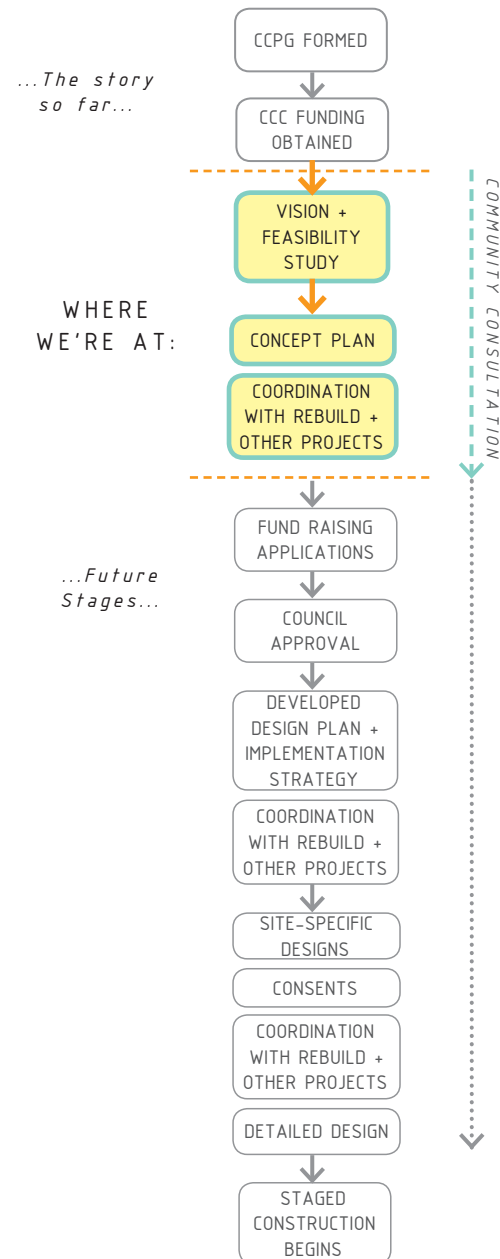
Wraight + Associates have undertaken community consultation facilitation, prepared the landscape architectural concept design and feasibility, including cost estimates, which is summarised in this report.

This report has been prepared on behalf, and for the exclusive use of the Christchurch City Council and the Christchurch Coastal Pathway Group. It is subject to and issued in connection with the provisions of the agreement between Wraight + Associates Limited (WA) and Christchurch City Council. The consultant accepts no liability or responsibility whatsoever for or in respect of any use or reliance upon this design or report by any third party.

Status:

date:

Initial Issue	20.12.12
Draft Issue to MR for comments	17.12.12
Draft Issue	03.12.12
Prelim for costing + Rob G	30.11.12
Prelim for costing	22.11.12
Preliminary Issue	09.11.12
Preliminary Issue	06.11.12



EXECUTIVE SUMMARY

This report describes the proposed Christchurch Coastal Pathway between Ferrymead and Sumner. It presents a concept design for the project and a costing that will allow its feasibility to be assessed.

The communities of Mt Pleasant, Redcliffs and Sumner have been instrumental in this study. Phased interaction with community members, community leaders and stakeholders including Ihutai Trust, sports club representatives, local schools, ECan and CCC officers recognised the importance that the proposal **integrates ecology, access, culture, recreation, commercial activity and quality of space**.

The vision that emerged from this consultation is for:

‘a necklace of jewels connecting communities’

The proposed cycleway and pedestrian path could be more than a route between suburbs. It could provide new amenity, new recreation facilities and new access; it could enhance ecology, tourism and community facilities; and it could celebrate the natural and cultural qualities of some of the areas worst-affected by the 2010-2011 earthquakes. The project is a long-held idea and ambition for the communities of the area, as well as of greater Christchurch. Current circumstances provide a unique opportunity to drive forward its realisation in a way that can reap multiple benefits.

Physically, the design proposes a wide path around the estuary beside tidal mud flats, through a reinstated beach in Redcliffs, along boardwalks on Moncks Bay’s deep water frontages, and across the coastal beaches at Sumner. It will facilitate access into the city from the surrounding residences; access to the Port Hills and beaches from the central city; and access to the estuary for fishing, birdwatching, boating and swimming, worming and shell collecting. It could open up recreation-based business opportunities for the area. The proposed pathway could also tell stories of the area’s Maori heritage and European settlement, and could commemorate the spirit of the people who endured life at the epicenters of the recent Christchurch earthquakes.

Works for the Coastal Pathway are proposed to integrate with or be additive to the rebuild works. At this point, the Coastal Pathway proposal is at an early stage, concepts are indicative only and will require further detailed investigation.

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1. INTRODUCTION

1.1 BACKGROUND

The Port Hills communities of Heathcote, Ferrymead, Mt Pleasant, Redcliffs and Sumner accommodate residences for over 17,000 people - approximately the same population as Ashburton. The area is also an important recreation and tourism destination for Christchurch's 370,000 people, as well as domestic and international tourists. Access to the area is achieved along the arterial Main Road which is situated beside the Avon-Heathcote Estuary / Ihutai, and which connects to the city via Ferry Road over Ferrymead Bridge.

Many of Christchurch's 2011 earthquakes had their epicenters in the Port Hills, and generated severe physical damage and emotional trauma for the people, community assets and homes of the nearest communities, including loss of life. Thousands of houses were damaged and many demolished. Local businesses were destroyed and community facilities including a school, libraries, community centres, sporting facilities and recreational tracks were lost.

The core infrastructure was also severely damaged when roads were blocked by landfalls. Safe pedestrian and cycle access between the Port Hills communities was severely affected.

Since the earthquakes there has been an overwhelming community desire to build the proposed Coastal Pathway not only to provide better connectivity, but also to meet a number of recreational and amenity needs of multiple interest groups. The proposed coastal pathway could provide a string of healthy recreational activities, tell the stories that make this place unique, while providing for viable transport alternatives. There is the strong belief in the community that this project has the potential to inspire and unify the community, and provide a legacy for the ongoing well-being of future generations.

In the Port Hills, the desire for a coastal pathway is not new. The pathway is a long-held ambition of the local Mt Pleasant, Redcliffs and Sumner communities, as well as, more broadly, of Christchurch itself. There is a long history of previous proposals for a – or parts of a – coastal pathway, such as the 'Merle Carter Walkway', and the the Moncks Bay to Scarborough Master Plan Draft, that have helped the potential connection take shape in the public's imagination. And previous works, such as the esplanade at Sumner, have given form and improved amenity to parts of the overall pathway route. There has not however – until this study – been a unified vision and concept for the proposed coastal pathway between Ferrymead and Sumner.

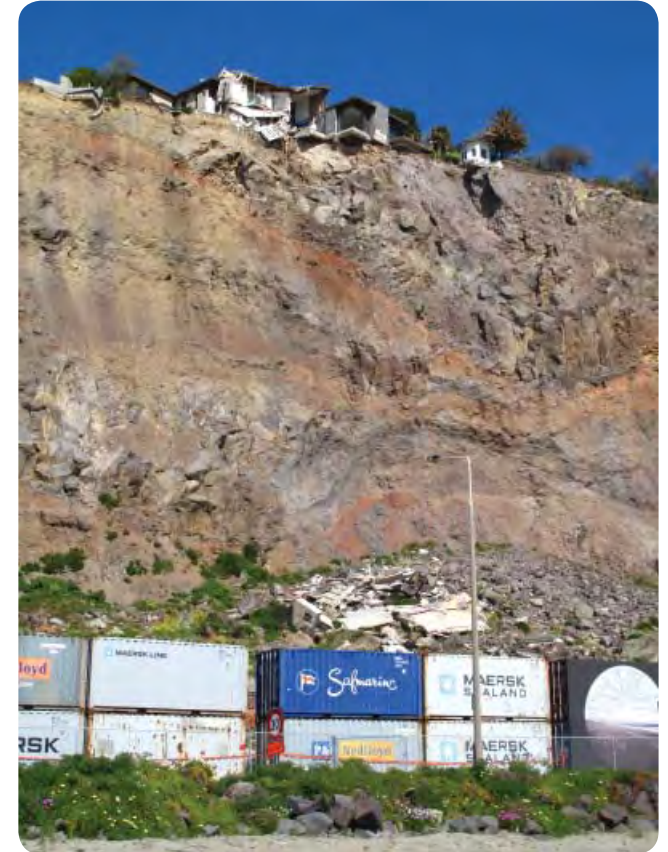


Figure 1.1 - The earthquakes' impacts are still highly visible in the Port Hills communities. Photograph taken from Shag Rock Reserve, 19th Sept 2012.

1.2 PRECEDENCE

The success of coastal pathways in reinvigorating communities is well proven. Many waterfront communities around the world have been reinvented by providing coastal pathways that serve multiple purposes: they are both a community facility and a statement of identity embodied in place. They provide a reason for being there.

In New Zealand, communities in New Plymouth and Wellington have galvanised around the public facilities and diverse activities associated with a coastal pathway. Not surprisingly, they have been designed not just for access – this is important – but also to provide a number of recreational, event-based or commercial activities and destinations along its route.



Figures 1.2-1.6 - Photographs from the coastal walkway at New Plymouth (left) and Wellington waterfront promenade, both highly successful and hugely popular.



1.3 BENEFITS

The proposed pathway aims to achieve the following in terms of earthquake recovery and community improvement. The breadth of these targeted benefits demonstrate that this proposal could potentially deliver:

- the widest possible benefit for the community;
- resilience of community;
- multiple benefits that address the needs of multiple groups with one solution.

Transport

The proposed pathway offers increased travel choice and equality of access for all, with amenity and safety benefits by giving less experienced cyclists an alternative to the busy Main Road carriageway. It can potentially help alleviate the demand for on-road transport, reducing pressure on the Main Road infrastructure. It can improve safety for non-automotive users by providing a continuous vehicle-free route typically at the water's edge. Modifications to adjacent carriageways and crossings – as part of other non-pathway rebuild works – can improve safety for vehicles and provide safer connections to the proposed pathway itself.

Environment

The proposed pathway can integrate various environmental and ecological benefits, including protection and enhancement of ecologies in the estuary. An integrated water-sensitive approach to stormwater management could mitigate pollutant influx to the estuary. The rebuilt edges can in places include substantial planting, which would complement a generally more habitat-friendly edge condition.

Tourism, sport and recreation

Access to the water's edge can provide access to a range of activities that will suit the diverse population of the Port Hills and wider Christchurch. The pathway proposal has the

potential to be the most significant and accessible outdoor recreation development in Canterbury.

Health

The proposed pathway can provide incentive and more opportunities for the communities to exercise in a safe and beautiful environment, encouraging a healthy lifestyle.

All Ages, all abilities

The pathway can and should provide open, democratic access to a range of activities associated with the estuary, coastal edges and other conditions along the proposed pathway route. Youth and families can be catered for with specific additions and activities. Mobility concerns – such as adequate overall width and smooth surfaces – will assist the elderly and ensure disabled access to the pathway.

Heritage and culture

The proposed pathway provides an opportunity and a place to promote the art, culture and histories of iwi, the local area, and its communities.

Economic revitalisation

The proposed pathway can help to bring more visitors to the Port Hills communities and tourists to Christchurch. A high-quality and high-amenity, well-connected environment can have a range of economic, investment and employment benefits.¹

¹ See, for example: MfE, 'The Value of Urban Design: The economic, environmental and social benefits of urban design, <http://www.mfe.govt.nz/publications/urban/value-urban-design-full-report-jun05/value-of-urban-design-full-report-jun05.pdf>

Patrick McGeehan (New York Times), 'The High Line Isn't Just a Sight to See; It's Also an Economic Dynamo', http://www.nytimes.com/2011/06/06/nyregion/with-next-phase-ready-area-around-high-line-is-flourishing.html?_r=1&

Population retention

The proposed Coastal Pathway provides a positive rebuild outcome. It proposes a much-desired facility that adds a reason for people to stay in the area and in Christchurch after the devastating effects of the earthquakes. It can help the very viability of the city as it strives to rebuild.

1.4 SCOPE

Christchurch Coastal Pathway Group (CPG) is proposing that the earthquake-damaged coastal edge is rebuilt with a multi-functional pathway incorporating walking, cycling, recreation and amenity facilities. There has never been access along the entirety of this stretch of coastline before. The proposed pathway will be for pedestrians and cyclists, as well as other non-motorised transport modes and will be nominally four metres in width. In some places there will be alternative routes: where this occurs, it is CPG’s preference to implement both routes concurrently.

This study is concerned with the coastal pathway from Ferrymead Bridge to Scarborough. This coastal section, it is anticipated, can form part of a broader network of linked greenways onwards to the CBD and along riverways. This document provides a high-level overview of the proposed coastal pathway, outlining its route, form, materials and ‘events’ along it. Whilst this report has utilised the most current information available, it is acknowledged that this is a dynamic environment and it is likely that new data will emerge which will need to be taken into account in subsequent investigations and detailed design.

The proposal has been coordinated wherever possible with upcoming infrastructural and rebuild works taking place. There are now ten post-earthquake projects concurrently addressing the area. These include: the Ferrymead Bridge project, Main Road 3-laning project, The Ferry Rd / Main Rd Master Plan and the Sumner Village Centre Master Plan. Some of these projects are accommodating the proposed pathway as modifications and additions, also described as ‘betterment’. Coordination of projects with the proposed coastal pathway will ensure cost-effectiveness. Representatives of the CPG and CCC are keen to plan holistically rather than undertake piecemeal repairs.

The proposal that follows identifies a number of adjoining modifications and possibilities, such as the redesign of Redcliffs Park and the rebuilding of saltwater baths at Sumner. While these are not directly part of the pathway proposal or other infrastructure repair works, their eventual integration is important to the overall quality and success of the proposed coastal pathway, particularly in terms of the aspiration that it encompass a series of diverse activities and destinations.



Figure 1.7 - The broad proposed Coastal Pathway context.



Figure 1.8 - The local proposed Coastal Pathway context. The proposed route, and scope of this report, is identified.

1.5 POLICY FRAMEWORK

Christchurch City Planning Instruments

The pathway proposal will be in accordance with

- a number of objectives from the Christchurch City Plan which include:

- Preservation of the natural character of the coast,
- Management of activities in a way which remedies or mitigates any adverse effect on the natural values.
- Minimisation of adverse effects of erosion and flooding and maintain the stability of the coastal dune system.
- Preservation of the scenic, recreational and wildlife habitat value of the rocky coastline and headlands.
- Recognition of the importance of, and provide for, the relationship of Māori, their culture and traditions with ancestral lands, waters, sites, waahi tapu and other taonga.
- the Christchurch Transport Strategic Plan, particularly in relation to the long-term visions for a major cycleway network, major recreational routes and centres, and the core public transport routes.
- the vision, principles, goals objectives and priorities of CCC's Public Open Space Strategy 2010-2040, particularly in its connecting, enhancing and creating of new recreational networks.
- CCC's Community Outcomes 2006-2012
- CCC's Surface Water Strategy
- CCC's Long Term Council Community Plan (LTCCP)
- CCC's Infrastructure Design Standard
- CCC's Tsunami guidelines for coastal Christchurch and Banks Peninsula
- CCC's Climate Smart Strategy

Coastal Planning Instruments

As part of the site will take in the coastal marine area, the proposal recognises

- the Regional Coastal Plan which lists the estuary as an area of Significant Natural Value.
- the objectives of the NZ Coastal Policy Statement and Draft Christchurch Coastal Strategy are acknowledged.
- the Avon Heathcote Estuary – Ihutai proposed Estuary Edge Master Plan.
- NZ Climate Change Centre, Climate Change Adaptation in New Zealand

CERA Recovery Strategy

The proposal will also be consistent with the economic, social, cultural, built environment and natural environment goals of CERA's Recovery Strategy for Greater Christchurch.

SCIRT

The pathway proposal is coordinated with the Stronger Christchurch Infrastructure Rebuild Team (SCIRT) rebuild projects and programme. There can be numerous efficiencies associated with building the proposed pathway together with the road, coastal edge and infrastructure repair works.

Local Plans and Projects

The proposed pathway will integrate with CCC's Suburban Centre Programmes Master Plans, such as the Sumner Village Centre Master Plan – details from which are incorporated in the pathway plans in this document – and the Ferry Road / Main Road Corridor Master Plan.

1.6 NGĀI TAHU ASSOCIATIONS

Te Rūnanga o Ngāi Tahu Act 1996 and the Ngāi Tahu Claims Settlement Act 1998 recognise the status of Papatipu Rūnanga as kaitiaki (guardianship) and manawhenua (tribal authority) of the natural resources within their takiwā boundaries.

The coastal area from Ferrymead to Scarborough Beach involves two Ngāi Tahu sub-tribal groups – Te Ngāi Tūāhuriri Rūnanga based at Tuahiwi, Kaiapoi and Te Hapū o Ngāti Wheke (Rāpaki) Rūnanga based at Rāpaki within Lyttelton Harbour/Whakaraupo – that claim traditional interests for this area, and who hold the manawhenua and kaitiaki status for their ancestral lands and waters along the area of this coast.

The estuary of the Avon and Heathcote Rivers / Te Ihutai, and the surrounding coastal area and the valleys and hills behind, are places of great cultural and historical significance to tangata whenua. They were areas of settlement and food gathering and mahinga kai (resource use) for Ngāi Tahu, and before them Ngāti Mamoe and Waitaha, for over 600 years.

Te Ihutai is a Statutory Acknowledgement Area under the Ngāi Tahu Claims Settlement Act 1998. For such areas the Crown has acknowledged the statements made by Te Rūnanga o Ngāi Tahu of the particular cultural, spiritual, historic, and traditional association of Ngāi Tahu with those areas.

This proposal addresses matters of relevance and significance to tangata whenua. These include:

- Ensuring the coastal water and streams are pollution free;
- Recognising of manawhenua history pre-1840;
- Using of correct Māori names for places;

- Protecting wāhi tapu and wāhi taonga;
- Increased use of appropriate native trees and restoration of habitat'
- Involving manawhenua in planning processes; and
- Considering the wider environment.

The degradation of Te Ihutai and its tributaries and its loss as a mahinga kai is a significant issue for Rūnanga. The potential effects (both negative and positive) on tangata whenua values include:

- Possible intrusion on, and disturbance of, sites of cultural significance, wāhi taonga and wāhi tapu around the estuary and coastline (from construction of the pathway and/or increased public access).
- Possible disturbance of Māori archaeological sites.
- Possible encroachment on the estuary and loss of habitat e.g. if the pathway requires extension of the sea wall.
- Effects on the estuary in general and its ecological and cultural health e.g. through access to sensitive areas.
- Opportunities to promote the restoration of coastal vegetation and planting of indigenous species that whakapapa to the area i.e. are locally indigenous.
- Opportunities to incorporate features that mitigate the effects of stormwater runoff from roads and stormwater discharges into the estuary e.g. stormwater treatment measures such as swales and treatment traps.
- Opportunities to incorporate landscape design, planting, artwork, and interpretation that acknowledges, in a specific and meaningful way, the relationship of tangata whenua with Ihutai and coastal areas.

In relation to the proposed SCIRT project to rebuild the Causeway, tangata whenua have acknowledged the need for effective repair of the sea wall. They have indicated that subject to mitigation of the effects of the work, principally sediment control, and managing the effects on shellfish and birds and the use of culturally appropriate design, the construction of a 1 in 3 slope of rip-rap boulders may be acceptable.

1.7 THE PROCESS

The process included the preparation of a design brief, and subsequently a concept plan for capital expenditure costing. This report describes:

- The Research (Section 2), including site analysis and community consultation
- The Proposal (Section 3) for the pathway, the vision, site-wide strategies, and details on a site by site basis.
- Implementation (Section 4) including costing
- Outcomes (Section 5)

The project was jointly managed by the Christchurch City Council (CCC) and the Christchurch Coastal Pathway Group (CPG). Wraight and Associates (WA) were the primary consultants and authors of this document. WA collaborated with Rob Greenaway, tourism and recreation specialist (www.greenaway.co.nz) and consulted with a multidisciplinary CCC team. Davis Langdon were engaged to provide costing information (www.davislangdon.co.nz).

Community and Stakeholder

CCC requirements are for the plan to be realistic, imaginative and achievable. Community involvement was fundamental in order to provide ownership of the scheme and incentive for use. The scoping and physical concept plan for the pathway was developed following consultation with the local communities of the Mt Pleasant, Redcliffs and Sumner neighbourhoods where there is strong support for a pathway, and with stakeholders (ECan, CCC, SCIRT, yacht clubs, estuary trusts and others).

Ngāi Tahu

Mahaanui Kurataiao Ltd (MKT) were commissioned by CCC to consult with the Rūnanga on this project. Preliminary advice was provided in December 2011, and further consultation was undertaken between August and December 2012.

2. THE RESEARCH

2.1 CONTEXT

The 6.5km-long proposed coastal pathway traverses a number of distinct neighbourhoods and communities, as well as a range of environmental and edge conditions. The diagram below introduces the main neighbourhoods that comprise the route. Within each neighbourhood, the pathway traverses a number of distinctive character areas – the ‘zones’ – and locations where the existing coastal edge / pathway condition changes. The zones are identified

broadly by the dominant surrounding environment – adjacent water and topography for example – while the conditions are identified by the immediate physical state of the coastal edge and existing surfacing along the pathway route. These categorisations provide a way of analysing down and understanding the site. The range of conditions and characters provide opportunity to celebrate the diversity of experience along the route, where the views,

the microclimate, the estuary channels, the bird habitat, the beaches, the parks and urban activity are all different, and can be even more diverse depending on the wind and the tide. The concept plan will look at amplifying these qualities within a coherent, legible pathway.

Refer to Appendix 1 for a selection of site photographs taken along the route.

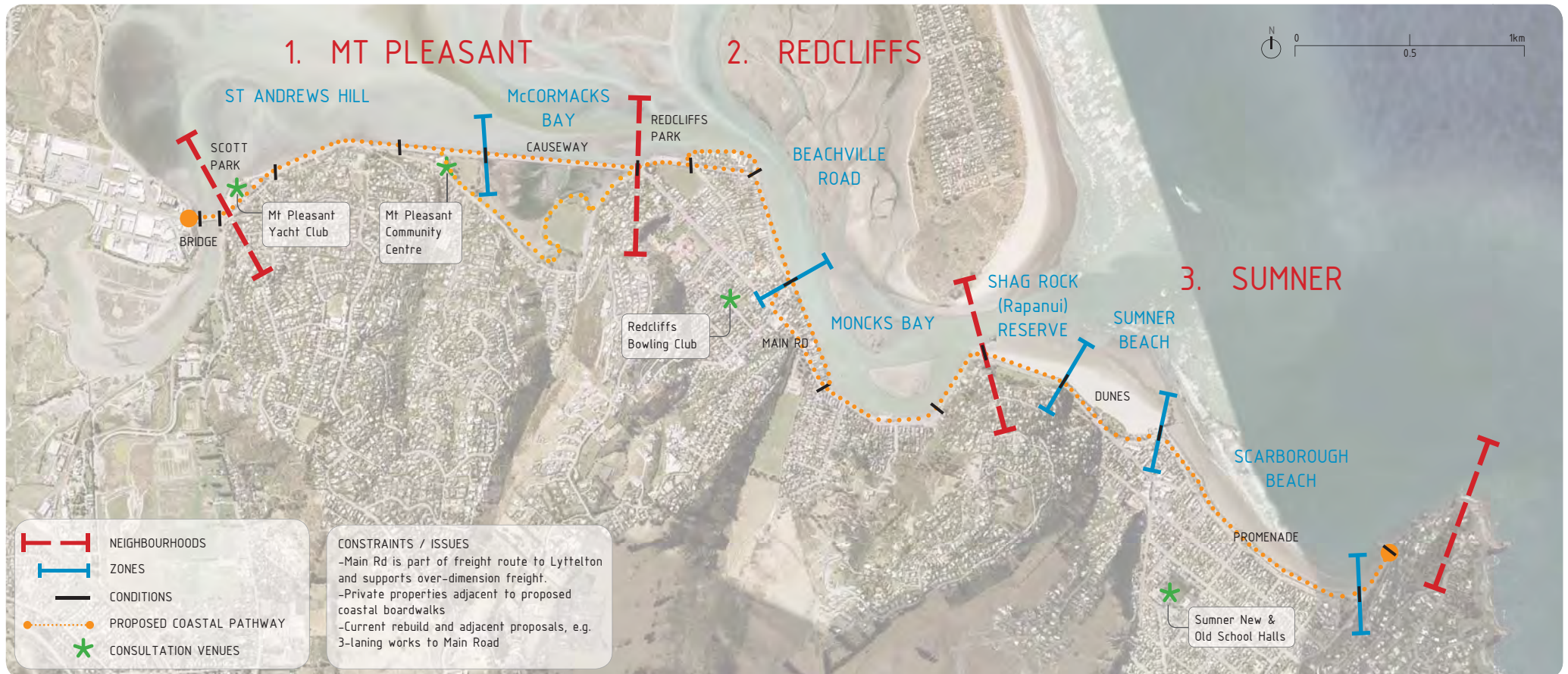


Figure 2.1 - Neighbourhoods, Zones and Conditions. Consultation venues also indicated.

