BEFORE THE GREATER WELLINGTON REGIONAL COUNCIL AND HUTT CITY COUNCIL
EASTERN BAYS SHARED PATH PROJECT

Under	the Resource Management Act 1991
In the matter	of applications for resource consents by Hutt City Council under section 88 of the Act, to carry out the Eastern Bays Shared Path Project

STATEMENT OF EVIDENCE OF JAMIE JOSEPH POVALL (PROJECT DESIGN) ON BEHALF OF THE APPLICANT

30 November 2020

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QUALIFICATIONS AND EXPERIENCE

1. My full name is **Jamie Joseph Povall**. I am the Director of Major Projects, Transportation New Zealand at Stantec.

2. My evidence is given on behalf of Hutt City Council ("**HCC**") in relation to its applications under section 88 of the Resource Management Act 1991 ("**RMA**") for resource consents for the Eastern Bays Shared Path Project ("**Project**").

3. I have the following qualifications and experience relevant to the evidence I shall give:

   (a) I hold a Certificate in Engineering (Civil) obtained from John Moores University (UK) in 2008 and a Master of Science degree in Transportation Engineering obtained from Salford University (UK) in 2006. I also hold an NZQA Diploma in Infrastructure Procurement achieved in 2018. In 2020 I completed the requirements for a Master of Engineering (Civil) degree from Canterbury University; however the degree has not yet been conferred.

   (b) I am a Chartered Engineer (UK), achieved in 2009, and a Chartered Professional Engineer (NZ), achieved in 2013. I am also a registered International Professional Engineer, obtained in 2017. My Chartered Professional Engineer (CPEng) Practice Area is *Lead designer of investigation and design of roading projects, road safety audits and traffic engineering analyses.*

   (c) I have 18 years of professional experience in the fields of transportation and civil engineering, including project investigation and design of infrastructure projects.

   (d) Between 2002 and 2011 I was employed by Liverpool City Council in England, a large metropolitan local authority, where my final role was Highways & Traffic Safety Services Manager, responsible for Capital Project Delivery (as well as other technical services).

   (e) Since 2011, I have been employed by Stantec New Zealand delivering civil infrastructure capital projects nationally for Waka Kotahi NZ Transport Agency ("**Waka Kotahi**") and various local authorities. From 2017, I have been the National Design Manager or Director for Stantec's largest civil transportation design projects nationally.

   (f) I have been the lead design engineer on multiple large infrastructure projects in New Zealand including:

      (i) State Highway 1 Johns Road four-laning and Greywacke Link Road in Christchurch;

(ii) the proposed Otaki to Levin expressway in the Wellington Region; and

(iii) the State Highway 58 Upgrade between the Hutt Valley and Porirua.

(g) I have also led, or been part of, the team that have delivered numerous cycleway or shared path projects including central Dunedin one-way pairs separated cycleways, Papanui Parallel Major Cycleway in Christchurch, Kapiti Coast Stride 'N Ride projects, State Highway 2 Upper Hutt off-road cycleway facility and Hastings District Council Model Communities Cycleway Designs.

(h) I have led the design work for the Project since 2016 through the Indicative and Detailed Business Case phases, and subsequently through to preliminary design for consenting. I have also attended and presented at numerous public/community meetings during that period.

4. I am a member of a number of relevant associations including:

(a) Engineering Council UK;

(b) Chartered Institution of Highways & Transportation (UK) (Chartered Member class – CMIHT); and

(c) Engineering New Zealand (Chartered Member class - CMEngNZ).

5. I confirm that I have read the 'Code of Conduct' for expert witnesses contained in the Environment Court Practice Note 2014. My evidence has been prepared in compliance with that Code. In particular, unless I state otherwise, this evidence is within my sphere of expertise and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

BACKGROUND AND ROLE

6. I am familiar with the Eastern Bays from Point Howard to Sunshine Bay and including Windy Point (the "**Project area**"), and the local roading network in the vicinity of the Project.

7. In preparing my evidence I have reviewed the:

(a) Indicative Business Case Eastern Bays Shared Path ("**IBC**"); Stantec; December, 2016;

(b) Detailed Business Case Eastern Bays Shared Path ("**DBC**"); Stantec; October, 2017; and

(c) Eastern Bays Shared Path Resource Consent Applications and Assessment of Effects on the Environment ("**AEE**"); Stantec; April, 2019.