2.2 SITE ANALYSIS SUMMARY

Refer to Appendix 2 for more detail.

Research and mapping exercises were undertaken as part of this study to analyse the context and the site's: history and cultural significance; geology and past ecosystems; hydrology; wildlife; broad and local connections; and its primary recreational uses. These studies informed the concept design, but were not intended to be exhaustive. The analysis has been summarised here to provide some background to the concept design as well as identifying conditions that could inform developed proposals.

History

The proposed coastal pathway area is a cultural landscape of high heritage significance to both Māori and Pakeha / Europeans. The estuary, Ihutai, was an immensely significant site to early Māori. It was a major site of food and resource gathering – mahinga kai – and served as a hub for regional trade between south island iwi. There were a number of settlements by early Māori – notably at Te Rae Kura (Redcliffs Park) by the first people of the area, the Waitaha, and the caves were also significantly utilised landmarks.

The estuary and its river connections were also important to early European settlers for trade and commerce. The river connections with the township were utilised for trade with Lyttelton harbour that came via the estuary. The estuary also served as a disposal site for various pollutants, much of which arrived via the Avon and Heathcote Rivers, and the resulted in siltation which essentially removed the rivers' transport uses by 1900.

The estuary has a long history as a recreational resource. Rowing and yachting have always been popular. A particularly notable 'recreational infrastructure' of the past was the coastal tramway which connected Sumner Beach with the city, but its construction entailed some major reclamations that had significant impacts on the estuary's hydrological patterns. The 2010-2011 earthquakes are important events in the area's recent history.

Recreation

There are diverse recreation activities in the coastal area key water-based recreation activities are: water-craft recreation is very important in Scott Park in Mt Pleasant; major fishing spots are located in Redcliffs at Beachville Rd and Moncks Bay; and surfing and swimming takes place at Sumner Beach. Significant reserves and sports amenities occur at McCormacks Bay, Redcliffs Park and Barnett Park. A number of smaller reserves, such as Shag Rock Reserve, are used for more passive forms of recreation like dog-walking and picnicing. Cycling and walking are already popular along parts of the proposed route. McCormacks Bay is important for bird watchers. And there are numerous connections into the Port Hills for tramping, although many of these tracks have been closed as a result of the earthquakes.

Connections

In the broadscale, there are limited ways to reach the pathway neighbourhoods. Pinched between the Port Hills and estuary, they are reached almost exclusively via the Ferrymead bridge and Main Rd, which was damaged in the 2010-2011 earthquakes. SCIRT road and infrastructure rebuild works are scheduled to take place alongside various parts of the proposed pathway.

Main Road, which extends towards the city along Ferry Rd, is identified as a major cycleway and core public transport route in the Christchurch Strategic Transport Plan. A relatively high proportion of serious crashes along it in recent years have involved cyclists suggests that cycle / car safety needs to be addressed. The route is freight-supporting to and from Lyttelton Port for over-dimension and some dangerous goods.

The neighbourhoods have multiple connections to Port Hills tracks, a number of parks and coastal amenities. The proposed coastal pathway can draw these networks together and improve connectivity and safety.

Geology + Ecosystems

The 2010-2011 earthquakes revealed previously unknown fault lines in Christchurch. These include a 14km long fault along the northern Port Hills, which was the origin of the February 2011 earthquake¹. The proposed pathway site is also significant for being at the juncture of the Port Hills, two rivers, the estuary and the ocean - the meeting of geological, alluvial and marine systems. This results in a diverse range of ecosystems that fringe the edges.

Wildlife

The Avon-Heathcote estuary / Te Ihutai for a long time has had a rich diversity of natural edge environments, such as dunelands and saltmarshes. It is a significant habitat for a high diversity of bird life – over 100 reported species² – and migratory birds, such as godwits. There is less diversity in but an abundance of marine species. Changes to feeding and roosting patterns are still being observed following the significant geomorphic environmental changes that have resulted from the 2010-2011 earthquakes.

Hydrology

The site is a highly complex hydrological system. Two rivers, four 'city drains' and numerous stormwater outlets discharge into the estuary. A sewerage treatment plant and oxidation ponds occupy much of the estuary's northern edge, though these no longer discharge into the estuary as they have been piped directly to sea since 2010. Two distinct, though adjacent, beach systems exist at Sumner, and water speeds through the channel and past South Brighton Spit / Te Karero Kororo. The tides in the area (Sumner) produce a MSL of 1.3 and MHWS of 2.5m above Chart Datum - refer tide envelope included in Appendix 2.

1 See GNS: <http://www.gns.cri.nz/Home/Our-Science/Natural-Hazards/Recent-Events/Canterbury-quake/Hidden-fault>
2 McMurtrie S. and Kennedy S, Exploring an Estuary - A Field Guide to the Avon-Heathcote Estuary/Ihutai, 2012, p. 4.

2.3 CONSULTATION

Meetings

Three public consultation events were held at three different venues, central to each of the three neighbourhoods. Nine meetings in total, of two hours each, took place with the public at which a projector and A1 prints were used to present, discuss and record feedback.

At the first meetings, held 18-19th September, the scope of the project and preliminary site analyses were presented. The community was invited to raise any and all ideas relating to the pathway project and the site. These were recorded within groups, presented to the others and discussed.

At the second consultation, held 9-10th October, a draft vision for the project, developed from the previous sessions' feedback, and a range of design options were presented and discussed. Groups documented their feedback and preferences. Design ideas and the vision were refined.

The third series of meetings took place over the 23rd and 24th of October. During these sessions a concept design was presented that took into account preferences and suggestions from the previous session, as well as constraints from the ongoing coordination with other rebuild projects.



Figure 2.3 - Photograph from consultation event at Redcliffs Bowling Club, 19th Sept.

In parallel with these public meetings several stakeholder meetings were conducted with the same data. Refer to Appendix 3 for a summary of consultation undertaken during this study.

Outcomes

Feedback and suggestions from the initial session onwards were mapped and organised into six thematic categories: Natural Environment, Cultural and Heritage, Recreational, Commercial, Movement, and Spatial.



Figure 2.4 - Excerpt from mapping of feedback and suggestions by theme.

As a means of re-communicating the range of suggestions with some weighting as to their importance (by frequency of occurrence) graphical 'ideas clouds' were created. These were refined through the consultation sessions as direction was clarified and relative importance confirmed.

By returning to communities with design options and then a draft concept design, participants were given a say throughout the design process. This ensured it was enthusiastic and democratic, and encouraged community buy-in and ownership of the proposed Coastal Pathway project.



Figures 2.5 - Graphical summary of feedback, suggestions and their relative importance, produced following some of the community consultation events, from Mt Pleasant (top), Redcliffs and Summer.

3. THE PROPOSAL

3.1 VISION

Key findings and values from consultation were documented, interpreted and distilled into thematic categories...

...which frame the community's vision for the project:

- NATURAL ENVIRONMENT** ...An ecological playground...
- CULTURAL + HERITAGE** ...A place to tell our stories about the coast...
- RECREATIONAL** ...It's more than a route, it's a braided necklace of activities...
- COMMERCIAL** ...Support recreation activities with commercial opportunities...
- MOVEMENT** ...Safe movement along and easy connections to the pathway...
- SPATIAL** ...Be broad, be generous, and be diverse...

... that underly the overall vision for the Coastal Pathway:

'A necklace of jewels connecting communities'

Through the analysis and consultation phases, three critical structuring devices were identified. These form the overarching spatial aspects to engage and are as follows:



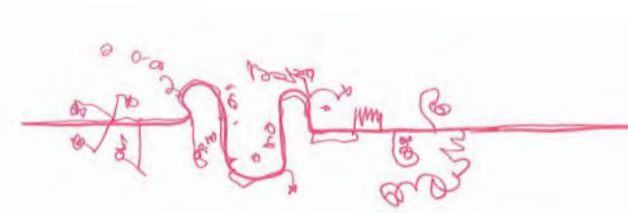
The Coast

The ever-changing water's edge. Its varying conditions provide the essence of identity and meaning for this place.



The Pathway

The quality, condition and layout of the path provides the medium for travelling along and engagement with the Coast.



Active Community

The pathway can connect, create and encourage activities, which draw the community to the coastal edge.

3.2 SITE-WIDE STRATEGIES

3.2.1 EXPERIENCES

In response to the site analysis and consultation feedback, WA identified primary spatial 'experiences' and 'nodes' that occur along the route.

The diagram presents both a refined site analysis and a conceptual overview of how the different sections of the pathway could be experienced. It reflects the existing conditions and environment. And it emphasises the diversity

of spaces and activities possible. The coloured line articulates distinctive sections of the pathway. The nodes are key moments of the journey in terms of distinctive views, activity or orientation.



Figure 3.1 - 'Experiences' diagram.

EXPERIENCES		MAJOR NODES / MOMENTS	LEGEND
00 - SCOTT PARK: boating edges, landing place	05 - BEACHVILLE SEA WALL: deep water, lookouts, fishing, linear park	a - Scott Park, diverse water access	Experience
01 - MT PLEASANT: rock pools and mud flats	06 - MONCK'S BAY: retained historic elements (wall, tram stop), fast water, wind protected, beach	b - Redcliffs Park, jetty, wetland + boardwalk, beach	major node
02a - CAUSEWAY: linear edge, access points, possible art/sculpture	07 - SHAG ROCK RESEVE / RAPANUI: dunes, sand beach, timber, easy access	c - Beachville Reserve	node
02b - McCORMACKS BAY: soft edge, bird watching	08 - MEMORIAL WALK: dunes, trees, commemoration	d - Shag rock, viewing platform, sea meets estuary	
03 - REDCLIFFS PARK: Estuary beach, possible wetland	09 - SCARBOROUGH BEACH: promenade, surf beach	e - Cave rock, beach options and views	
04a - BEACHVILLE / MAIN RD: urban, treed, enclosed, shops	10 - LIFESAVING CLUB: possible lookout - dramatic finale	f - Cafe + playground	
04b - COASTAL BOARDWALK: over-water, views, private properties adjacent		g - Lifesaving club + views	

3.2.2 GEOTECHNICAL ISSUES AND THE EDGE EXPERIENCE

Refer to Appendices 4 and 5.

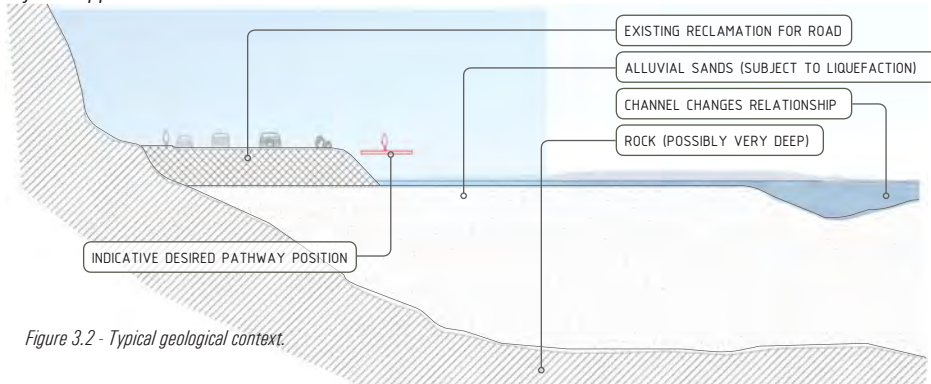


Figure 3.2 - Typical geological context.

The typical condition has the proposed coastal pathway on the seaward side of an existing road reclamation.

The edge experience is very important along the pathway because it will facilitate engagement with water, but marine and alluvial sediment provides a challenging condition to pile structures, so rip-rap walls tend to be the preferred solution for engineering. The baseline solution – the 1:3 seawall edge rebuild proposal by SCIRT engineers – does not offer the same opportunities for water engagement that a steeper (1:2) solution could. A 1:2 edge could reduce the impact of reclamation on the estuary, or could accommodate a range of minor modifications, such as a lower level access pathway and rock pools, which will enhance experience and engagement with water.

It is important that the Coastal Pathway proposal itself does not entail any reclamation. The concept design is adapted to suit existing proposals by SCIRT and CCC.

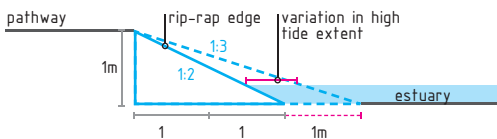
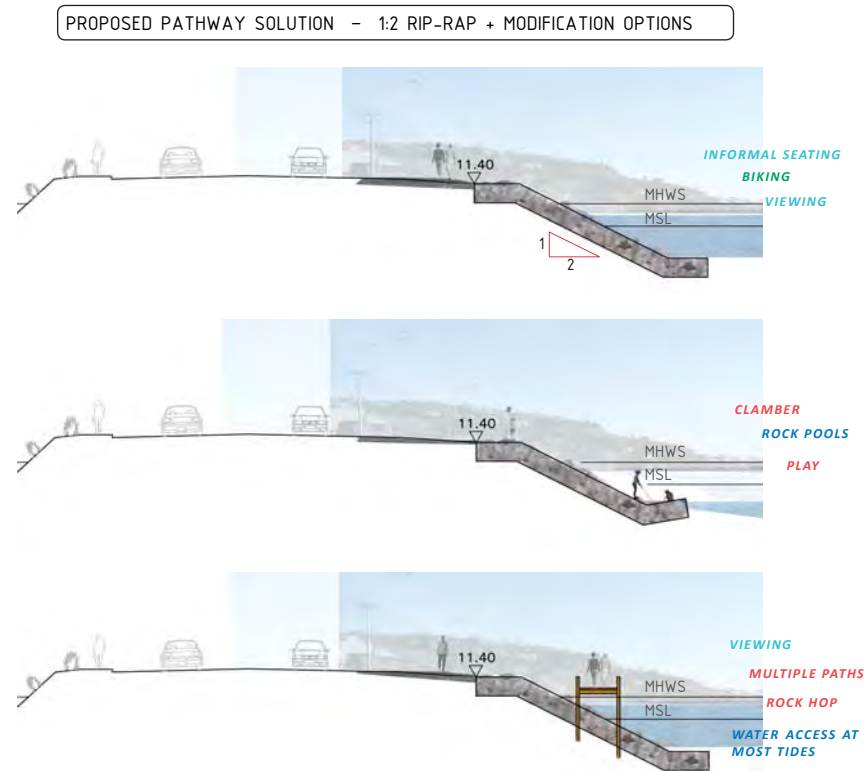


Figure 3.3 - Diagram illustrating principle of reduction in reclamation due to steeper rip-rap edge with 1m nominal elevation of pathway above estuary bed.



Figures 3.4 - Baseline and modified solutions. Note edge elevation and sea levels are indicative only.

3.2.3 WAYFINDING AND INTERPRETATION

Wayfinding and interpretation is an important part of the identity of a place. It makes people feel safe and comfortable, and expresses the unique culture of the communities that have, and continue to, inhabit the place. Artwork can also be incorporated.

The ‘experiences’ strategy provides a foundation for the spatial principles that should inform proposed pathway wayfinding and interpretation, which are shown below. A specific interpretation plan should be developed for the proposed coastal pathway that would address historic sites, cultural and environmental interpretation, element siting, existing interpretation, Crime Prevention Through Environmental Design (CPTED), vandalism concerns and, importantly, commemoration of the earthquakes.

Signage is important for information, wayfinding, interpretation and as distance markers. Elements should form a consistent suite in terms of materials, graphics and typography and should conform with the specifications and objectives of the CCC Sign Manual. Signs should be modifiable to receive additions as the pathway and linked network of amenities develops and connects to Port Hills tracks. Distance markers should be included at intermediate points. A consistent suite of small information and warning signs, eg. ‘no fishing’, should be used sparingly and should also conform to the CCC Sign Manual (note: not illustrated on below diagram). Waharoa - gateways - could also be considered for inclusion at appropriate points along the proposed Coastal Pathway.

- ✿
1. Information and Wayfinding Sign.
 These elements should be highly visible and sited at strategic locations where people are likely to join or begin the coastal pathway. Opportunity to include QR codes that could trigger aural content. Provision for the visually-impaired should be included.
- ✿
2. Interpretation Sign.
 These elements should be sited at key interpretation locations, e.g. historic sites or at strong viewing points. Opportunity to include QR codes that could trigger aural content and story-telling. Provision for the visually-impaired should be included.
- ✿
3. On or In-Ground Distance Marker
 These ‘events’ will encourage recreational pathway users, while helping to create an animated experience along the route. Opportunity to include QR codes and provision for the visually-impaired, through tactility, for example.



Precedent images of main signage and wayfinding elements



Figure 3.5 - Indicative locations for signage and interpretation elements.

3.2.4 TRANSPORT CONNECTIONS

Transport connections to the pathway will be an important part of its success. It is expected that the Coastal Pathway would contribute to an increase in visitors to the area by private car, public transport and non-motorised means. Refer to Appendix 2 for an overview of street and walkway networks.

Estimating vehicular increase is beyond the scope of this study, but it is anticipated that some limited provision may need to be made for increased vehicle parking associated with the coastal pathway and increased visitor numbers. This will be a matter for further consideration as detailed design develops. The strategy is to integrate any new parking with existing parking and facilities at strategic locations or 'nodes' on the route, however, there is need for further study to firm up options when opportunities have been identified.

There are a range of transport modes of accessing the proposed Coastal Pathway. Bus-stops occur regularly along the route. New cycle stands should be installed at strategic locations along the proposed coastal pathway.

Further investigations should be undertaken in detailed design phases into suitable pedestrian / cycling crossings and access opportunities to the new proposed pathway. The concept proposal suggests new crossings are protected median islands.

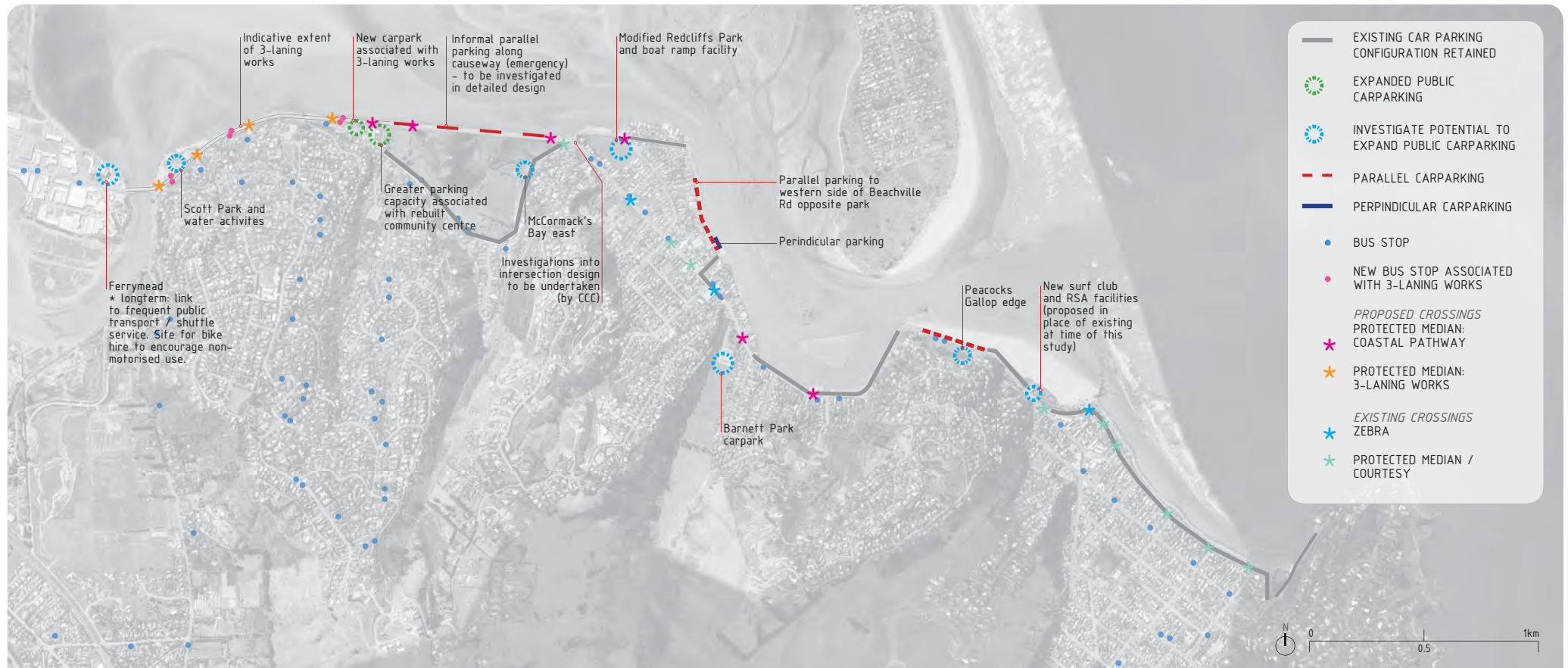


Figure 3.6 - Transport connections diagram.

3.2.5 LIGHTING

Lighting along the pathway will help to ensure a unique identity and night-time experience as well as safety.

Lighting should be designed to highlight important features, nodes and access points, and provide general lighting along the overall route where it will ensure safety of pathway users.. As the proposed pathway is typically adjacent to a roadway it will receive some illumination from carriageway lighting. This would be supplemented by a trail of low-level lighting which can be controlled for appropriate hours of use, and could be powered by LED technology. these matters will require further investigation at detailed design phase. New light columns are proposed where carriageway

lighting is anticipated to be insufficient for pedestrian / cyclist safety. All lighting should be designed to minimise impact on the night sky environment and wildlife habitats.

There are three primary lighting typologies proposed, however all are subject to further investigation:

1. Low level/ on-ground / recessed bulk head lighting @ 10m centres
2. 7m light columns with 2 luminaires @ 15m centre
3. Low level feature and directed lighting to elements or auxilliary parts of pathway, e.g. lookout pier.



1. Distinctive, low-level lighting element. The main lighting treatment of the Coastal Pathway route. Intended to highlight the trail.



2. High-quality, Distinctive Light Columns. Anticipate limited use along Coastal Pathway. Needed in areas where there is little spill from carriageway, e.g. new carparks.



3. Feature lighting
Range of fitting types employed to highlight specific elements and access points.

Precedent images of primary proposed lighting typologies.



Figure 3.7 - Lighting diagram.

3.2.6 FURNITURE

A simple, robust suite of furniture elements should be used along the pathway and can assist in creating a cohesive identity and experience along the route.

Furniture will need to be durable in the coastal environment and should be suited to the range of situations that occur along the pathway. Furniture design and siting should contribute to the structuring of spaces, rather than being mere objects within them and there is the opportunity for it to incorporate cultural references. Sustainably-sourced hardwood timber is an appropriate material for seating. Bins, bollards and other elements should be used sparingly and should be discreet and consistent in terms of their finish and materials. Detailed design of furniture will occur in future stages of development. When this occurs, all users of all abilities, CPTED and maintenance requirements should be considered.



Figures 3.8 - Precedent images of robust, bespoke seating.

3.2.7 PLANTING

Planting can increase the potential ecological and health benefits for the estuary.

Three main typologies make up the planting strategy for the Coastal Pathway:

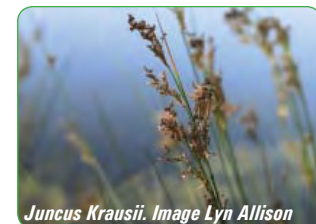
- Street tree planting;
- Roadside planting; and
- Rip-rap / coastal edge planting

New tree planting will occur at select locations along the streets but will also feature at the redeveloped Redcliffs Park, Beachville Rd Park and in an enhanced park landscape behind the dunes at Sumner beach. New trees should be native and appropriate to the ecological condition they exist within or alongside. However in some places, such as along Main Road at the Redcliffs shops, exotic tree planting may be more appropriate for its scale, form and deciduousness.

Roadside planting should comprise a range of locally native estuary edge species which can also be suited to bio-retention swales. Where the proposed pathway exists alongside a carriageway, planted swales have the potential to significantly mitigate auto-originating pollutant runoffs into the estuary, thereby improving ecological health.

Coastal edge planting amongst the rip rap will be hardy, locally-native species suited to high salt exposure and, in some cases, inundation.

There are various areas where planting is not directly associated with the primary typologies. At Redcliffs Park, a naturalised edge will potentially entail substantial areas of wetland and saltmarsh, the detail for which is subject to input from ecologists, as well as iwi. The pathway also navigates behind a sensitive, regenerating sand dune ecology at Sumner where local native species should be used to maximise ecological health and habitat potential.



Figures 3.9 - Selection of native species appropriate for Coastal Pathway development. It is recommended that a detailed planting list is developed in consultation with a local ecologist and Tangata Whenua.

3.2.8 TEXTURES & KEY PLAN

Materials

A simple, robust palette is proposed that responds to adjacent edge conditions.

The diagram outlines the primary material treatments of the proposed Coastal Pathway. Asphalt is the predominant pathway material proposed where the path is on solid ground and should be of a fine grade. Timber boardwalks are proposed in areas where such structures are required:

over water, moving sand or where structures may require some flexibility. Wide decking timbers will provide a smoother surface for wheeled users. Composite materials should be investigated at detailed design stages.

Trees and flush in-ground planting (not illustrated below) are the primary soft typologies utilised along the route, along with modification and planting of rip-rap edges that is proposed to soften the condition and provide habitat.

Sites for ‘clusters’ of furniture are also indicated. These correspond to nodes along the route, situated at key access, event, viewing or reprieve spots. In this way furniture is used to complement and help in the creation of distinctive moments along the pathway route.

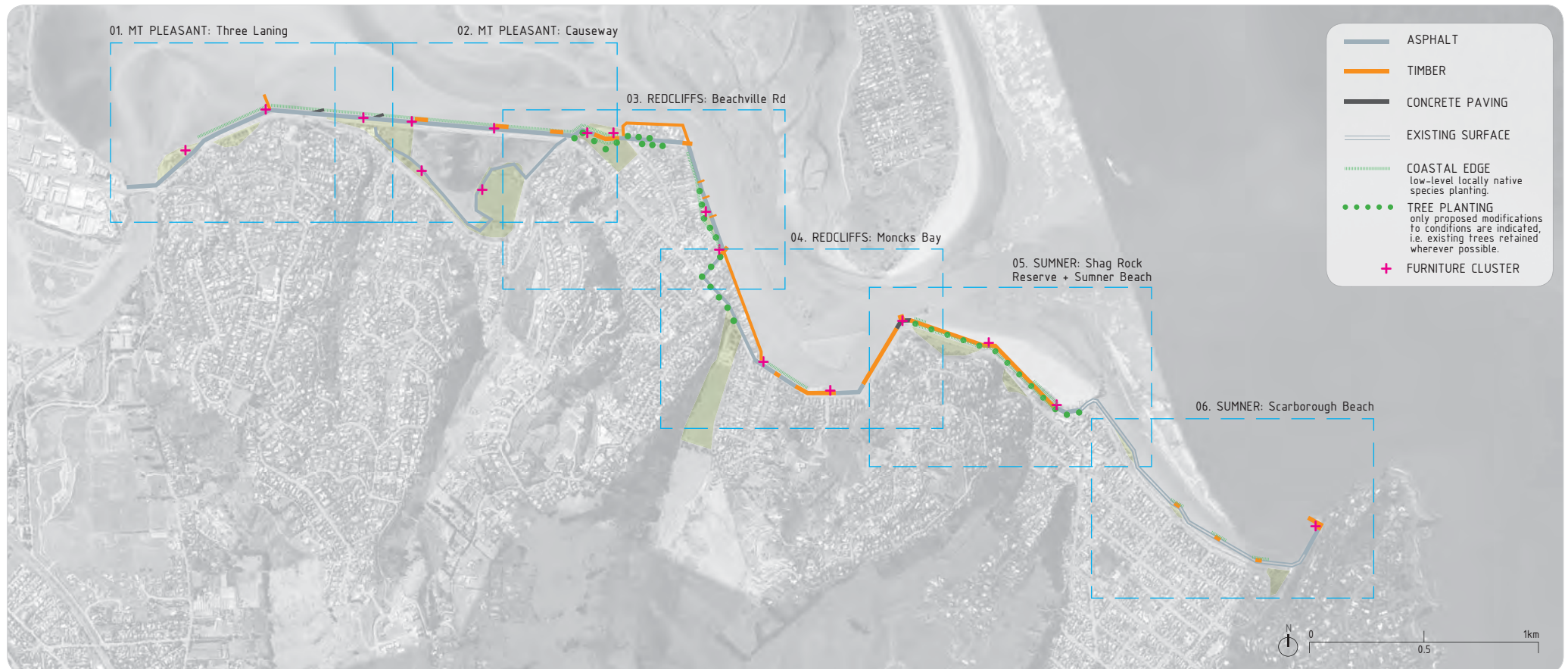


Figure 3.10 - Primary material treatment along the pathway and key plan identifying plans that follow.

3.3 CONCEPT DESIGN

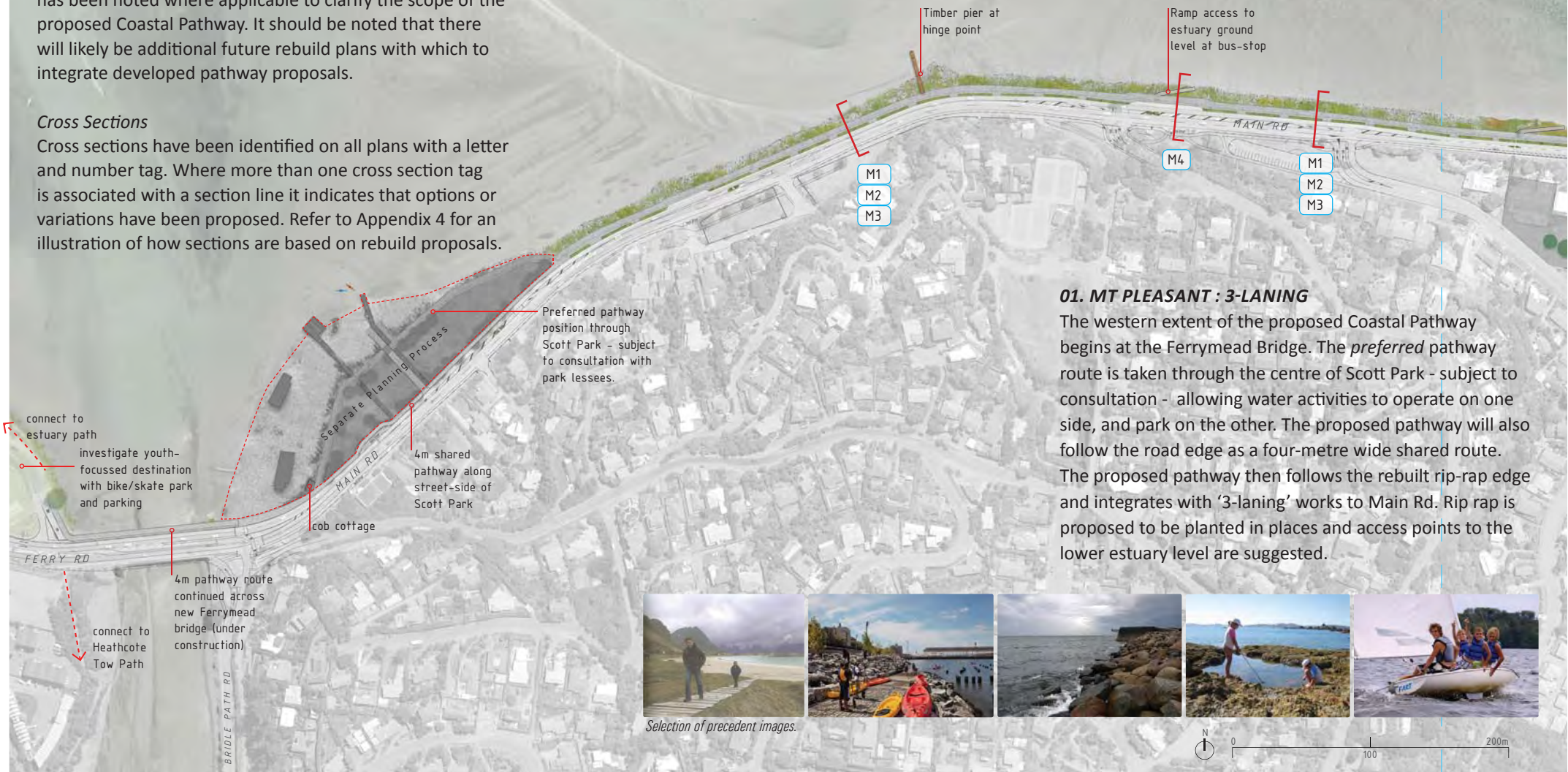
INTRODUCTION

The following plans and sections describe the concept design for the proposed Coastal Pathway. The proposed pathway design is integrated with rebuild and other works proposals wherever these occur. The extent of rebuild works has been noted where applicable to clarify the scope of the proposed Coastal Pathway. It should be noted that there will likely be additional future rebuild plans with which to integrate developed pathway proposals.

Cross Sections

Cross sections have been identified on all plans with a letter and number tag. Where more than one cross section tag is associated with a section line it indicates that options or variations have been proposed. Refer to Appendix 4 for an illustration of how sections are based on rebuild proposals.

* **REBUILD WORKS** - by SCIRT / others:
All works to carriageway, new rip-rap edge and associated reclamation and stabilisation is by others.
Relevant Plan: SCIRT: Main Rd 3 Laning - Scheme Design Option 1 [Sheets 1-7], No. A 28.09.11. [digital file: 3390292-060-C-100-C-107.dwg]. Received 18th October, 2012.



01. MT PLEASANT : 3-LANING

The western extent of the proposed Coastal Pathway begins at the Ferrymead Bridge. The preferred pathway route is taken through the centre of Scott Park - subject to consultation - allowing water activities to operate on one side, and park on the other. The proposed pathway will also follow the road edge as a four-metre wide shared route. The proposed pathway then follows the rebuilt rip-rap edge and integrates with '3-laning' works to Main Rd. Rip rap is proposed to be planted in places and access points to the lower estuary level are suggested.



Selection of precedent images.

Figure 3.11 - Mt Pleasant: 3-laning plan.

02. MT PLEASANT : CAUSEWAY

The causeway runs from the community centre (approximately) to 'the rock' at Redcliffs Park, where Main Road deviates from the coastal edge. Along the causeway the pathway has the same proposed edge and pathway treatment as that proposed at the Mt Pleasant:3-laning and creates 'events' at the 3 culvert points that allow the tidal flow within McCormack's Bay. A loop path around McCormacks Bay skirts the inlet's edge and connects to community facilities, while providing an alternative, more sheltered route.



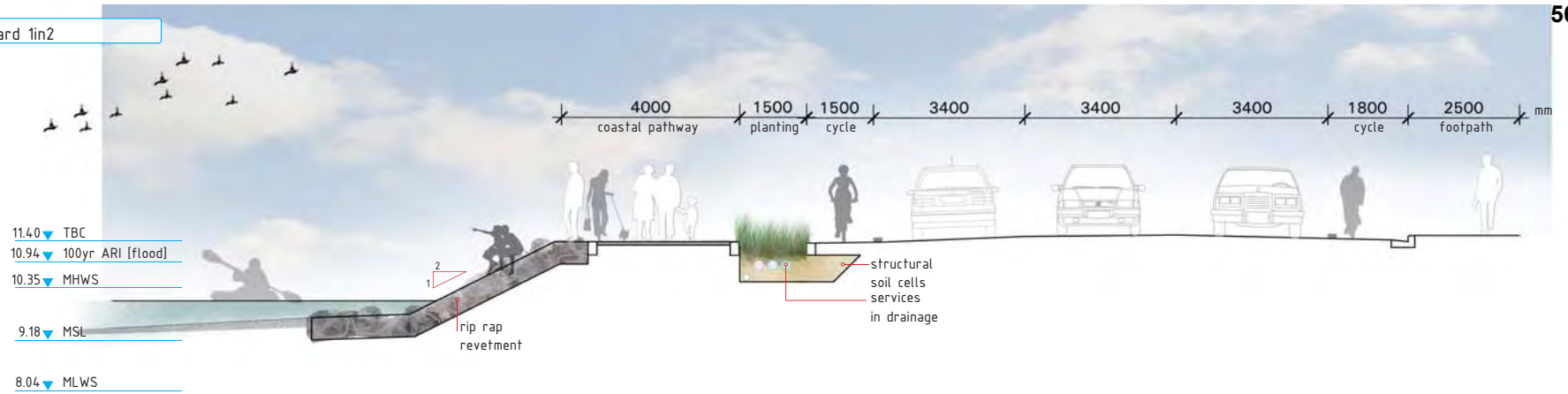
Selection of precedent images.



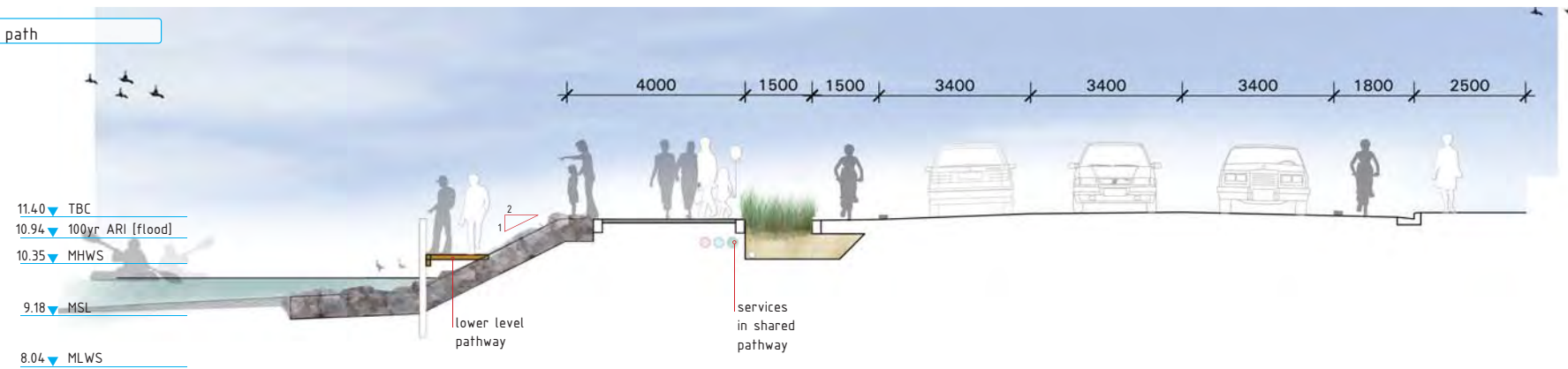
* **REBUILD WORKS** - by SCIRT / others:
 All works to carriageway, new rip-rap edge and associated reclamation and stabilisation is by others.
 SCIRT: Main Road Causeway - General Arrangement Sheet [RD2001], Issue 1 29.06.2012. [digital file: 10634-DE-RD-DG-2001.dwg]
 Received 18th October, 2012.

Figure 3.12 - Mt Pleasant: Causeway plan.

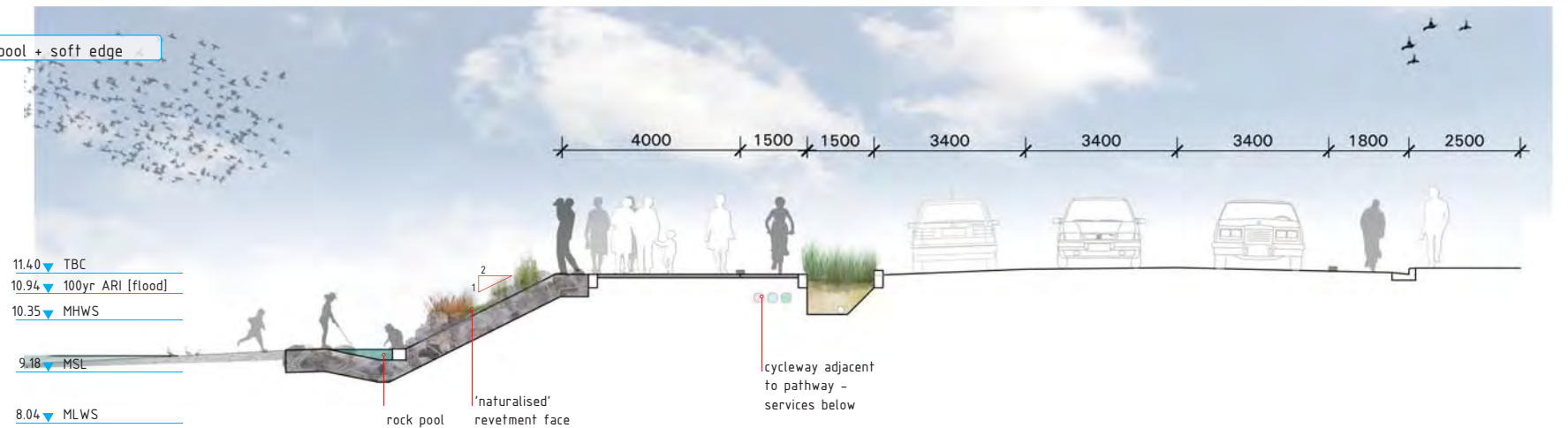
M1 - standard 1in2



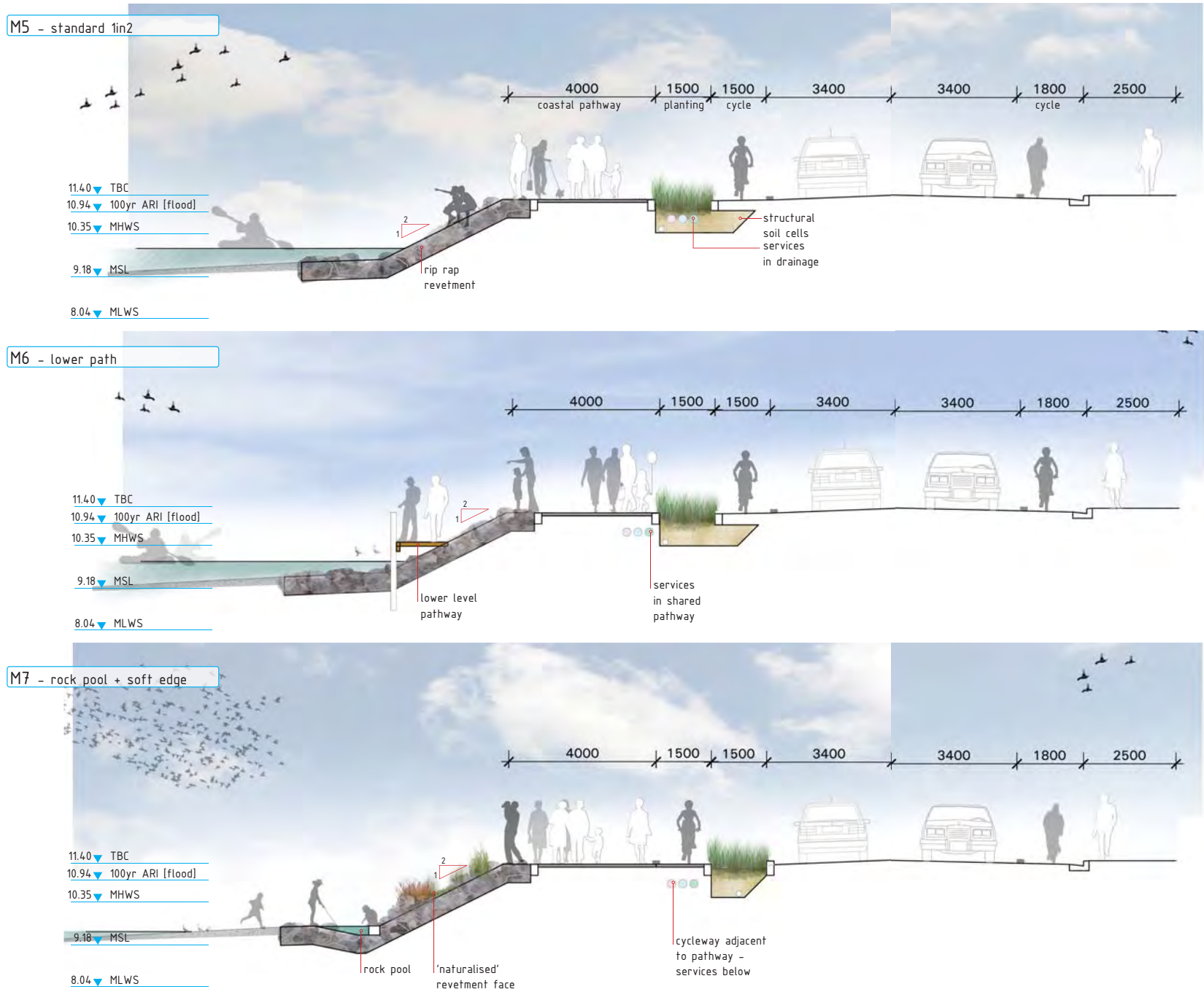
M2 - lower path



M3 - rock pool + soft edge



Figures 3.13 - Mt Pleasant: 3-laning sections.



Figures 3.14 - Mt Pleasant: Causeway sections.

M1, M2, M3, M4

Sections M1, M2 and M3 illustrate variations and options for the rock rip-rap condition that is proposed for the Mt Pleasant: 3-laning section of the proposed Coastal Pathway. They also show options relating to the position of the commuter cycleway, planting and services position. A four metre wide pathway is the minimum width proposed. This provides a shared cycle and walking pathway that allows the opportunity to pause or stop along the route. The New Zealand Transport Agency¹ and New Zealand supplement to Austroads guidance² suggests a desirable minimum width for a shared recreational path of 3.5m. The guidance suggests greater than 4m may be required where there are a high number and diversity of users - both anticipated conditions for the proposed coastal pathway.

Section M1 depicts an unmodified 1 in 2 steep rip-rap condition. (A 1 in 3 rip-rap wall is the initial engineering solution put forward - see p 15). The rock rip-rap does not directly form part of the Coastal Pathway proposal as it will be installed by others. Section M2 shows a pathway at a lower level and M3 indicates a rock pool and planted

1 <http://www.nzta.govt.nz/resources/pedestrian-planning-guide/>
 2 <http://www.nzta.govt.nz/resources/nz-supplement-austroads-gtep-part-14-bicycles/>

revetment face. This would comprise scattered pockets of hardy, locally-native plant species. M3 also illustrates the preferred configuration of the commuter cycle lane with it alongside the main shared pathway.

The precise extent of each condition is subject to design development. However it is envisaged that a lower pathway will be included for around 10% of the total length, rock pools for approximately 20%, and a planted revetment face for about 50% of the edge - note that the planted face can occur alongside other modifications to the standard rip rap wall.

Section M4 shows an estuary level access ramp at the bus stop along the route. The bus stop is at a break in the proposed planting to provide a drop-off area.

M5, M6, M7

The causeway has the same proposed treatment and options extended from the 3-laning part of the pathway. Sections M5, M6 and M7 illustrate these.

Integrating with the Rebuild

Along the 3-laning and causeway sections the existing

vertical wall is being rebuilt as rock rip-rap. The proposal by SCIRT is to build a 1in3 sloped rock rip-rap edge, and the resource consent for this has been lodged. The concept proposal for the pathway suggests revising this to a 1in2 slope with planting pockets, rock pools and ramped accessways integrated or added on to the slope.

Introducing rock pools and planting pockets at varying levels can create a condition with ecological potential. It can create a range of habitat for various species to occupy.

**Note that the rip-rap revetment, carriageway and footpath opposite is to be installed by others and is not part of the Coastal Pathway proposal. Refer to Appendix 4 for illustration of how the pathway sections integrate with rebuild proposals.*



Figure 3.15 - The existing seawall and edge condition along the causeway (Sept, 2012).

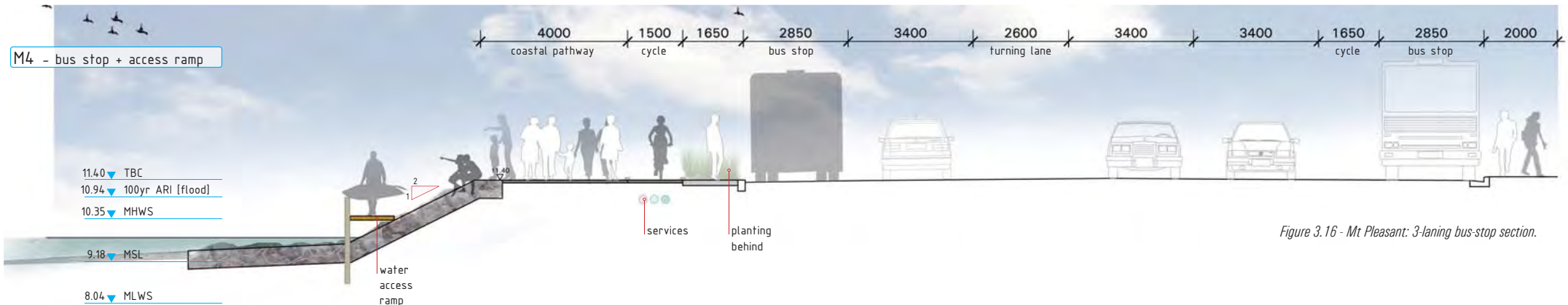


Figure 3.16 - Mt Pleasant: 3-laning bus-stop section.

03. REDCLIFFS : BEACHVILLE ROAD

The redevelopment of Redcliffs / Te Rae Kura Park offers an opportunity to acknowledge the original settlers of this area. The proposed embayment is an area of fill that was formerly a saltmarsh bay. The proposed estuary edge park with a declaimed, soft edge might comprise saltmarsh, wetland and beach areas and a boardwalk that allows a close interaction with the watery ecology and provides opportunities for interpretation and education.

This proposal will entail either the removal of Beachville Road between the existing boat ramp and Main Road (option 1 - main plan) or its relocation (in option 2) – both subject to detailed investigation. An alternative conversion to a slow street may be required if detailed investigations reveal the removal of the road is not feasible. The potential removal or relocation of the road section will require further investigation in developed design phases with assessment of full impacts, such as: local property; loss of playing field space; infrastructure costs; and environmental effects.