8. I prepared the *Design Features Report* dated April 2018 in Appendix J of the AEE, and have led the development of the Project's *Preliminary Design Plans* (Appendix N of the AEE). I have also reviewed the *Alternatives Assessment Report* (Appendix G of the AEE) and *Transport Assessment Report* (Appendix L of the AEE).

9. I was involved in preparing the IBC and the DBC and reviewing the Strategic Business Case report in earlier stages of the Project development. I have also authored or reviewed multiple other technical reports (not forming part of the application) since the commencement of the IBC in 2016.

10. I have also reviewed the draft evidence of the 13 other witnesses for HCC.[1]

SCOPE OF EVIDENCE

11. The purpose of my evidence is to provide an outline of the physical layout and design of the Project.

12. My evidence addresses:

(a) the design philosophy for the Project;

(b) the design development;

(c) the assessment of alternatives;

(d) a high-level description of the Project and its design features, including safety barriers;

(e) details of key design elements and associated design standards incorporated in the plans to date and as set out in the proposed conditions; and

(f) responses to submissions and the section 42A report.

EXECUTIVE SUMMARY

13. The Project design philosophy is to develop a safe and integrated walking and cycling facility along Marine Drive. The design of the Project has been developed bay-by-bay on a site-specific basis, through an iterative design

[1] Shelley McMurtrie, Julia Williams, Michael Allis, Richard Reinen-Hamill, Rob Greenaway, Caroline van Halderen, John Cockrem, Fleur Matheson, Ihakara Puketapu-Dentice, Alex James, Michael Copeland, Simon Cager and Morris Love.

process, responding to a range of issues (both to maximise benefits, and to address the potential effects of the Project on the environment).

14. Thorough design processes, involving experts and the community, have been followed to consider alternative options for providing the Project, as well as specific design issues.

15. Given the nature of the Project, the width of the Project's proposed shared path ("**Shared Path**") has been a particular focus. Detailed consideration of appropriate path width as well as potential environmental effects has resulted in a minimum standard path width of 2.5m applied in the most constrained locations, with 3.5m width used elsewhere (and for 83% of the length of the Shared Path)..

16. Similarly, a combination of wall types to support the Shared Path have been selected: either curved seawalls (single, double, or on occasion, triple height) or revetment (rock rip rap) in conjunction with a reinforced vertical concrete cantilevered seawall.

17. The design has been progressed sufficient to enable assessment of the Project's effects. Detailed design will be progressed and finalised in line with the proposed conditions (and in particular the Landscape and Urban Design Plan ("**LUDP**") and Bay Specific Urban Design Plans ("**BSUDP**")).

18. Construction will be staged, with walls likely to be constructed 'in-situ'. Final construction methods will be finalised, again in line with conditions (including the required Construction and Environmental Management Plan ("**CEMP**"), and the pre-construction provision of detailed plans) .

METHODOLOGY

19. In preparing my evidence I have:

    (a) undertaken multiple site visits including drive-overs, walk-overs and cycling the full length of the Project;

    (b) attended consultation and engagement events including individual bay consultation evenings and public events used to explain the Project options and seek feedback to shape the proposed design;

    (c) reviewed the Project documentation since 2016, and reviewed previous technical documentation prior to the involvement of Stantec before 2016;

    (d) reviewed national and local design standards and guidelines for cycleway and shared path projects; and

    (e) reviewed national and local design standards for coastal edge treatments including the design of seawalls.

DESIGN PHILOSOPHY

20. The Project aims to develop a safe and integrated walking and cycling facility along Marine Drive to connect communities along Hutt City's Eastern Bays, and to provide links to other parts of the network for recreation and tourism purposes (the Remutaka Cycle Trail in particular, as well as the Great Harbour Way / Te Aranui o Pōneke).

21. Currently, pedestrian and cyclist connectivity and use along the Eastern Bays is low. This is due to a lack of dedicated cycling and walking facilities and the tightly constrained nature of Marine Drive. For the most part, cyclists and pedestrians must use the road shoulder, which is very narrow and even non-existent in sections.

22. Initially, the technical commission for the Project sought to provide a walking and cycling facility along Marine Drive, but through early investigations it was apparent that there was also a resilience issue given the age and condition of sections of the existing seawall structure that was at risk of failure. A significant failure of the seawall could restrict access for Eastbourne and the Eastern Bays communities, as well as compromising critical underground services contained within the road corridor.