The alignment of Main Rd around Moa Bone Cave is uncertain due to rockfall issues, however design options allow for flexible treatment.

The Beachville Rd seawall is to be rebuilt as a rip-rap edge by others and the pathway follows its inside edge. A series of pop-through lookouts enhance opportunities for viewing and fishing. Behind the seawall at the widest points a linear park is possible in which a small children’s bike area is proposed to enrich the route and provide amenity.



Figure 3.17 - Redcliffs: Beachville Road plan.

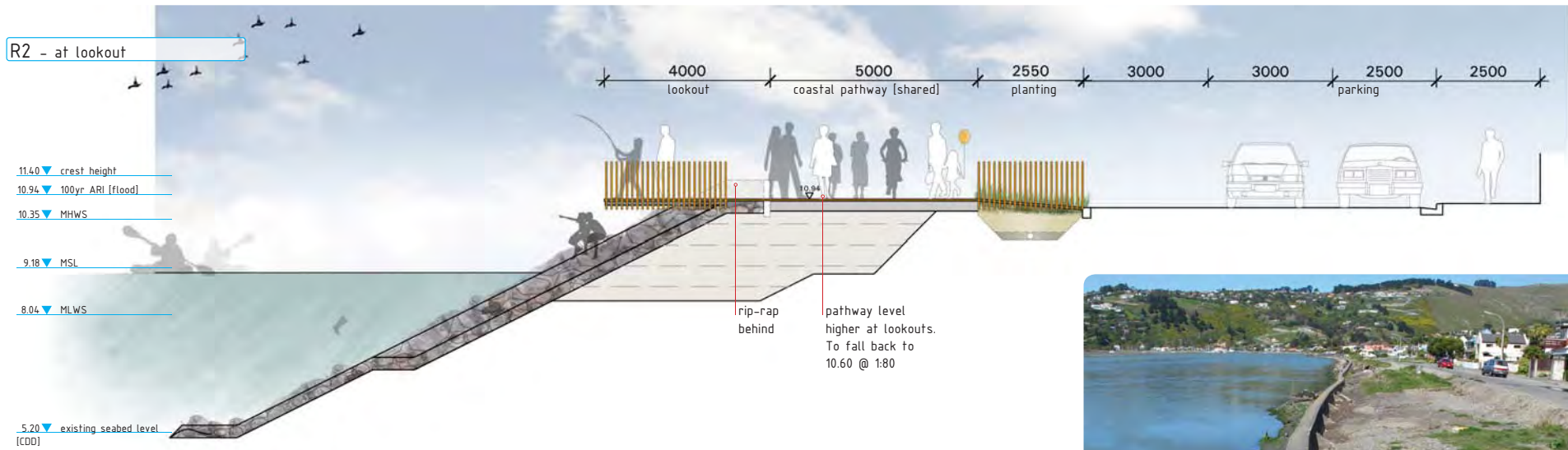
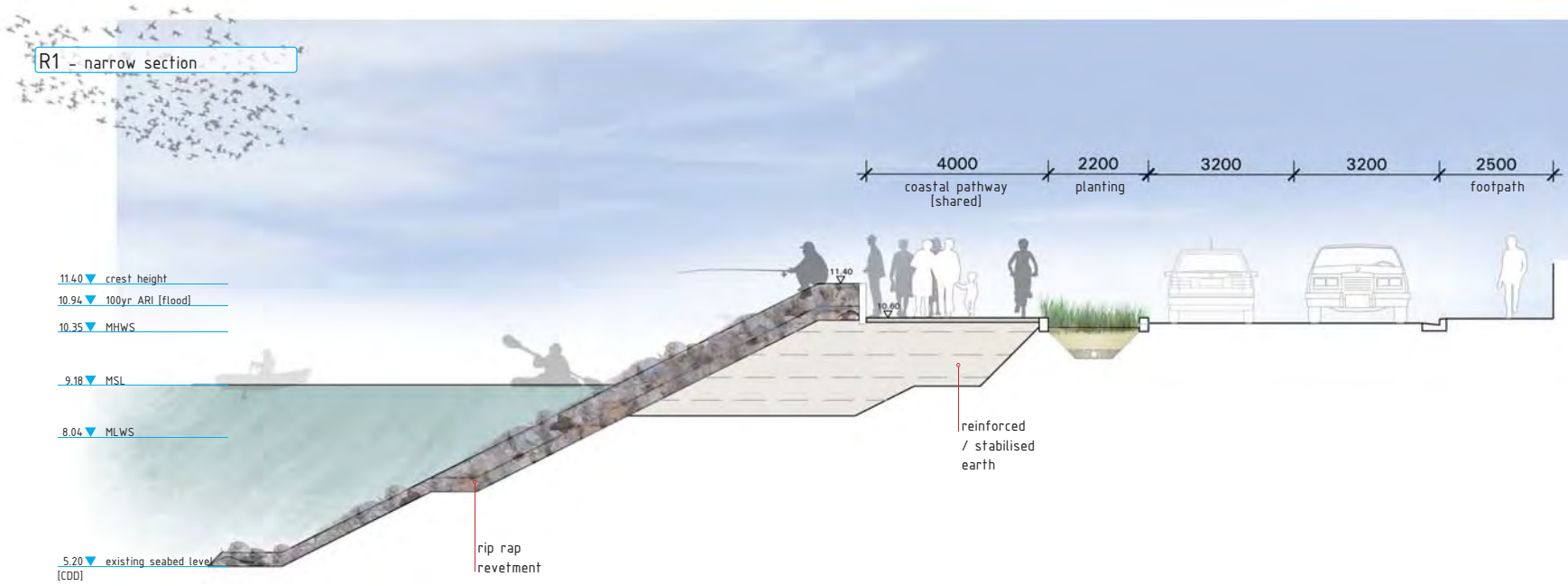


04. REDCLIFFS : MONCKS BAY

Two routes are proposed from Beachville Road to the tram stop. The first route through the Redcliffs shops links the pathway into the community, supporting local business, and continues past Barnett Park and its linked tracks. The second route runs along the coastal edge on a proposed new boardwalk.

At central Moncks Bay, the existing shallow rip-rap and beach conditions are retained, along with the historic wall and tram stop. The yacht club are proposing to rebuild their water-side facilities: its design will provide places for boat and channel viewing and will be integrated with the pathway. The eastern boardwalk commences from around a new potential boat shed and will be integrated atop a restored rip-rap edge. It culminates in a lookout at one of the most significant viewing points along the entire proposed pathway.

Figure 3.18 - Redcliffs: Moncks Bay plan.



Figures 3.19 - Redcliffs: Beachville Road seawall sections.



Figure 3.20 - The existing Beachville Rd seawall and space adjacent (Sept, 2012).

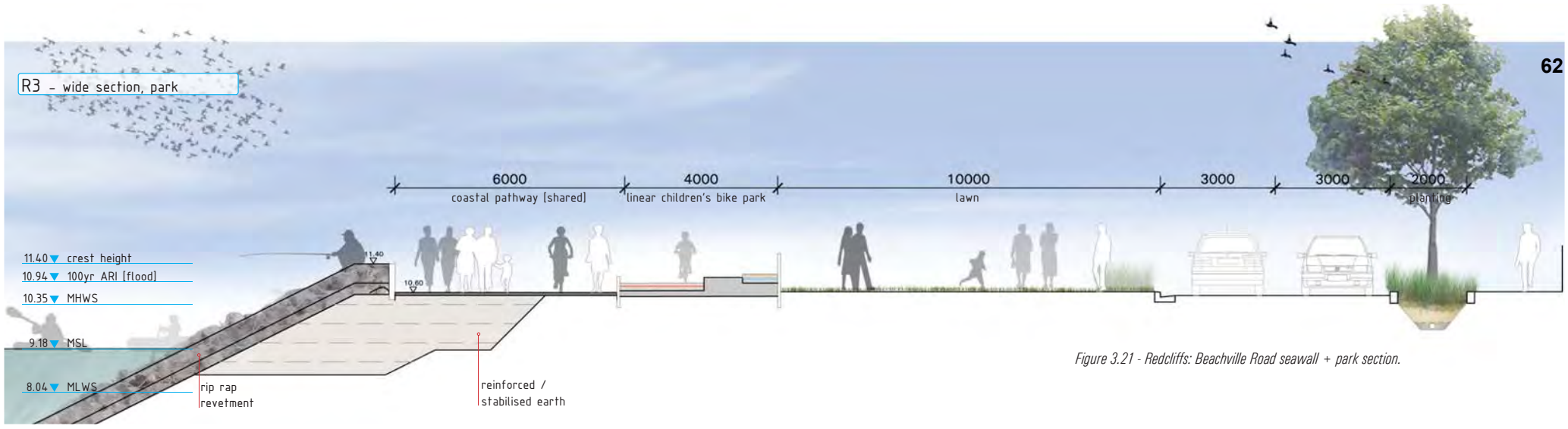


Figure 3.21 - Redcliffs: Beachville Road seawall + park section.

R1, R2, R3
 Section R1 shows the general treatment along narrow sections adjacent to the Beachville Rd seawall where planting is possible.

Section R2 shows where a proposed lookout point is integrated into the wall. The lookout will be timber deck linking to timber boardwalk that extends back across the pathway. The lookout includes a timber balustrade.

Section R3 indicates the park that is possible in wider sections adjacent to the seawall. A linear children's bike park is proposed adjacent to the pathway. This might be a simple undulating pavement for scooter and bike confidence building play.

Integrating with the Rebuild

The Coastal Pathway proposal integrates with the SCIRT seawall proposal and proposes no additional modification to the edge position or wall condition. In the SCIRT proposal, the crest of the proposed new rip-rap revetment is located *landward* of the existing seawall (pre-earthquake) position. The distance set back from this position varies from approximately 0.7m, at the narrowest parts along this section of seawall, to 3.7m, at the widest points. The toe of the 1in2 battered revetment will extend further than the

existing toe of the rip-rap, however most of this condition is permanently inundated.

**The rip-rap revetment, carriageway and footpath opposite is by others and not part of the Coastal Pathway proposal.*

R4
 Section R4 illustrates a coastal boardwalk option that could potentially be included around the edge of two areas of private properties that occur along the proposed pathway - at Beachville Road and Main Road. This is an important section of the proposed pathway to allow it to be properly 'coastal' as well as to minimise the amount of pathway that

conflicts with private driveway access with the on-street options.

The 'coastal' option addresses privacy issues by lowering the elevation of the boardwalk below the top of the rip-rap edge and setting it some distance from the property boundary. An alternative design treatments could consider reclamation: this may be investigated at subsequent stages when more detailed survey data is available. The coastal routes are subject to ongoing consultation and investigations into the potential pros and cons of reclamation, and alternative design treatments to address privacy issues.

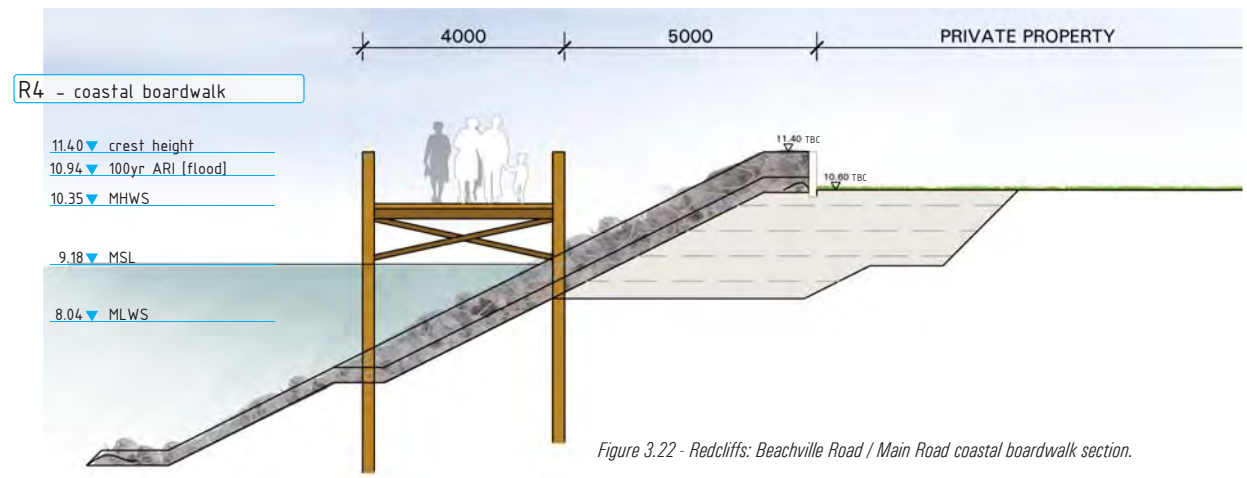
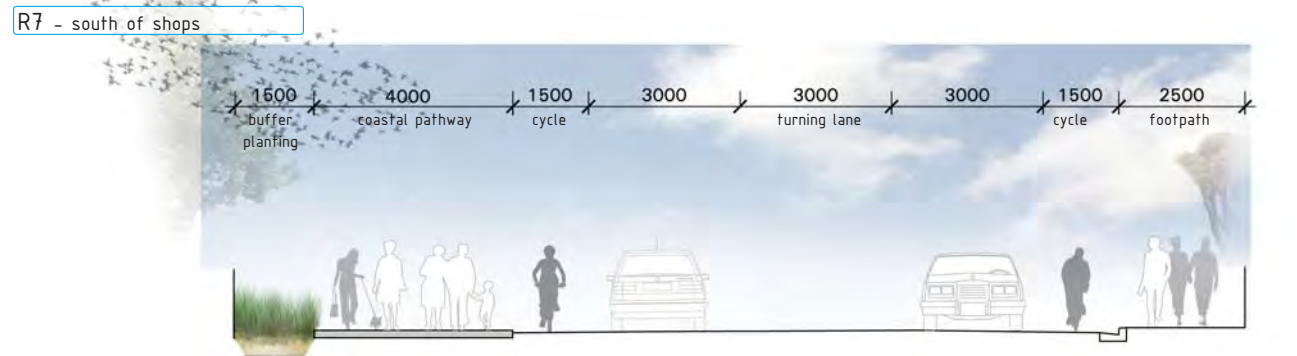
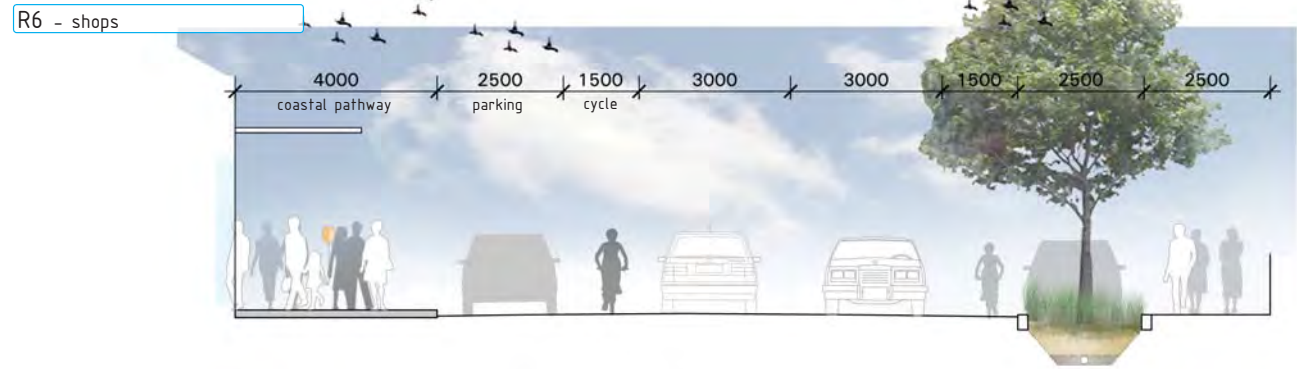
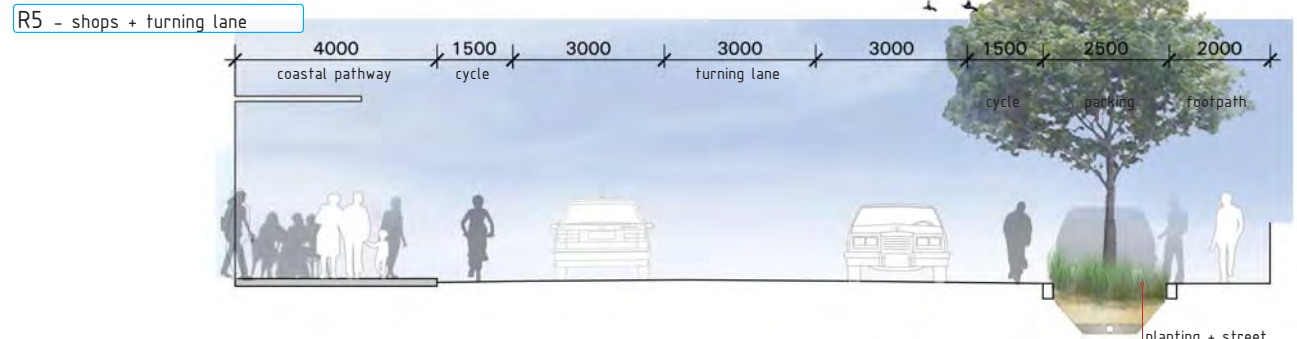


Figure 3.22 - Redcliffs: Beachville Road / Main Road coastal boardwalk section.

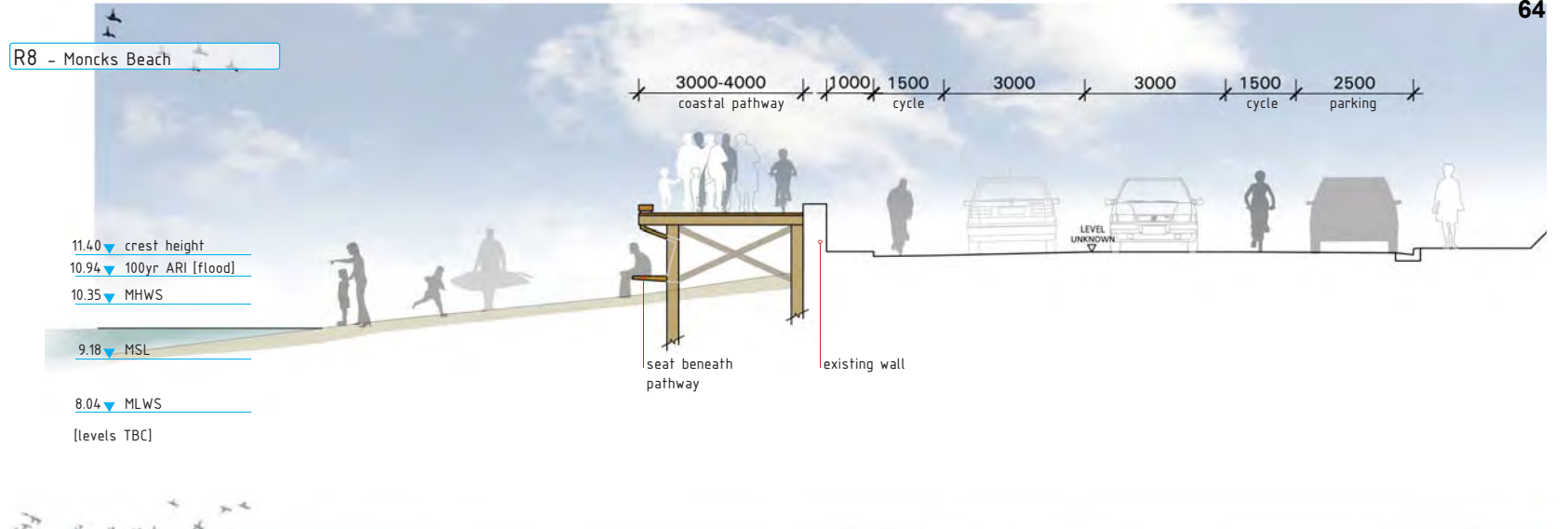
R5, R6, R7

Sections R5, R6 and R7 describe the typical on-street condition that the proposed Coastal Pathway will take in its anticipated initial form. This route, past the Redcliff shops, would form an alternative part of the pathway if the coastal boardwalk is completed as indicated in section R4.

In sections R5 and R6 the pathway comprises a widened footpath around the Redcliffs shops with tree planting on the opposite side of the road and parking to both sides where a turning lane is not needed. Section R7 includes buffer planting between driveway accesses to the boundary of private properties, which will improve safety, privacy and amenity.



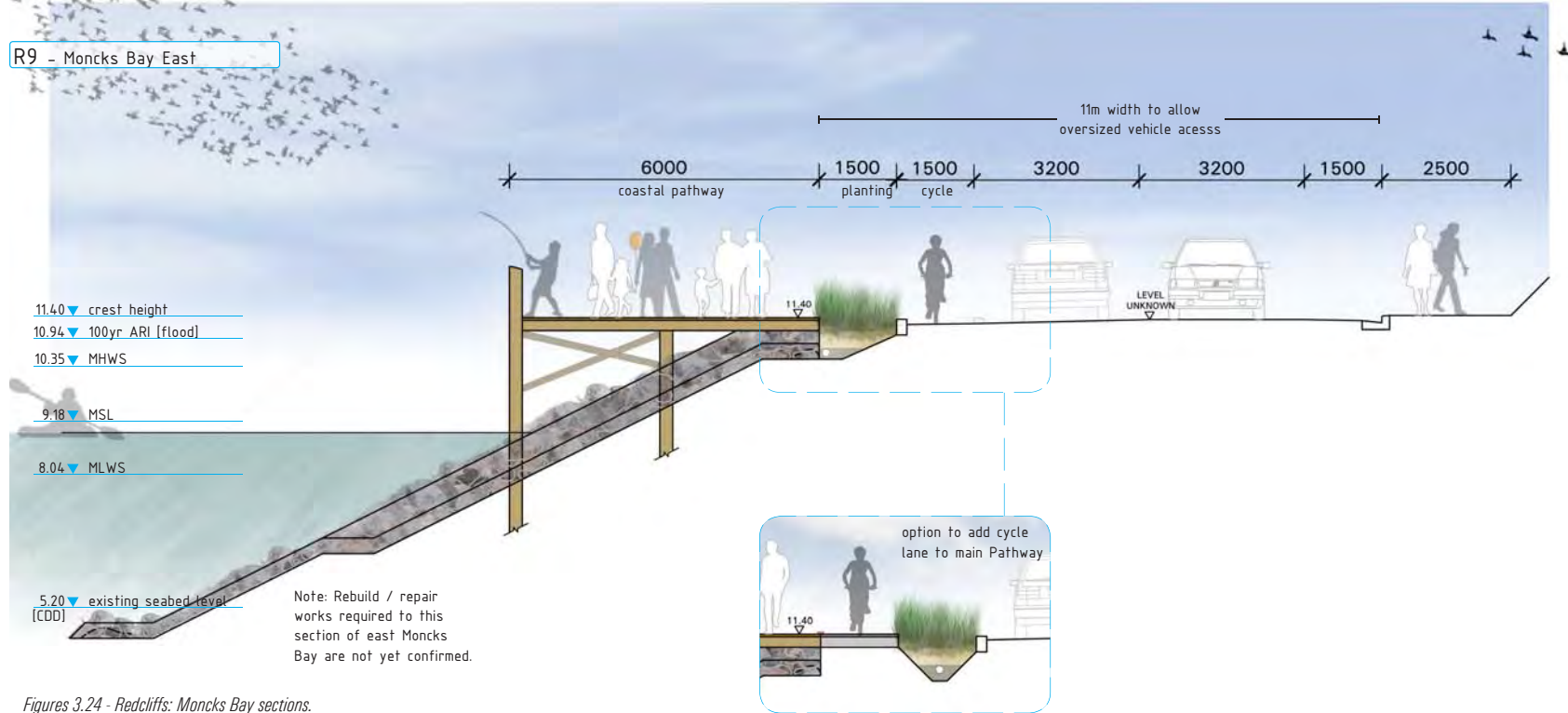
Figures 3.23 - Redcliffs: Moncks Bay - Main Road street sections.



R8, R9

Section R8 shows the proposed timber boardwalk along a section of the beach at Moncks Bay with existing wall retained. A seating element is integrated beneath to provide a useable edge to the beach.

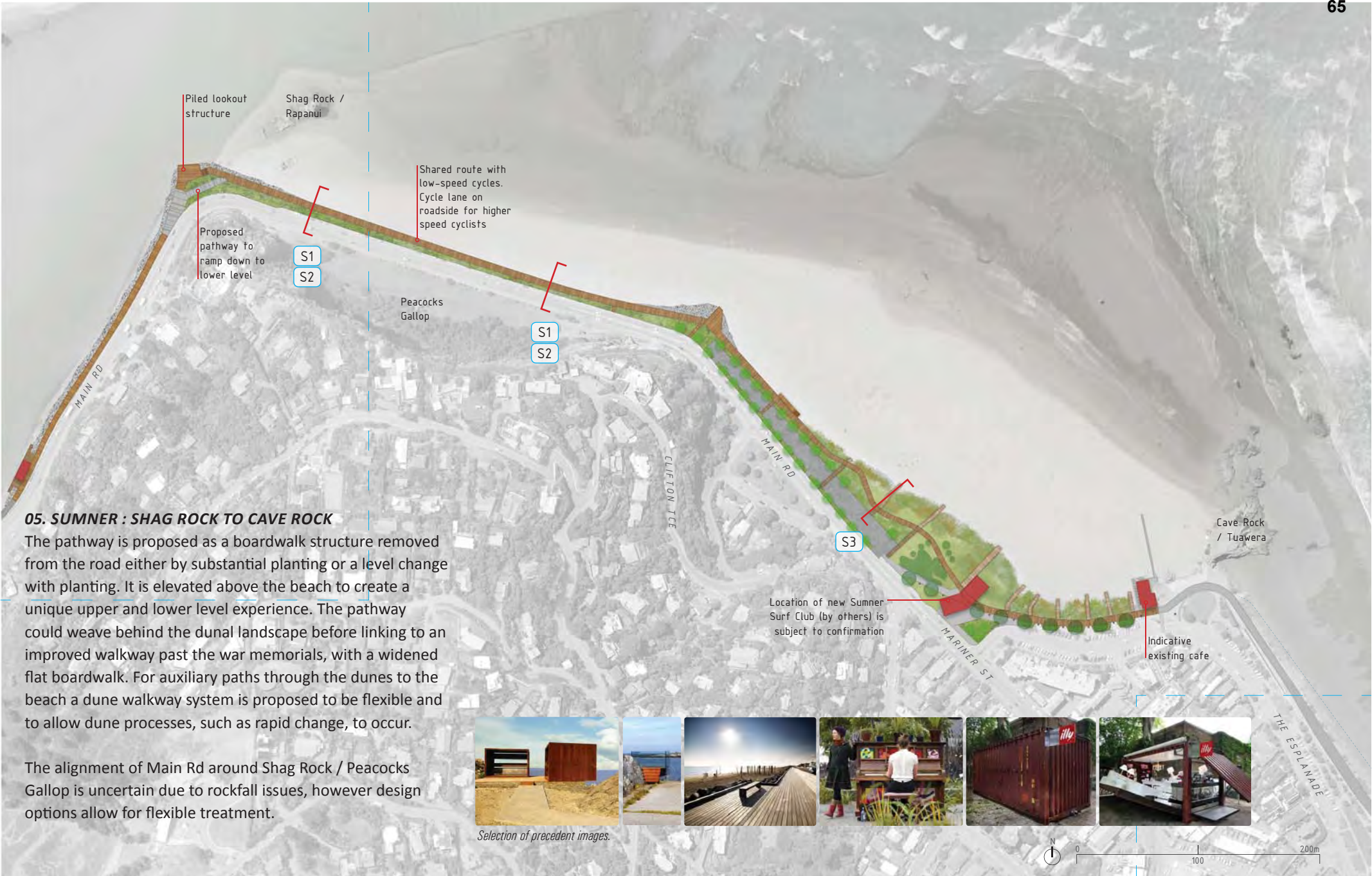
Section R9 indicates the proposed condition along eastern Moncks Bay. Here the carriageway and general condition is tight, particularly where it turns the corner at Shag Rock. A rebuilt rip-rap seawall is proposed, atop which a timber promenade is integrated. A variation of the cycle lane position is shown. The 6m width provided here allows for flexibility in relation to the potential issues arising from the road repair / rebuild where road widening may be required.



Integrating with the Rebuild

At section R9, along eastern Moncks Bay, there is an existing, wide area of rip-rap. This condition, it is anticipated, will be repaired and rebuilt as required to support and accommodate boardwalk piling.

Figures 3.24 - Redcliffs: Moncks Bay sections.



05. SUMNER : SHAG ROCK TO CAVE ROCK

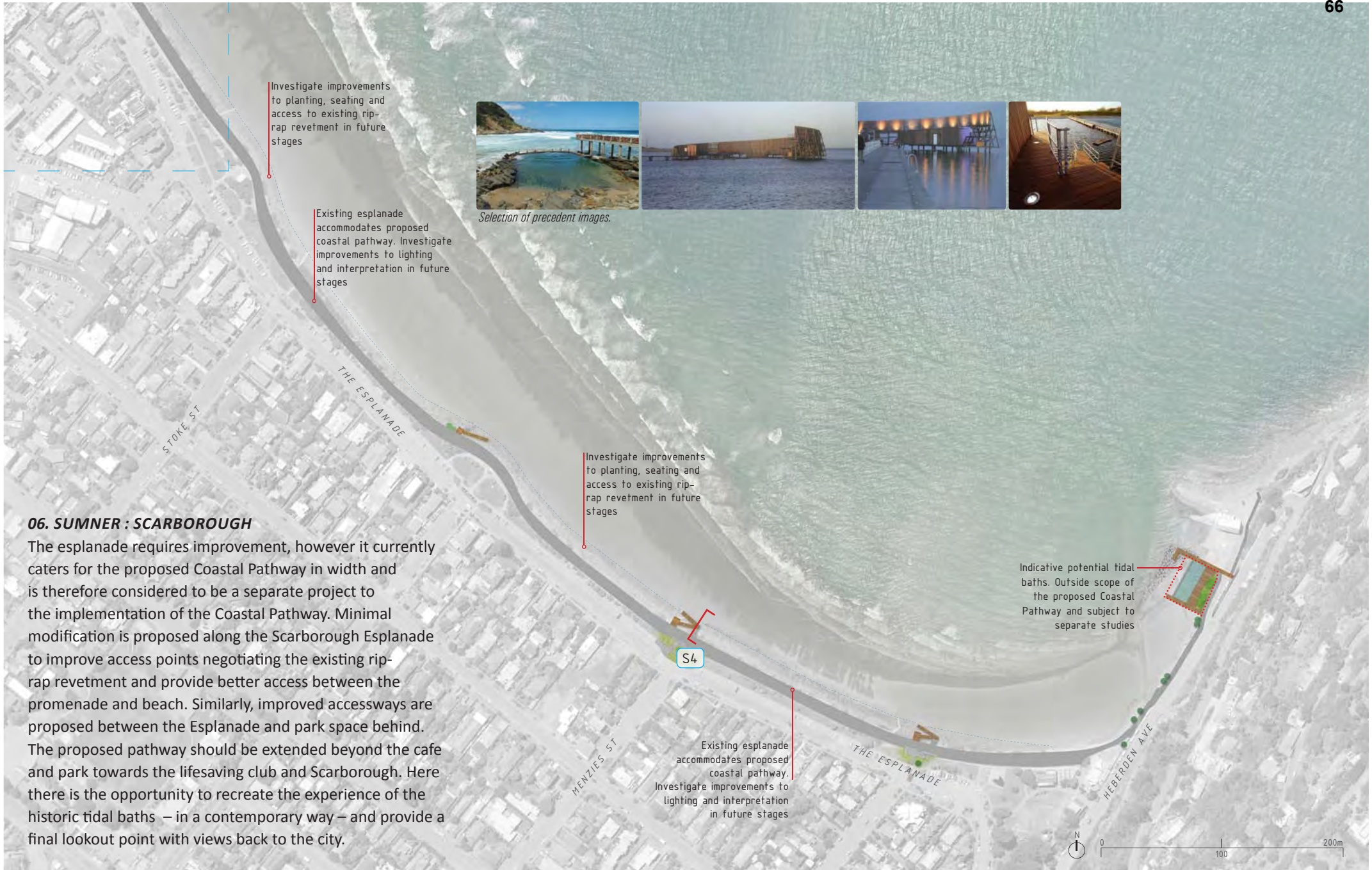
The pathway is proposed as a boardwalk structure removed from the road either by substantial planting or a level change with planting. It is elevated above the beach to create a unique upper and lower level experience. The pathway could weave behind the dunal landscape before linking to an improved walkway past the war memorials, with a widened flat boardwalk. For auxiliary paths through the dunes to the beach a dune walkway system is proposed to be flexible and to allow dune processes, such as rapid change, to occur.

The alignment of Main Rd around Shag Rock / Peacocks Gallop is uncertain due to rockfall issues, however design options allow for flexible treatment.



Selection of precedent images.

Figure 3.25 - Sumner: Shag Rock to Cave Rock plan.

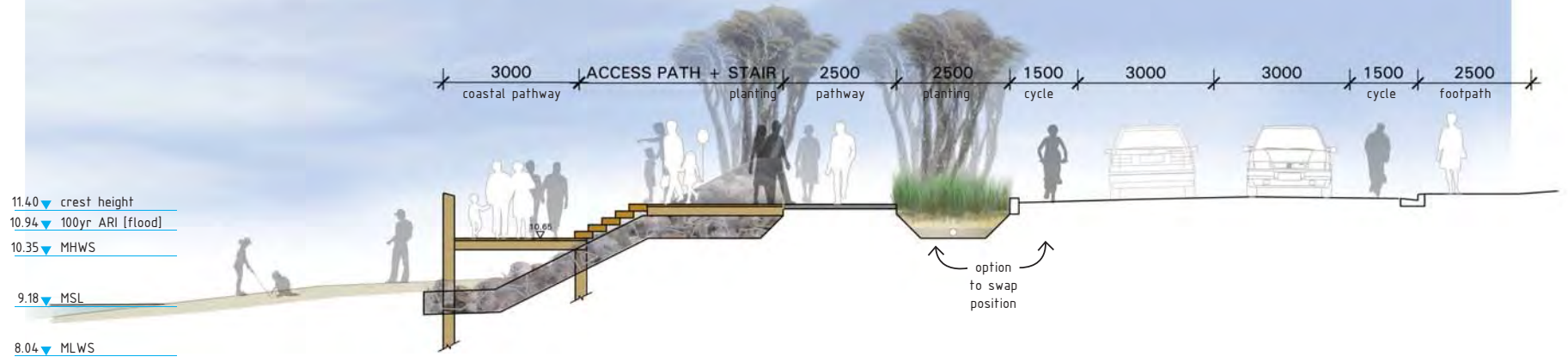


06. SUMNER : SCARBOROUGH

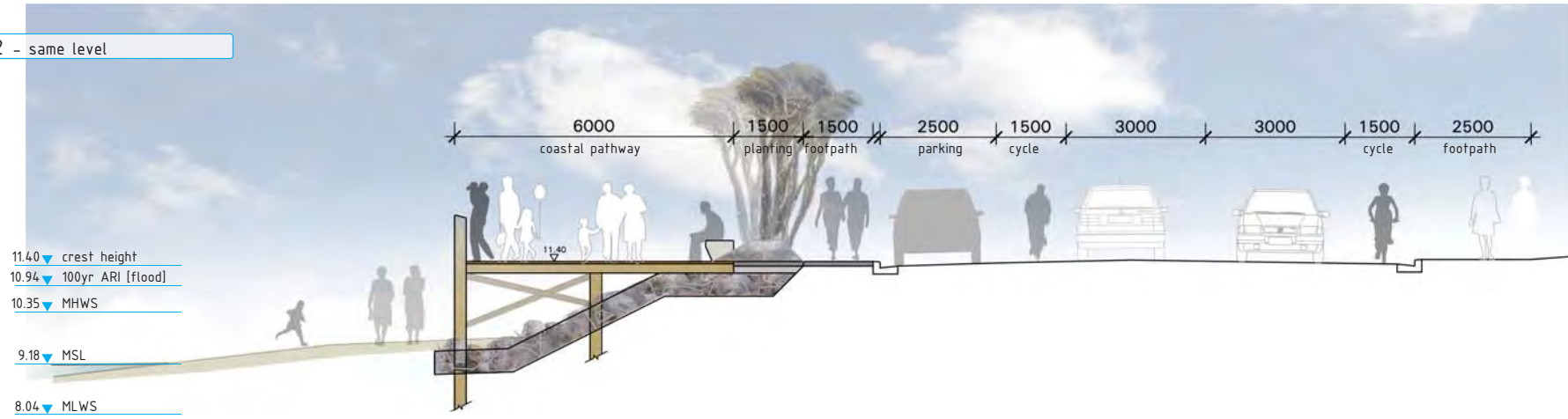
The esplanade requires improvement, however it currently caters for the proposed Coastal Pathway in width and is therefore considered to be a separate project to the implementation of the Coastal Pathway. Minimal modification is proposed along the Scarborough Esplanade to improve access points negotiating the existing rip-rap revetment and provide better access between the promenade and beach. Similarly, improved accessways are proposed between the Esplanade and park space behind. The proposed pathway should be extended beyond the cafe and park towards the lifesaving club and Scarborough. Here there is the opportunity to recreate the experience of the historic tidal baths – in a contemporary way – and provide a final lookout point with views back to the city.

Figure 3.26 - Sumner: Scarborough plan.

S1 - split level



S2 - same level



Figures 3.27 - Sumner: Shag Rock Reserve sections.

S3 - dunes



Figure 3.28 - Summer: dunes walkway section.

S1, S2

Sections S1 and S2 illustrate options or variations for the pathway treatment along the beach at Shag Rock Reserve. S1 has the pathway at a lower level, with an additional upper, potentially higher-speed path between planting. The street side planting could have intermittent parallel parking, and the cycle lane could be included on the upper pathway. S2 shows the possibility of having the pathway at the same level, raised more above the beach but creating a generous space for users. Both options include a portion of pathway at a higher level to allow its use in storm events.

S3, S4

Section S3 shows the pathway behind the dunes with carparking and access adjacent. A timber accessway through the dunes connects to the main pathway. This can be an ecologically rich section of the pathway.

S4 shows how access can be improved on the existing revetment down to the beach with a combination of concrete steps, timber deck and ramping. These access points need to be more generously-scaled and less steep than the existing provision. Attention should be given to slip performance as, at the lower levels, ramps will be subject to

S4 - revetment access

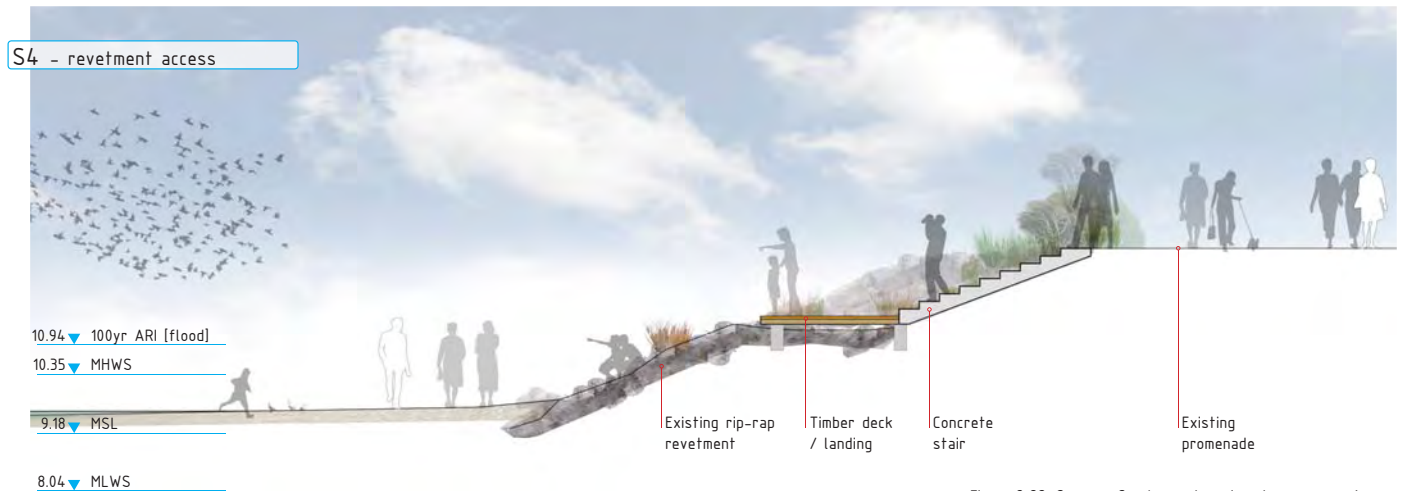


Figure 3.29- Summer: Scarborough esplanade access section.

occasional inundation. Scarborough is only a low-mid tide beach as successive modifications to the edge have resulted in its erosion. There is some scope longer-term to modify the revetment condition and in turn restore a dry-beach at high tide, however this modification is beyond the scope of the Coastal Pathway proposal.

4. IMPLEMENTATION

4.1 COST

The total estimated cost for the proposed Coastal Pathway is:

\$26,122,010.95 (plus GST)

Allow estimated escalation of 4% per annum.

The costing has been broken down into six overall sections along the proposed pathway and into further sub areas. The overall sections correspond broadly to the plans presented in the Concept section (3.3) of this report. Costing by sub-

area is included on the following page and relates to the below key plan, while the plans that follow (section 4.2) more precisely define the scope that has been costed.

The estimate includes for: Contractors Preliminaries & General; Margins; Design & Construction Contingency; and professional fees, and is based on current day competitive costs.

The estimate excludes the following: GST; Finance & Legal Costs; Land Related Costs; Inflation; Programme related Penal Costs / Shift Work; Non competitive tendering; Work

outside boundary; Unforeseen ground conditions; Supply of sculptures, works of art; Building Consent charges; Resource Consent and associated hearing costs; Costs associated with obtaining a Coastal Permit; RMA and zoning charges; Noise limitation costs; Disruption costs to the existing surrounding establishment; Unforeseen increase in Labour costs as a direct result of the Christchurch Earthquake rebuild.

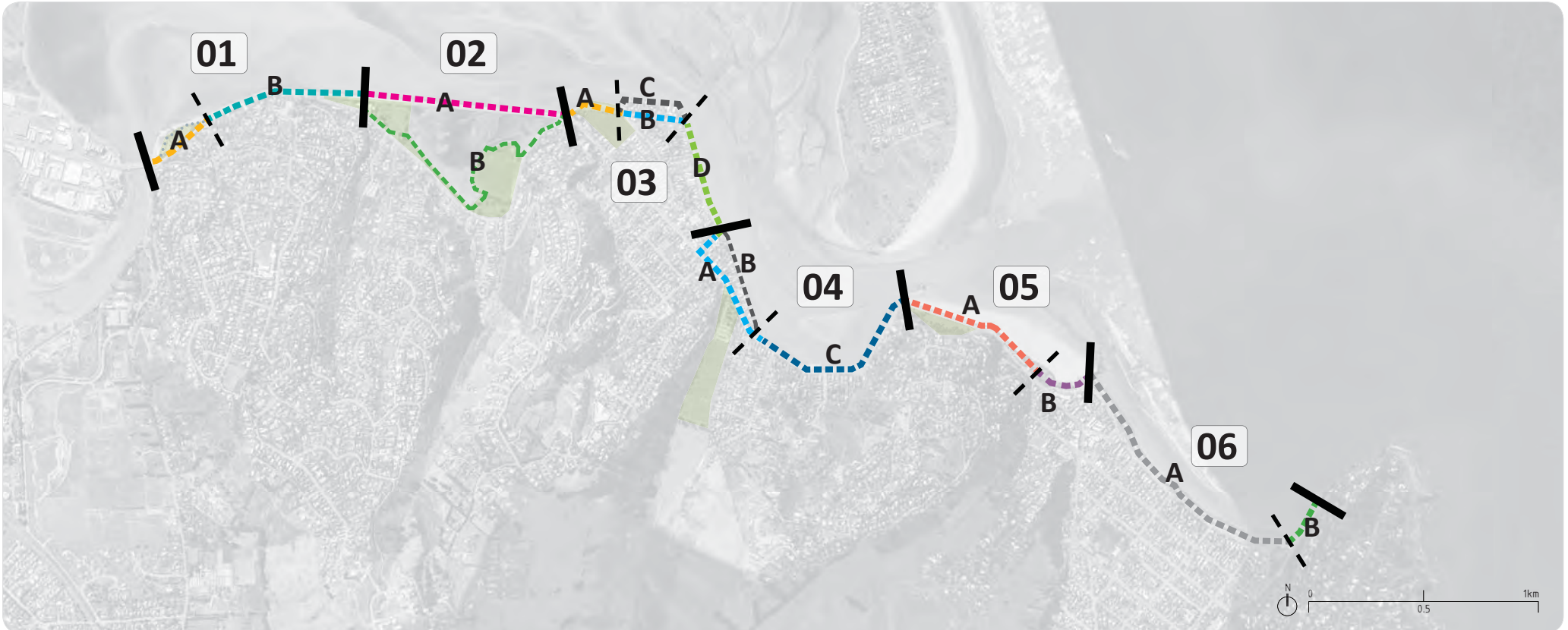


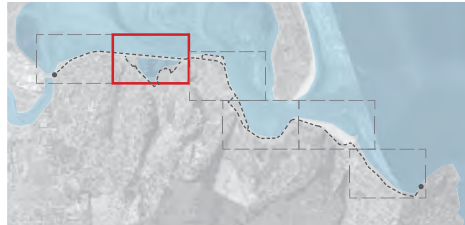
Figure 4.1 - Costing key plan.

01. MT PLEASANT : 3-Laning



01A - Scott Park, path to road edge	\$218,150.38
01B - Mt Pleasant, adjacent 3-laning	\$712,763.53
01 Total :	\$930,913.91

02. MT PLEASANT : Causeway



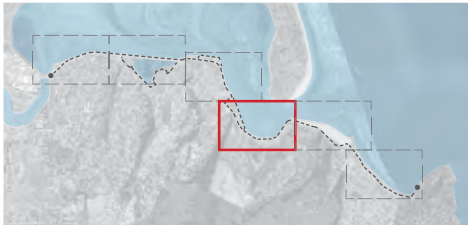
02A - Causeway	\$1,751,083.70
02B - McCormacks Bay	\$850,454.13
02 Total :	\$2,601,537.83

03. REDCLIFFS : Beachville Road



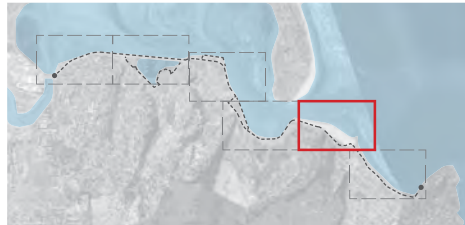
03A - Te Rae Kura Park	\$2,588,444.22
03B - On Beachville Road	\$303,294.64
03C - Beachville Rd: Coastal Boardwalk	\$3,861,195.82
03D - Beachville Sea Wall	\$1,062,387.19
03 Total :	\$7,815,321.87

04. REDCLIFFS : Moncks Bay



04A - Beachville / Main Road	\$483,911.92
04B - Main Rd: Coastal Boardwalk	\$4,509,415.32
04C - Moncks Bay	\$2,881,789.73
04 Total :	\$7,875,116.97

05. SUMNER : Shag Rock to Cave Rock



05A - Rapanui / Shag Rock Reserve	\$3,839,506.85
05B - Memorial Walk	\$1,849,794.31
05 Total :	\$5,689,301.16

06. SUMNER : Scarborough



06A - Scarborough Beach	\$520,872.00
03B - On Beachville Road	\$688,947.21
06 Total :	\$1,209,819.21

4.2 COSTED SCOPE

The following plans highlight the extent of the works that are costed for the proposed coastal pathway. The areas are highlighted in yellow and outlined red dashed. The extent of sub-areas (1a,1b, etc.) are indicated.

* **REBUILD WORKS** - by SCIRT / others:
All works to carriageway, new rip-rap edge and associated reclamation and stabilisation is by others.

Relevant Plan: SCIRT: Main Rd 3 Lining - Scheme Design Option 1 [Sheets 1-7], No. A 28.09.11. [digital file: 3390292-060-C-100-C-107.dwg]. Received 18th October, 2012.



Figure 4.2 - Mt Pleasant: 3-laning plan with areas of costed works identified.



Figure 4.4 - Redcliffs: Beachville Road plan with areas of costed works identified.



Figure 4.5 - Redcliffs: Moncks Bay plan with areas of costed works identified.



Figure 4.6 - Sumner: Shag Rock to Cave Rock plan with areas of costed works identified.



Figure 4.7- Summer: Scarborough plan with areas of costed works identified.

4.3 NEXT STEPS

To ensure momentum in this project is maintained, the immediate short-term actions are recommended:

- CCC staff adopt Coastal Pathway proposal concepts for use within CCC planning processes;
- CPG and CCC agree to utilise report material for ongoing consultation and project promotion;
- Further public consultation takes place to establish priorities;
- Further liaison with SCIRT;
- Briefing for further investigations and studies;
- Feasibility and costings are peer-reviewed; and.
- CCC and CPG investigate funding options.

Further Issues to consider

- Additional investigations required (e.g. geotechnical, planning);
- Further design development of strategies (materiality, wayfinding, interpretation, ecology, traffic / parking);
- Further opportunity for more detailed consultation; and
- Integration with other infrastructure/planning projects.

Various aspects of design development and detailing will be subject to more detailed feasibility designs / options and community consultation.

Phasing and Coordination

The proposed Coastal Pathway will be realised through a phased process of development and implementation.

The first parts of the proposed pathway to be developed further will necessarily be those that require coordination with current or imminent rebuild projects, which are:

- *The Ferrymead Bridge replacement*
- *Main Road 3-laning works*
- *The Causeway rebuild*
- *Beachville Road Seawall*

These rebuild projects correspond broadly with the first three proposed pathway plans as illustrated in this report: Mt Pleasant: 3-laning, Mt Pleasant: Causeway, and Redcliffs: Beachville Road.

Other anticipated rebuild works for which detail is not currently available but will potentially effect the proposed Coastal Pathway design, include:

- *Main Road alignment around Moa Bone Cave*
- *Main Road alignment around Shag Rock Reserve / Peacocks Gallop*

For developed pathway proposals coordination also needs to continue with:

- *The Sumner Village Centre Master Plan*
- *The Ferry Road / Main Road Master Plan*
- *The Christchurch Transport Strategic Plan*
- *The Estuary Edge Master Plan*

Thorough coordination between all plans and rebuild projects hold opportunities for increased efficiencies and, ultimately, improved outcomes.

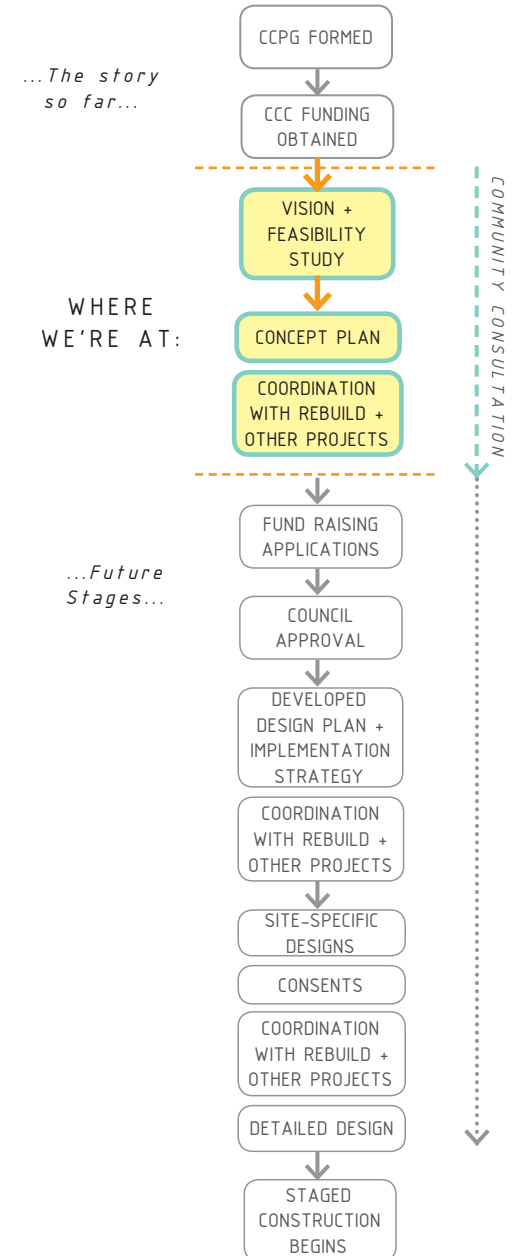


Figure 4.2 - Overview of proposed pathway development process.

5. OUTCOMES

These outcomes describe those anticipated effects associated directly with the Coastal Pathway proposal. It does not assess the impact of SCIRT proposals to which parts of the proposed pathway design are adapted.

1. Net Ecological Gain for the Estuary

- Declamation at Redcliffs offsets reclamation by SCIRT. SCIRT 3-laning and causeway works will entail some reclamation. This is not part of the Coastal Pathway proposal, however it is anticipated that these works will be sufficiently offset in physical area by the amount of declamation in the Redcliffs / Te Rae Kura Park that is proposed as part of the coastal pathway development.
- Habitat can be enhanced by providing a diverse rocky shore habitat and planting within the rip-rap wall. Planting in the rip-rap can enhance habitat and increase indigenous vegetation along the estuary edge.
- Stormwater treatment swales can improve the quality of discharges into the estuary, which may have benefits for estuary and ecological health.
- Increased awareness of ecological values can be promoted through treatment of coastal edges, access to ecological amenities - e.g. improved path around McCormacks Bay - stormwater treatment, dune walkway and associated interpretation. This is expected to have indirect long-term benefits to ecological health.

2. Net Economic Gain for the City

- It is essential that tourists have access to 'free' local recreation activities in well-designed and developed settings if they are to have genuine high-quality experiences and recommend a destination as a 'must see' location. The Christchurch Coastal Pathway fulfils the need for an accessible activity-based experience of the estuary and coast. The level of interest from tourists will directly correlate with the quality of the design, development and delivery of the pathway.
- Walking, cycling and sight-seeing are key domestic and international tourism activities in all districts in New Zealand. The infrastructure which underpins walking, cycling and sight-seeing will also underpin the majority of domestic and international tourism expenditure in Christchurch, and all sectors – accommodation, transport, food and entertainment – depend on the ability of the city to attract visitors for high quality experiences and to keep them in the city for longer (by giving them more to do). The coastal pathway will become a key part of Christchurch tourism marketing for national and international tourism and an important reason for longer stays in the region.
- New Plymouth, with a city population of approximately 53,000, recorded 427,000 users in the year ended June 2012 on its Coastal Walkway, with a peak of more than 51,000 users in January 2012. Considering New Plymouth's experience, the coastal pathway's target for annual activity should be no fewer than 1 million users p.a. (including domestic, international and local traffic). Activity may well be far in excess of this. Even low levels of local expenditure from this market will be an important contribution to the regional economy.
- There is no marginal cost to each use of the walkway.

3. Net Cultural Gain for Ngāi Tahu

- The proposed pathway recognises the place and values of Ngāi Tahu in this landscape in the past, now and into the future.
- All relevant areas will be referred to by both their Māori and European names.
- The proposed Redcliffs / Te Rae Kura 'estuary park' could more explicitly recognise Ngāi Tahu's presence through, for example, a "taonga house" that could contain some of the important artefacts from the area, such as at Moa Bone Point Cave / Te Ana-O-Hineraki.
- Edge conditions to the estuary will improve ecological values and health.

4. Net Social Gain for the Community

- Coastal pathway projects elsewhere confirm that this project can play a key role in creating a stronger and more vibrant community.
- The Coastal Pathway proposal provides better linkages between communities. The pathway can create new and enhance existing spaces for social interaction. The proposed pathway will tie the community to key aspects of the environment.
- The proposed pathway will encourage learning and education opportunities.
- The pathway can contribute to a strong sense of community identity through a strong place identity.
- The pathway will become a commemoration of the community spirit that was uncovered after the shocking events of 2010 and 2011

5. *Net Recreational Gain*

- Sport New Zealand research indicates that walking is the most popular form of active recreation in New Zealand and in Canterbury. Over 65% of adults in the Canterbury West Coast Sports Trust region walk for recreation, and almost 30% cycle. This compares with just over 10% who play golf (the highest participation sport in Canterbury West Coast). Walking is particularly popular amongst women, with over 74% participating. Cycling is especially popular amongst men, with almost 36% participating. (all 2007/08 data).
- International research indicates that ‘activity friendly environments’ are critical to supporting participation in healthy outdoor activities. These are settings where residents and visitors are encouraged to be active because the environment is highly attractive. We are encouraged to be active because being out there is extremely pleasant – not just because we think we should be active for our health. The motivation presented by an attractive setting is possibly more important than worries about personal fitness levels, and participation is likely to be more enduring.
- Personal safety in recreation is a key issue, and perceptions of unsafe settings are a deterrent to participation. Busy recreation settings encourage more use through passive surveillance, and separation from vehicle traffic is vital if we are to increase participation in cycling, walking and other wheeled pursuits, such as scootering and skate boarding (these all occur on the New Plymouth Coastal Walkway with very low levels of conflict).
- The benefits of activity for physical, mental and community health are widely accepted..

- There is currently very poor provision of outdoor recreation opportunities for people with disabilities in the region, particularly within or near natural settings. The proposed coastal pathway, with its even and level surfaces, will represent a massive opportunity for people who rely on walking aids or who have mobility issues.
- Access for students travelling between home and school will vastly improve, as it will for residents commuting to work. This form of ‘incidental’ physical activity makes very important contributions to physical and mental health.
- The proposed coastal pathway has the potential to be the most significant and accessible outdoor recreation development in Canterbury, exceeding activity levels at, for example, Bottle Lake and potentially the cycle and walking tracks on the Port Hills.

6. *Net Gain in Public Access to the Coastal Margin*

- The public have access to all of the existing coastal margin, except for in front of the two separate sections of private properties (one along Beachville Rd, and the other along Main Road), but this access is currently of poor quality which limits use of the coastal margin. The proposed pathway significantly improves access to and along this coastal margin. Diverse opportunities to access the water itself are integrated along the proposed pathway.
- Enabling such public access along the entire coastal margin is a key principle of the RMA and should be delivered as part of this concept plan.

7. *Explicit recognition of the loss that has been suffered and the legacy this provides for future generations*

- The plan incorporates the potential to remember the local people that lost their lives in the earthquakes or were seriously injured, lost their houses or businesses, as well as heroes such as the members of the local fire brigade, council workers, etc. It must be remembered that one of the main reasons for the proposed pathway is a legacy of community spirit that arose out of the earthquakes, and the recovery.

8. *No loss of private property where it exists above Mean High Water Springs & no loss of access to the water*

- A coastal route in front of the Beachville Road and Main Road private properties will not encroach on privately owned land. To the extent that these have existing *legitimate* boat ramps and other water access structures, they can potentially be integrated on the other side of the pathway as part of developed design.

APPENDIX 1 - SITE PHOTOGRAPHS

Selection of site photographs indicating various edge conditions along anticipated Coastal Pathway route.



Mt Pleasant - Scott Park



Redcliffs - Beachville Rd seawall



Redcliffs - Moncks Bay



Sumner - Clifton dunes



Mt Pleasant - Causeway



Redcliffs - Private edge



Redcliffs - Moncks Bay East



Sumner - Memorial walk



Redcliffs - Boat ramp carpark



Redcliffs - Main Rd shops



Sumner - Shag Rock Reserve



Sumner - Scarborough promenade

HISTORY

Pre-European

The estuary, Ihutai, was an immensely significant site to early Māori. It was a major site of food and resource gathering - mahinga kai - and also served as a hub for regional trade between south island iwi. There were a number of settlements by early Māori and the caves were also significantly utilised landmarks.

The first Māori in the Christchurch area were the Waitaha. They were followed in the 1500s and assimilated by Ngāti Mamoe, who came south from the North Island. In the mid-1700s Ngāi Tahu arrived and after a time assumed customary authority over the Canterbury region and the broader South Island.

Ensuing years saw Ngāi Tahu challenged and diminished by wars - particularly with the rangatira ('chief'), Te Rauparaha - and later epidemics of measles and influenza that were brought by European settlers. Relationships with the new arrivals were initially profitable and amicable, however the continued migration of Europeans saw continued loss of ancestral lands and ongoing shift in power.

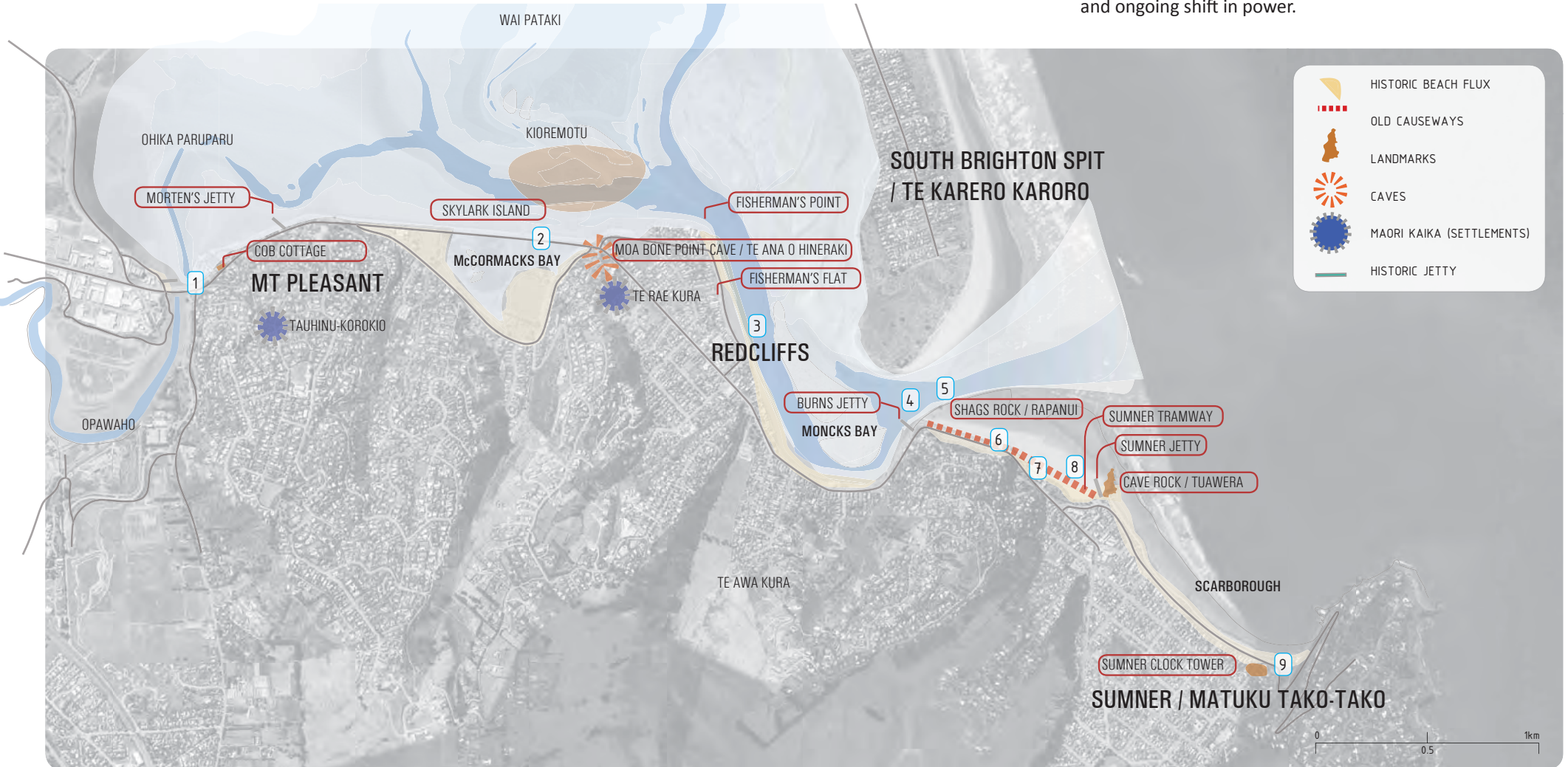


Figure A2.1 - Diagram of selected historical and cultural sites along the proposed Coastal Pathway.



Figure A2.2 - Trails and place names in Ngāi Tahu times. Adapted from Christchurch City Council, 'Christchurch before 1850 - The First Peoples'.

European

The estuary and its river connections were also important to early European settlers for trade and commerce. Goods were brought via the estuary to the Heathcote River docks. The waterways' industrial uses also meant the estuary served as a disposal site for various pollutants, much of which arrived via the Avon and Heathcote Rivers, which removed food-gathering practices. The associated siltation removed the rivers' transport uses by 1900. The estuary has a long history as a recreational resource for rowing and yachting. A particularly notable 'recreational infrastructure' of the past was the coastal tramway which connected Sumner Beach with the city. It resulted in some of the major reclamations of the early 20th century that had significant impacts on the estuary's hydrological patterns, though helped to galvanise a popular tourist destination. The 2010-2011 earthquakes are an important event in the area's recent history.



'Rakawakaputa, Port Cooper Plains', 1848, William Fox. (SOURCED FROM CCC, 'Christchurch Before 1850 - The First Peoples'.)

Photographs

The historic photographs present a sample the environment and life along the pathway route in the late 19th and early-mid 20th centuries. They identify some major changes that have taken place along the route, such as the tramway reclamations (2,6) and the pre-modification condition of Scarborough Beach (9).



FERRYMEAD BRIDGE - DURING WW1 (SOURCE: 'THE ESTUARY, WHERE OUR RIVERS MEET THE SEA: DAVID BARR)



MONCK'S BAY - 1882 (SOURCE: 'THE ESTUARY, WHERE OUR RIVERS MEET THE SEA: J. SPILLER, PILGRIMS ASSOCIATION COLLECTION')



CLIFTON: THE ROAD BELOW - 1907 (SOURCE: 'THE ESTUARY, WHERE OUR RIVERS MEET THE SEA: CANTERBURY MUSEUM')



MCCORMACKS BAY: THE CAUSEWAY - EARLY 1900S (SOURCE: 'THE ESTUARY, WHERE OUR RIVERS MEET THE SEA: A. ALDERSLEY; CANTERBURY MUSEUM')



SHAG ROCK: THE MOUTH OF THE ESTUARY - 1900 (SOURCE: 'THE ESTUARY, WHERE OUR RIVERS MEET THE SEA: J.J. KINSEY; CANTERBURY MUSEUM')



SUMNER BEACH - CIRCA 1910 (SOURCE: TIMEFRAMES, TAKEN BY WILLIAM A. PRICE)



FISHERMAN'S FLAT + MONCK'S BAY - 1800S (SOURCE: 'THE ESTUARY, WHERE OUR RIVERS MEET THE SEA: CANTERBURY MUSEUM')



CLIFTON: TRAM CAUSEWAY (SOURCE: 'THE ESTUARY, WHERE OUR RIVERS MEET THE SEA: CANTERBURY MUSEUM')



SCARBOROUGH - EARLY PHOTO (SOURCE: 'THE ESTUARY, WHERE OUR RIVERS MEET THE SEA: CANTERBURY MUSEUM')

GEOLOGY + ECOSYSTEMS

The 2010-2011 earthquakes revealed previously unknown fault lines in Christchurch. These include a 14km long fault along the northern Port Hills, which was the origin of the February 2011 earthquake¹. Up-lift ruptures are still regular occurrences in the area. The pathway site is also significant and unique for being at the juncture of the Port Hills, two rivers and the ocean - the meeting of geological, alluvial and marine systems. This resulted in a diverse range of historic ecosystems that surround the pathway site. The estuary once had a richer diversity of natural edge environments, such as dunelands and saltmarshes.

1 See GNS: <http://www.gns.cri.nz/Home/Our-Science/Natural-Hazards/Recent-Events/Canterbury-quake/Hidden-fault>

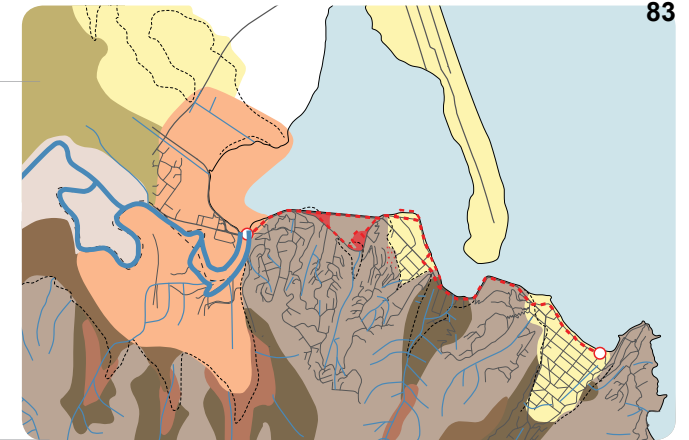


Figure A2.4 - Geology, soils. Adapted from resources.ccc.govt.nz (soils + geomorphology of Chch)

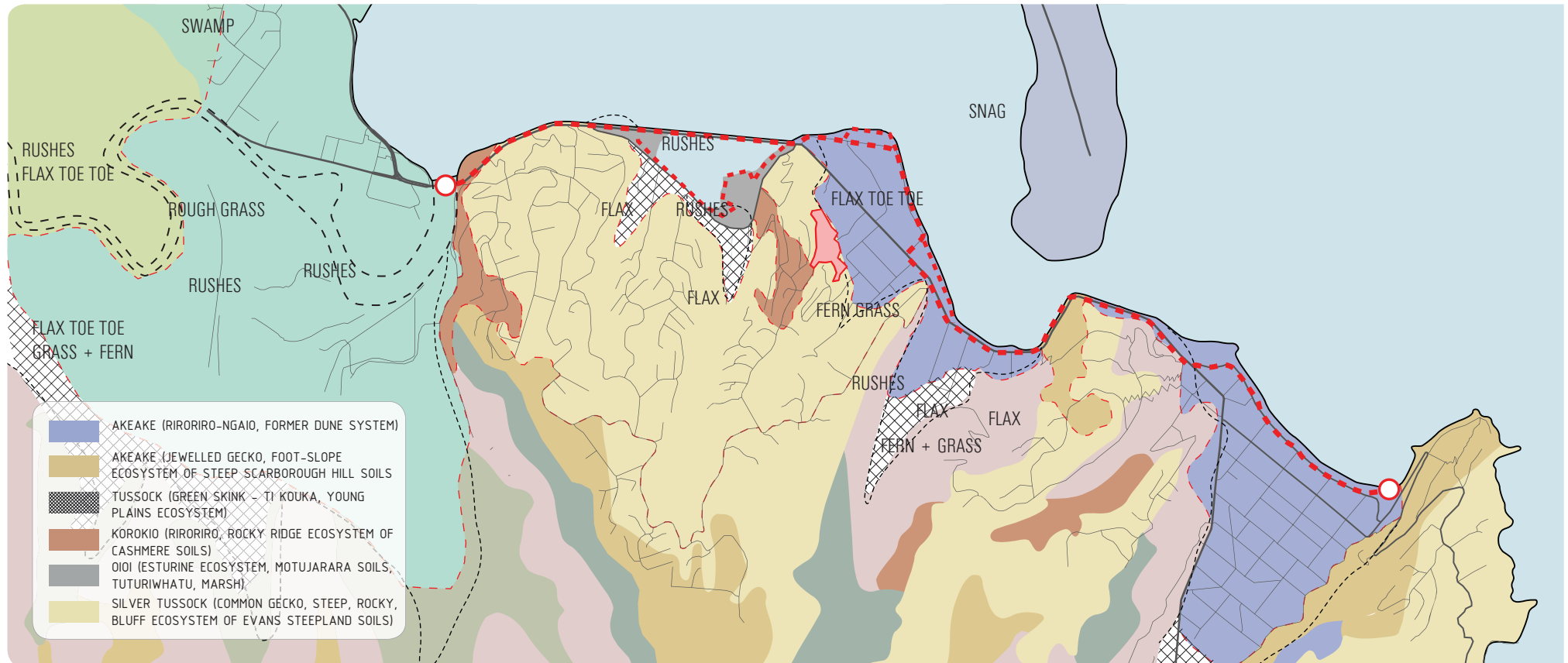


Figure A2.3 - Historic ecosystems. Adapted from Lucas Associates, *Swamps and Vegetation Cover 1856*.

HYDROLOGY

The site is a highly complex hydrological system. Two rivers, four 'city drains' and numerous stormwater outlets discharge into the estuary. A sewerage treatment plant and oxidation ponds occupy much of the estuary's northern edge though these no longer discharge into the water body as it has been piped directly to sea since 2010.

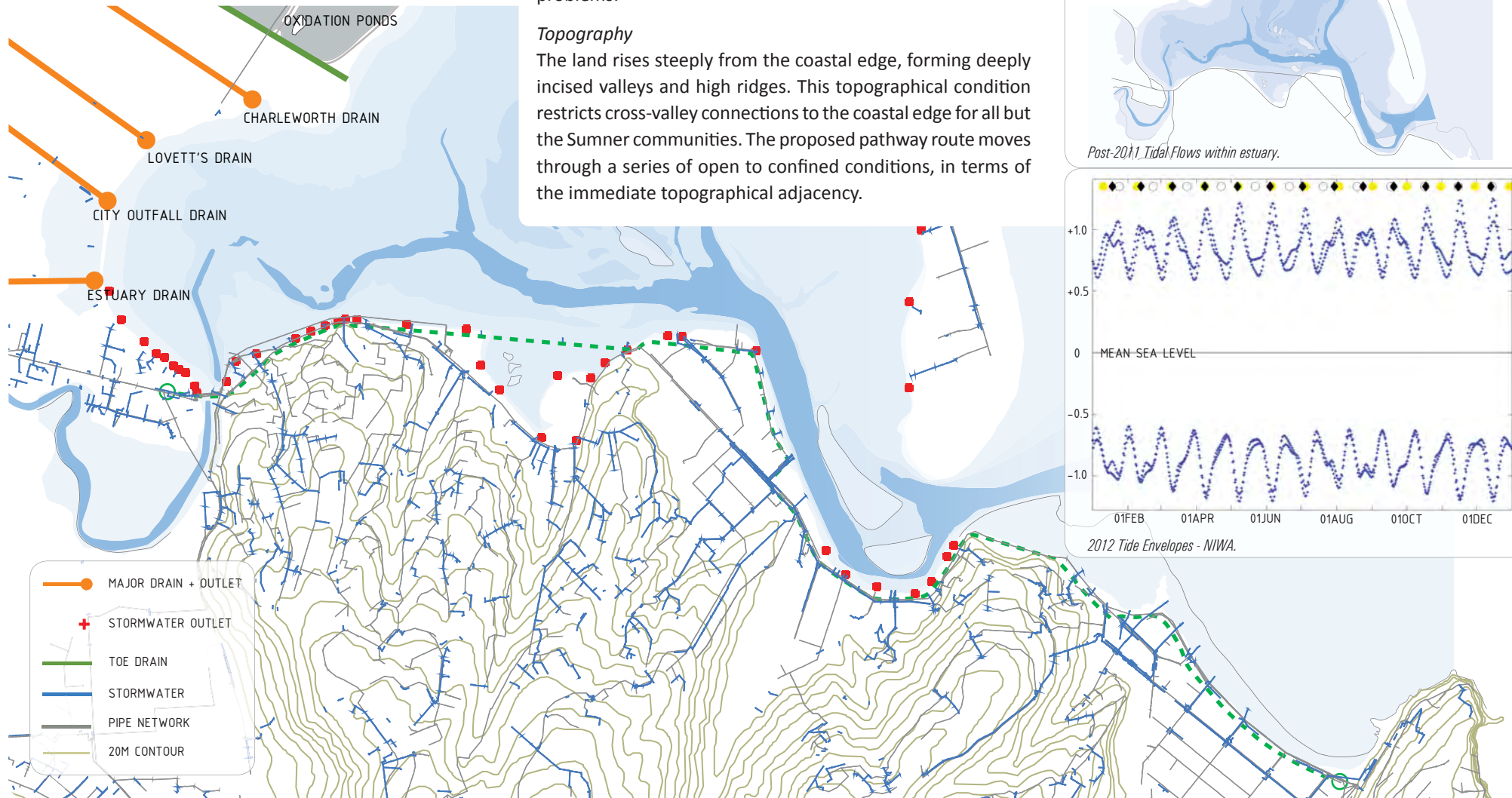


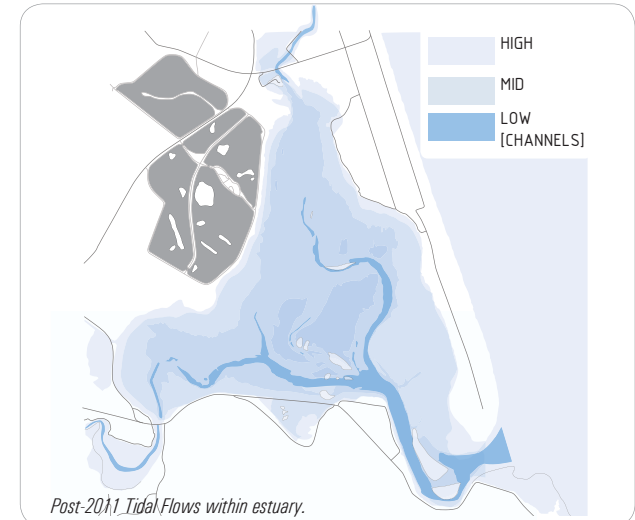
Figure A2.5 - Diagram of hydrological systems.

Tidal

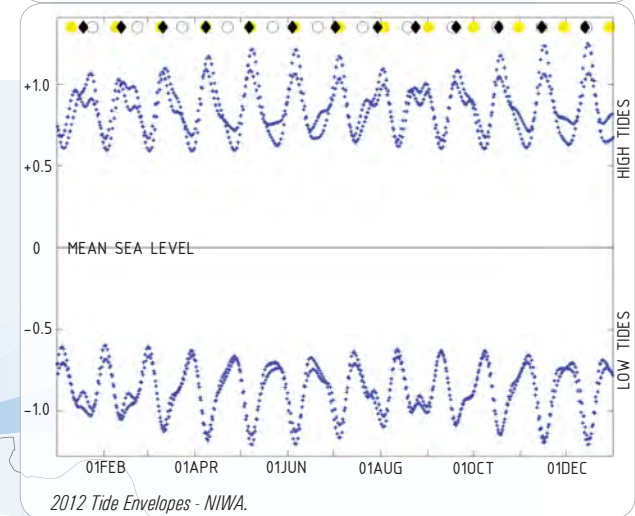
The 2010-2011 earthquakes had significant impact on the tidal patterns of the estuary. They notably resulted in an approximate 0.5 metre uplift along the southern edge of the estuary. The estuary is reshaping in response to these changes, which has effected habitat and erosion, for example. It has been observed that contaminated sediment has in some places been buried by uprisings, and is alleviating some aquatic weed problems.

Topography

The land rises steeply from the coastal edge, forming deeply incised valleys and high ridges. This topographical condition restricts cross-valley connections to the coastal edge for all but the Sumner communities. The proposed pathway route moves through a series of open to confined conditions, in terms of the immediate topographical adjacency.



Post-2011 Tidal Flows within estuary.



2012 Tide Envelopes - NIWA.

WILDLIFE

The Avon-Heathcote estuary / Te Ihutai is a highly significant habitat for a diversity of bird life and marine species. It is also culturally very significant as a major historic source of shellfish gathering and trade to Ngāi tahu. Changes to feeding and roosting patterns are still being observed due to the significant geomorphic changes to the environment. Over 100 bird species have been reported at the estuary¹ and it is an important habitat, both nationally and internationally, for migratory birds – most notably for the hundreds of godwits that stay for the summer months before returning to Alaska.

For a detailed guide to the birdlife of the estuary, refer to SJ Owen (ed), *The Estuary - Where Our Rivers Meet the Sea*, 1992.

1 McMurtrie S. and Kennedy S, Exploring an Estuary - A Field Guide to the Avon-Heathcote Estuary/Ihutai, 2012, p. 4.

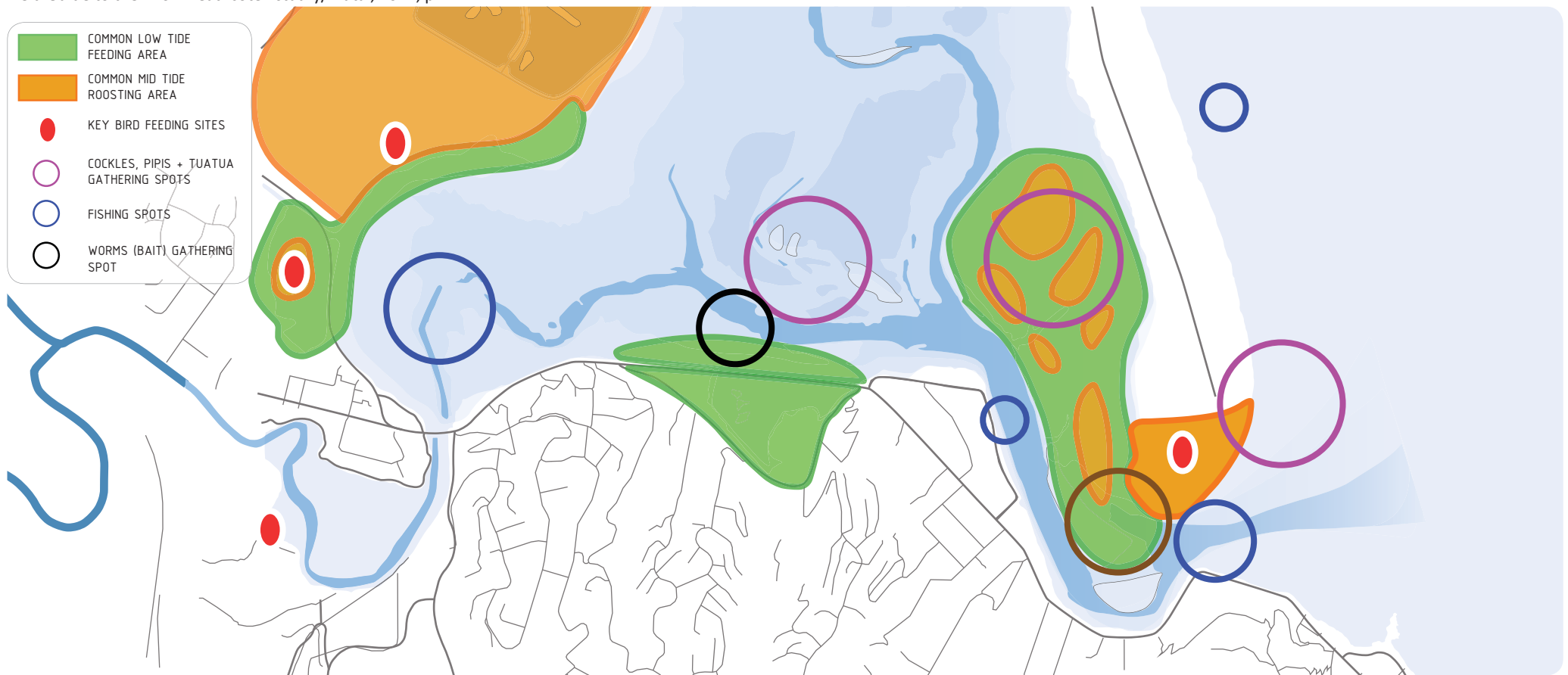


Figure A2.6 - Diagram of predominant wildlife patterns.

URBAN CONNECTIONS

In the broadscale, there are limited ways to reach the pathway neighbourhoods. Pinched between the Port Hills and estuary, they are reached almost exclusively via the Ferrymead bridge and then Main Rd. From the bridge the Pathway is primarily connected to the CBD along Ferry Rd and, while other routes including the ring road converge around Ferrymead, the bridge remains the essential pinch point. The neighbourhoods require Main Rd to be an effective route and also, as the only means of access, one with good provision for a range of transport modes. Main Road also forms part of a freight link to Lyttelton port and is used for over-dimension and sometimes dangerous goods. It was extensively damaged in the earthquakes which has had significant impact on local communities and the port link.

In the Christchurch Transport Strategic Plan 2012 the proposed pathway route is identified as a major cycleway, recreational walkway and core public transport route. The proposed Coastal Pathway has the capacity to fully achieve the first two of these strategic objectives, and to contribute to creating an effective core public transport route. In this way the proposed pathway can not only connect, provide amenity and options for local communities, but contribute to the city's overall infrastructural objectives and resilience.

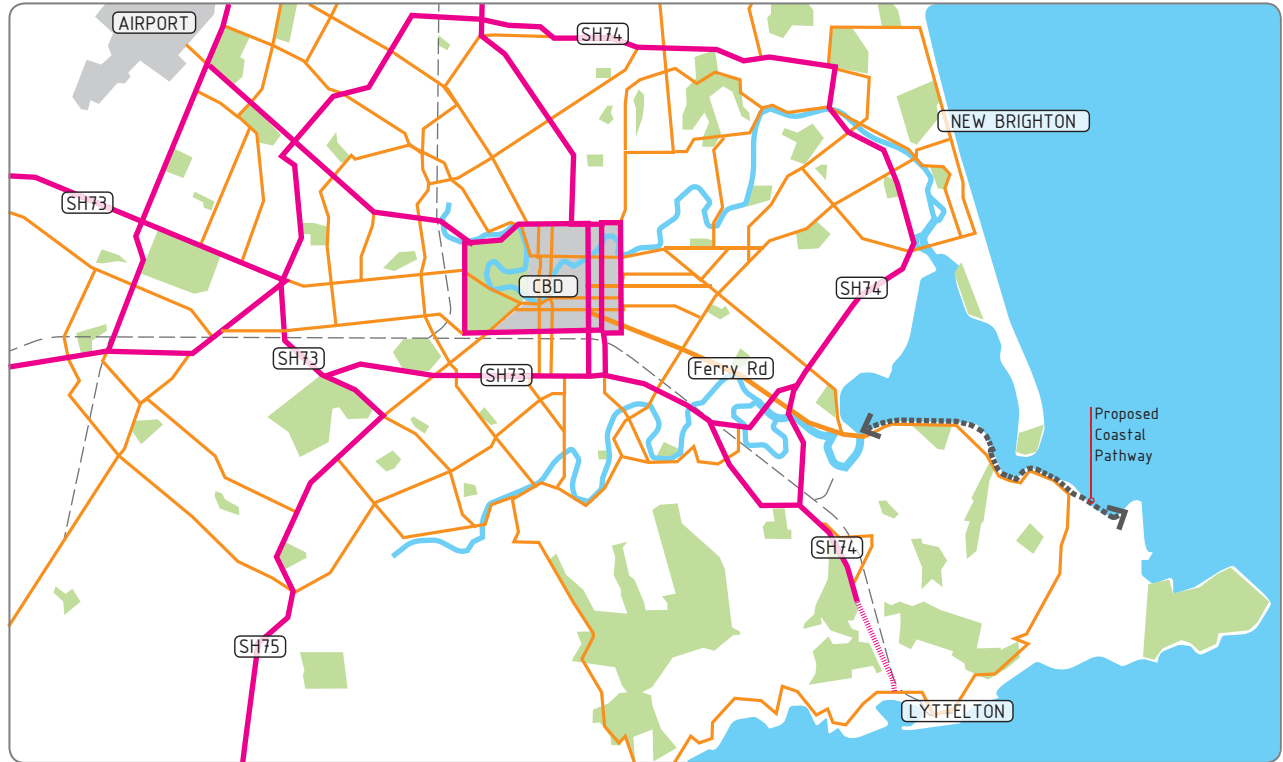


Figure A2.7 - Diagram of broader Christchurch with primary and secondary arterial roads, rail lines and green reserves indicated.



CCC diagram of cycle network. Major cycleways indicated bold. Source: CCC, Christchurch Transport Strategic Plan, June 2012.



CCC diagram of long-term vision for walking. Major recreational routes indicated dashed. Source: CCC, Christchurch Transport Strategic Plan, June 2012.



CCC diagram of public transport. Core routes indicated bold. Source: CCC, Christchurch Transport Strategic Plan, June 2012.

LOCAL CONNECTIONS

A safe pathway is so desired largely because of the high number of walkers/cyclists living near the hills and beaches, but also because a relatively high proportion of serious crashes along Main Road in recent years have involved cyclists. Such a pathway would not only be a great metropolitan and tourism asset for Christchurch, offering access from city to beaches and hills, but would also let workers from the coastal communities commute safely into the new cycle-friendly CBD.

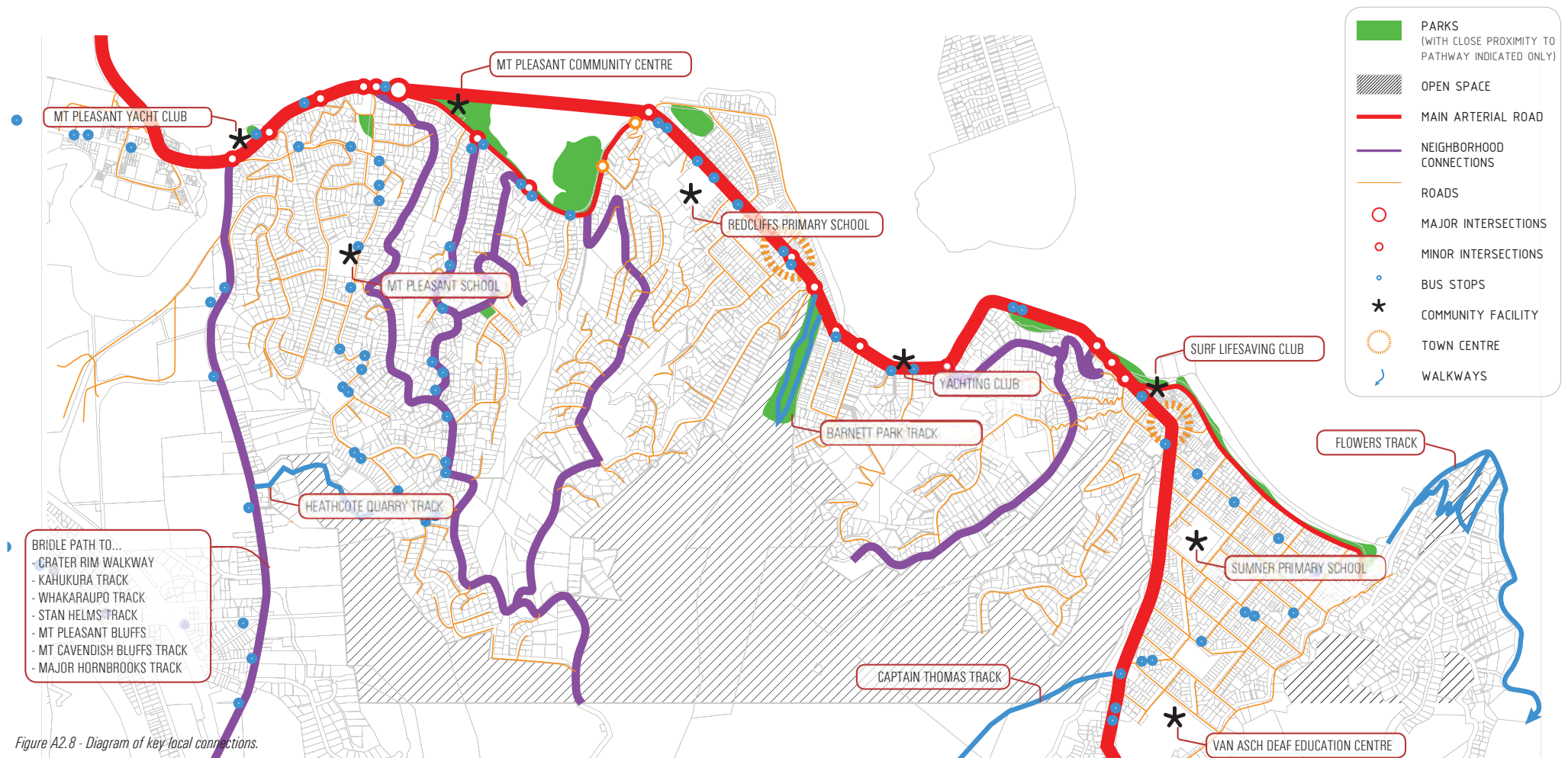


Figure A2.8 - Diagram of key local connections.

RECREATION

The below diagram illustrates some of the main recreation activities associated with various parts of the pathway. It is not an exhaustive survey of everything that takes place everywhere along the route. It does however identify key trends, such as the primacy of water-craft recreation taking place adjacent to Scott Park in Mt Pleasant; that popular fishing spots are located in Redcliffs at Beachville Rd and Moncks Bay; and that surfing and swimming takes place at and near Sumner Beach. The proposed pathway route passes significant reserves and sports amenities at McCormacks Bay, Redcliffs Park and Barnett Park, as well as a number of smaller reserves, such as Peacocks

Gallop that are used for more passive forms of recreation, like dog-walking and picnicing. Cycling and walking are already popular along parts of the proposed route, such as McCormacks Bay for walkers – and bird watchers – and there are numerous connections into the Port Hills for more serious tramping, although many of these tracks have been closed as a result of the earthquakes.

There are extensive opportunities for greater recreational use on the water edge if access is organised, which would help to address the loss of opportunities on the hills.

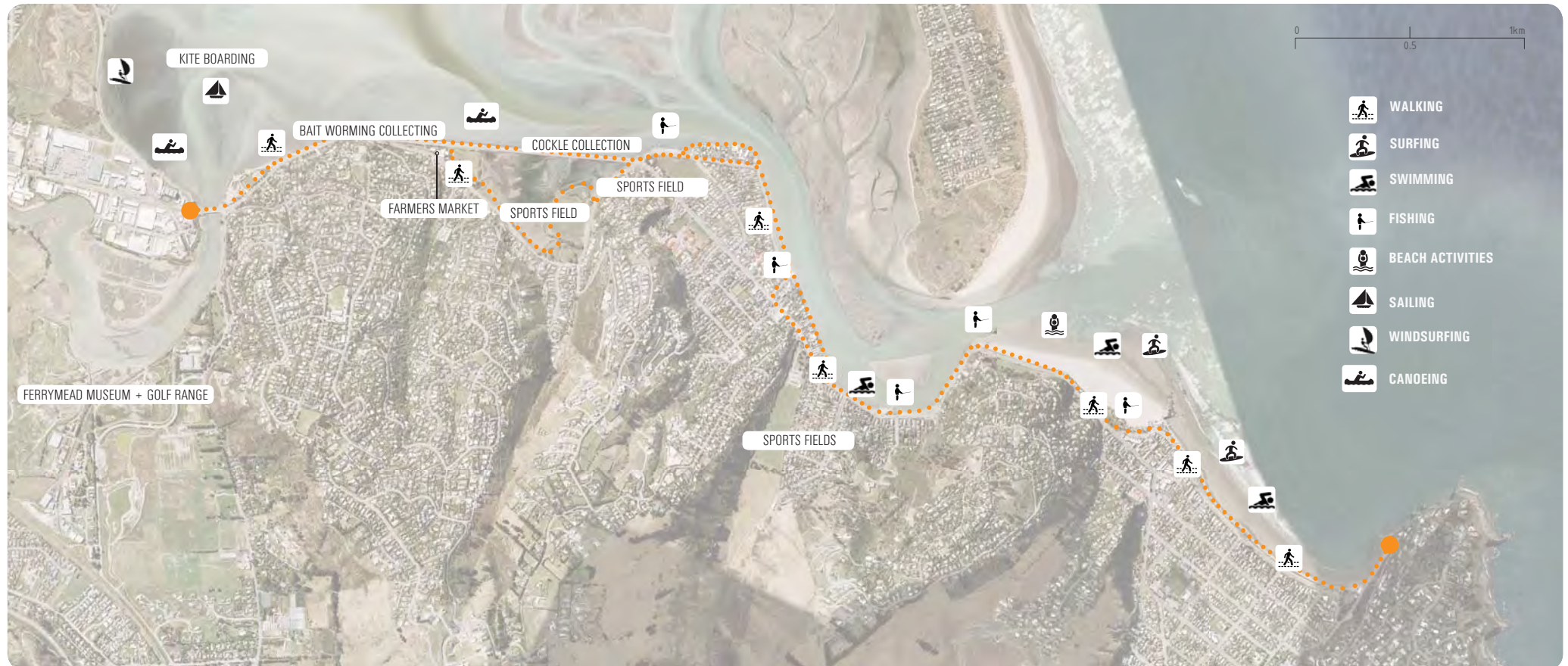


Figure A2.9 - Key recreation locations.

SUMMARY TABLE OF CONSULTATION UNDERTAKEN

	DATE	VENUE	DURATION	WITH	DESCRIPTION / OUTCOMES
COMMUNITY	18 Sept 2012, 4pm	Mt Pleasant Community Centre	2 hours	Community - Mt Pleasant	Inception, ideas and suggestions from public
	18 Sept 2012, 7:15 pm	Sumner New school hall	2 hours	Community - Sumner	Inception, ideas and suggestions from public
	19 Sept 2012, 7:15 pm	Redcliffs Bowling Club	2 hours	Community - Redcliffs	Inception, ideas and suggestions from public
	9 Oct 2012, 4:00pm	Mt Pleasant Yacht Club	2 hours	Community - Mt Pleasant	Feedback on draft vision and design options
	9 Oct 2012, 7:15pm	Redcliffs Bowling Club	2 hours	Community - Redcliffs	Feedback on draft vision and design options
	10 Oct 2012, 7:15pm	Sumner Old School Hall	2 hours	Community - Sumner	Feedback on draft vision and design options
	23 Oct 2012, 4:00pm	Mt Pleasant Yacht Club	2 hours	Community - Mt Pleasant	Feedback on refined vision and draft concept design
	23 Oct 2012, 7:15pm	Sumner New school hall	2 hours	Community - Sumner	Feedback on refined vision and draft concept design
	24 Oct 2012, 7:15pm	Redcliffs Bowling Club	2 hours	Community - Redcliffs	Feedback on refined vision and draft concept design
STAKEHOLDERS	5 Sept 2012, 10:00am	Christchurch City Council offices	3 hours	Christchurch City Council officers	Briefing, issues for ecology, recreation, traffic
	5 Sept 2012, 2:30pm	Christchurch City Council offices	3 hours	ECAN	Briefing, issues for ecology, recreation, traffic, consent
	18 Sept 2012, 10:00am	Christchurch City Council offices	3 hours	Christchurch City Council officers	Community presentation agenda
	18 Sept 2012, 12:30pm	Mt Pleasant Community Centre	1 hour	Kidsfirst	Values and aspirations
	18 Sept 2012, 2:00pm	Mt Pleasant Community Centre	1 hour	Mt Pleasant Residents Association	Values and aspirations
	19 Sept 2012, 1:30pm	Mt Pleasant Community Centre	1 hour	Christchurch Yacht Club	Values and aspirations
	19 Sept 2012, 2:30pm	Mt Pleasant Community Centre	1 hour	Redcliffs, Brookhaven, Sumner Residents Associations	Values and aspirations
	9 Oct 2012, 9:00am	Christchurch City Council offices	3 hours	Christchurch City Council officers	Community presentation agenda
	10 Oct 2012, 12:00pm	Mt Pleasant Community Centre	2 hours	Ihutai Trust	Values and aspirations
	10 Oct 2012, 2:00pm	Mt Pleasant Community Centre	2 hours	Canterbury University students	Usage patterns
	12 Oct 2012, 2:30pm	Christchurch City Council offices	1 hour	SCIRT	Integration of path and roadworks
	23 Oct 2012, 9:00am	Christchurch City Council offices	3 hours	Christchurch City Council officers	Community presentation agenda

SUMMARY OF COMMENTS AND SUGGESTIONS FROM CONSULTATION EVENT HELD AT REDCLIFFS BOWLING CLUB, TUES 19TH SEPT, 7.15PM - 9.15PM

THEMES:

NATURAL ENVIRONMENT

CULTURAL + HERITAGE

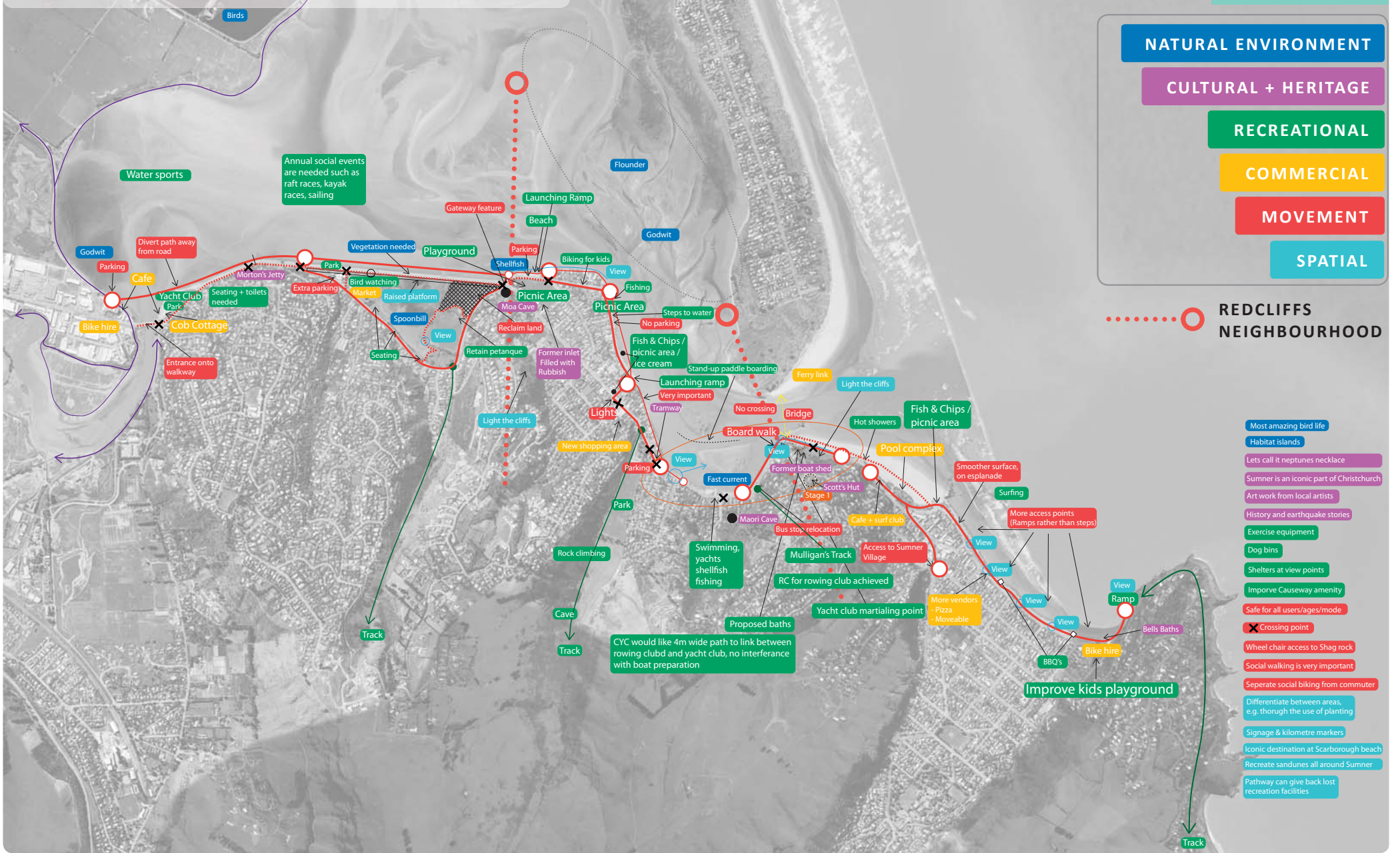
RECREATIONAL

COMMERCIAL

MOVEMENT

SPATIAL

.....○ REDCLIFFS NEIGHBOURHOOD



- Most amazing bird life
- Habitat islands
- Lets call it neptunes necklace
- Summer is an iconic part of Christchurch
- Art work from local artists
- History and earthquake stories
- Exercise equipment
- Dog bins
- Shelters at view points
- Improve Causeway amenity
- Safe for all users/ages/mode
- ✗ Crossing point
- Wheel chair access to Shag rock
- Social walking is very important
- Seperate social biking from commuter
- Differentiate between areas, e.g. thorough the use of planting
- Signage & kilometre markers
- Iconic destination at Scarborough beach
- Recreate sandunes all around Summer
- Pathway can give back lost recreation facilities

SUMMARY OF COMMENTS AND SUGGESTIONS FROM CONSULTATION EVENT HELD AT SUMNER NEW SCHOOL HALL, TUES 18TH SEPT, 7.15PM - 9.15PM

THEMES:

NATURAL ENVIRONMENT

CULTURAL + HERITAGE

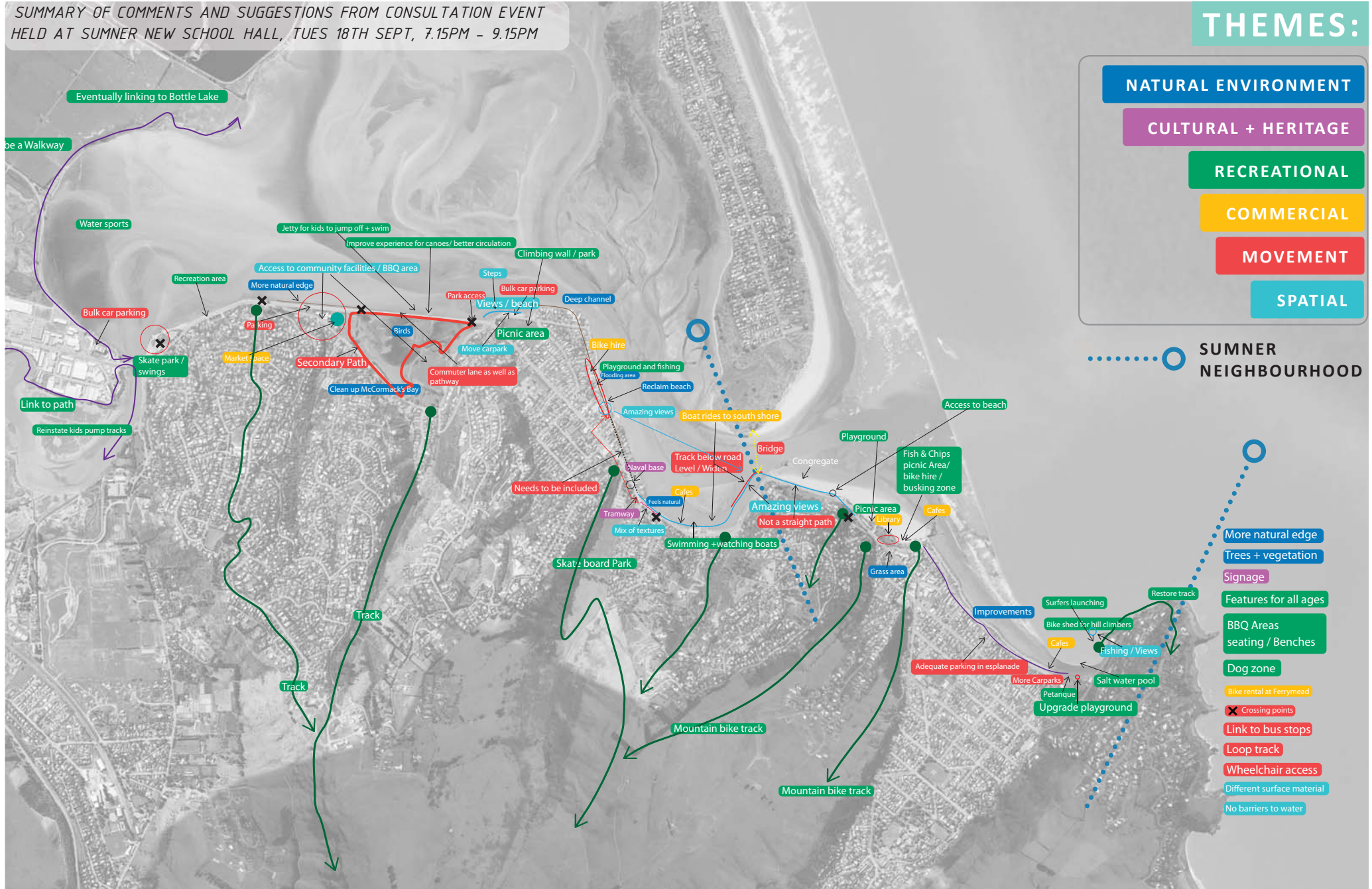
RECREATIONAL

COMMERCIAL

MOVEMENT

SPATIAL

SUMNER NEIGHBOURHOOD



- More natural edge
- Trees + vegetation
- Signage
- Features for all ages
- BBQ Areas seating / Benches
- Dog zone
- Bike rental at Ferrymead
- ✗ Crossing points
- Link to bus stops
- Loop track
- Wheelchair access
- Different surface material
- No barriers to water

APPENDIX 4 - SECTION OVERLAYS

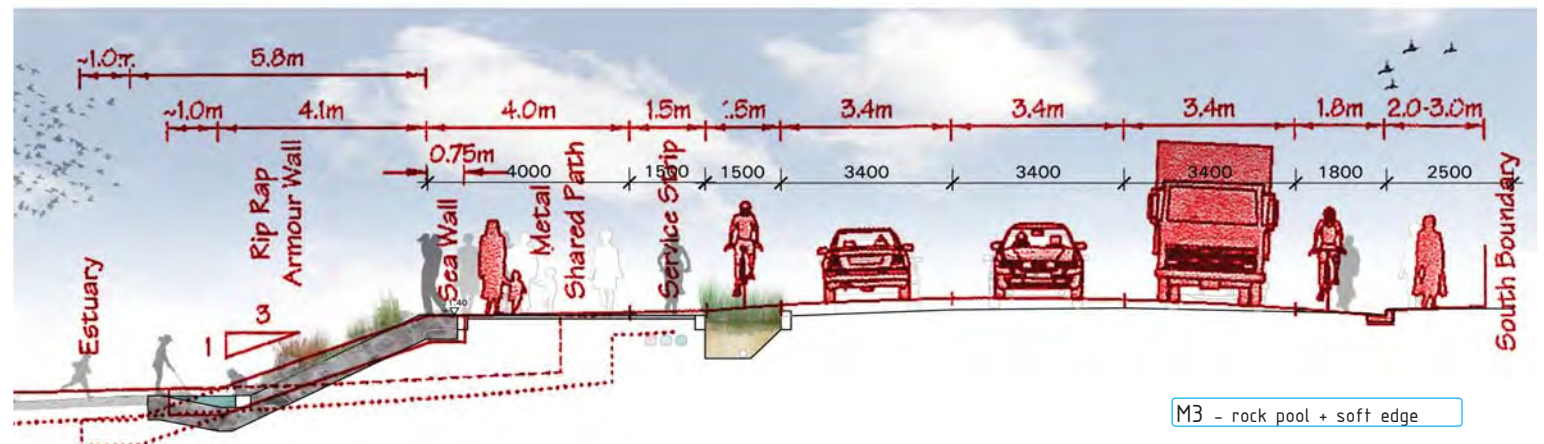
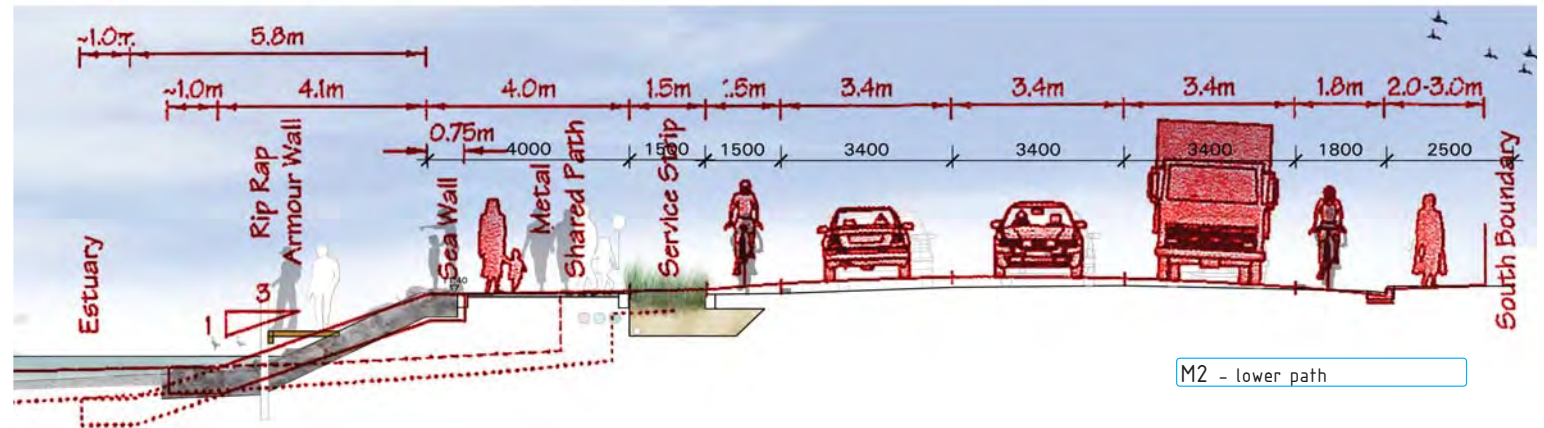
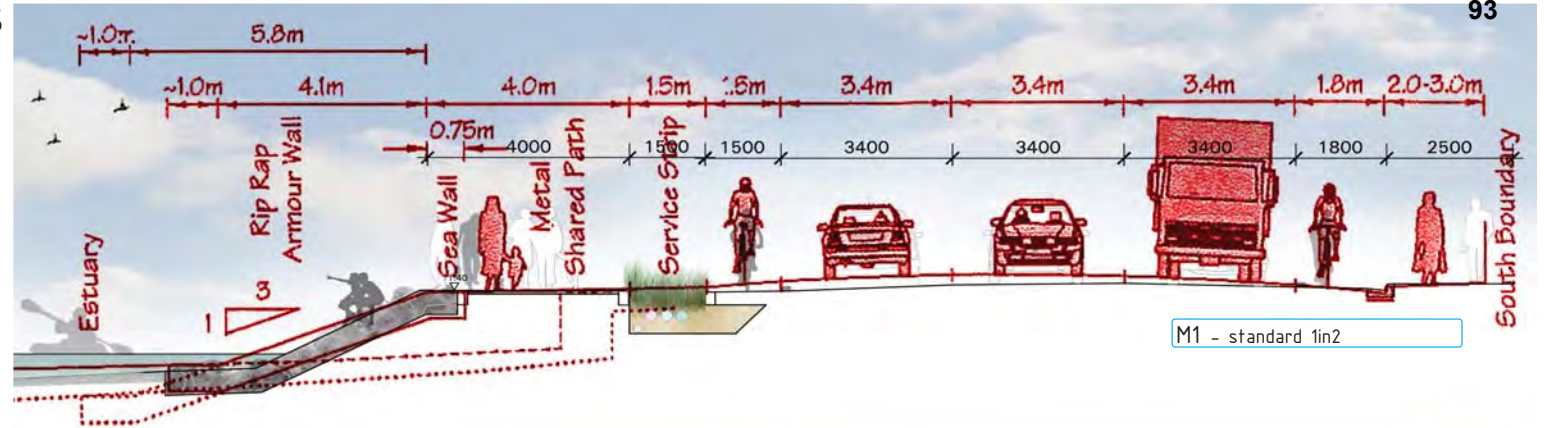
The proposed Coastal Pathway sections were adapted to existing SCIRT/CCC rebuild proposals wherever these were available.

TYPICAL 3-LANING AND CAUSEWAY SECTIONS WITH SCIRT/CCC BASE OVERLAID.

SCIRT section from:

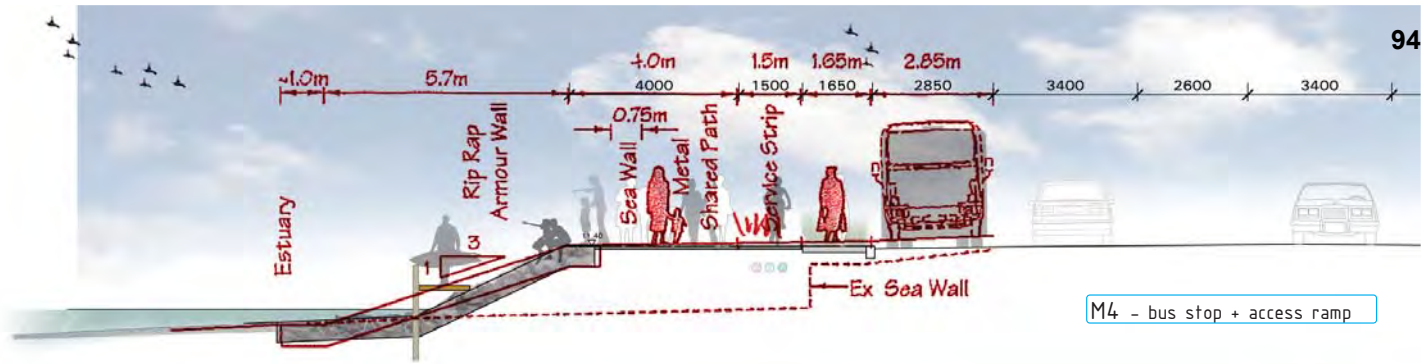
Main Road 3-Laning - Street Renewal Consultation Plan, Issue 2, 18/05/2012 - [TP323504]

- pdf-file only received October, 2012



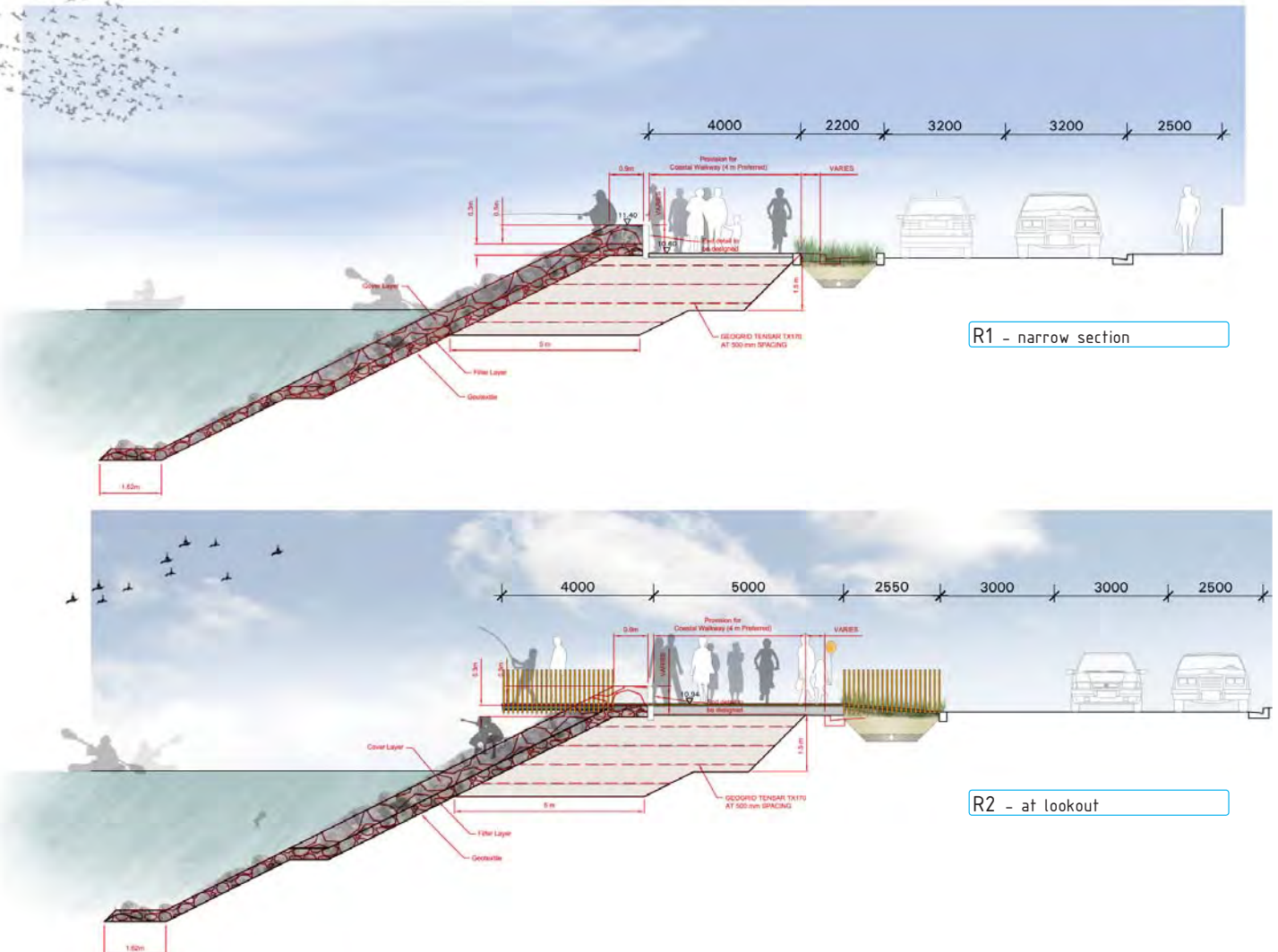
3-LANING BUS-STOP SECTIONS WITH SCIRT/CCC BASE OVERLAID.

SCIRT sections from:
 Main Road 3-Laning - Street Renewal Consultation Plan,
 Issue 2, 18/05/2012 [TP323504]
 - pdf-file only received October, 2012




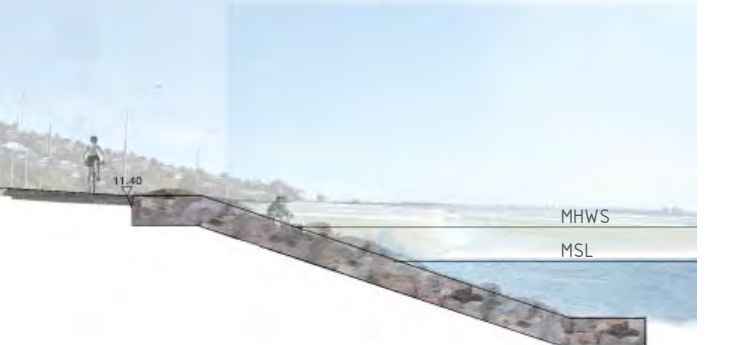
TYPICAL BEACHVILLE RD SEAWALL SECTIONS WITH SCIRT/CCC BASE OVERLAID.

SCIRT section from:
 Beachville Road and Celia Street - Eastern Sea Wall Typical
 Cross Section [RD4001]
 - CAD file 10824-DE-RD-DG-4001.dwg received 16/10/12



There are a number of design options for establishing the coastal pathway platform. Each has its own engineering, social, cultural, environmental and economic issues. The general considerations for the different approaches considered as part of the concept design are set out below:

VERTICAL RETAINING WALL	PROS	CONS
 <p>Potential Variations (not uniquely assessed within table)</p>	Maintains current edge alignment	Structural stability issues in seismic events
	No encroachment on estuary	Limited potential for biodiversity / landscaping
	Proximity to water	Does not provide an additional pathway width
		No direct water access

RIP-RAP REVETMENT	PROS	CONS
	Resilient structure	Intrudes into estuary bed
	Flexible gradient / footprint	Cultural sensitivity
	Ability to introduce biodiversity / landscaping	
	Potential for access to estuary	

RECLAMATION	PROS	CONS
	Enables connectivity through narrow sections	Intrusion into estuary
	Provides for additional pedestrian/cycle safety + amenity	Cultural sensitivity
	Cost effective in low tidal flow environments	Technically challenging and expensive in deep/swift water
	Potential for access to estuary	
	Ability to introduce biodiversity / landscaping features	

BOARDWALK	PROS	CONS
	Enables connectivity through narrow sections	Cost
	Less intrusive than reclamation	Maintenance issues
	Proximity to water	Limited scope for direct water access
	Capable of being located in deep/swift water	Limited potential for biodiversity / landscaping
	Low impact design options suitable for sand dunes	

INLAND ROUTE	PROS	CONS
	Ability to integrate with community facilities	Not adjacent to waters edge
	Alternative route options	Less separation from traffic and conflict with driveways
	Potentially more sheltered from elements	Limited width in road corridor
		Less direct (depending on route)