23. The Project will provide a continuous shared path on the seaward side of Marine Drive between Point Howard and Marine Parade in Eastbourne (excluding Days Bay) and includes removing and replacing much of the existing seawall (3.1km in length) with a new structure that is located in such a position so as to accommodate the required shared path width (either 2.5m or 3.5m).

24. In addition to the seawall and associated Shared Path works, the Project scope also includes various other items that have been identified through the Business Case and project development processes as being required to support the Project or to address its effects.

DESIGN DEVELOPMENT

25. The proposed design has been developed bay-by-bay on a site-specific basis, through an iterative design process, responding to a range of issues including, but not limited to:

    (a) desirable path width;

    (b) the structural condition of the existing walls;

    (c) the width of the existing road reserve;

    (d) coastal processes;

    (e) ecology;

    (f) presence of penguins; and

(g) community feedback.

Indicative Business Case Phase

26. During the IBC phase, a multi-disciplinary team, including community representatives, identified key project constraints and opportunities. A key outcome from the multi-criteria assessments ("**MCA**") undertaken during the IBC phase by the Project team related to the recommended width of the facility and also the type of seawall structures that should be considered.

27. The IBC concluded that wider path options were preferable (which was also supported by community engagement feedback), and path widths less than 2.5m were rejected, with the recommendation that paths of 2.5m or 3.5m be considered further during the next stages of project development.

28. A number of seawall type treatments were also assessed and rejected during the IBC as not being appropriate for the Project in this environment (such as timber or sheet pile type wall options due to concerns regarding durability in a coastal marine environment). A number of seawall types such as rock revetment and concrete formed seawalls were recommended for further consideration.

Detailed Business Case Phase

29. During the DBC phase, further investigation and design were completed. Following completion of a more detailed MCA, together with extensive detailed bay-by-bay public engagement, the DBC phase concluded with proposed path widths throughout the Project, and proposed wall types to achieve the necessary path width, discussed in more detail below.

30. I led the development of the proposed design solution (path width and wall type) during the DBC. This involved leading a team of multi-disciplinary specialists in order to assess different options and seek an optimal solution when considered against different assessment criteria.

31. In August 2017, I attended numerous meetings with the different bay communities in order to explain the proposed design and seek feedback on the general design proposal, as well as other feedback such as desired beach access, landscaping, parking, barriers and bus stops.

32. I then presented a final follow up meeting that was held with the Eastbourne Community Board to confirm the final proposal and any further changes as a result of the community feedback.

33. From the DBC phase the key outcomes for the Project design were as follows:

(a) ***Path width***: 3.5m wide in less constrained areas, 2.5m in areas of constraint where there is strong community support for a reduced width

(such as at beach locations). Path width is discussed further in my evidence below.

(b) ***Wall type***: generally curved redirecting seawalls were preferred in most locations; in some locations sections of revetment and limited sections of low level dwarf wall (vertical faced) were preferred.

Consenting Design Phase

34. Following the finalisation of the DBC design, the Project team commenced further design required to provide sufficient detail for consenting and in order to avoid or minimise the Project's effects in response to specialist assessments.

35. The key Project design changes or additions since the DBC are:

(a) ***Beach nourishment/path width***: as a result of the community feedback relating to beach amenity and the recreational assessment undertaken and addressed in the evidence of **Mr Greenaway**, the Project has incorporated beach nourishment at Point Howard Beach, Lowry Bay and York Bay where there are relatively high levels of beach use. These locations were initially proposed to be served by a 2.5m wide shared path in order to minimise the effect on the beach area. Providing beach nourishment, addressed in the evidence of **Mr Reinen-Hamill**, has afforded the opportunity to widen the Shared Path along the majority of these three beaches to 3.5m width.

(b) ***Atkinson Tree/path width***:

(i) During public engagement activities, particularly the bay specific event in York Bay, there was interest in the path width and also the effects on the 'Atkinson Tree' (a pohutukawa next to the coast). Views were sought on path widths and also the retention or removal of the tree. Broadly, the outcomes of the discussion were that the majority of the community highly valued the beach and were not in support of beach loss. The views on the tree were less conclusive. Some residents were strongly in favour of removal, with others firmly against noting that whilst it had no special or protected status, for some members of the York Bay community, the tree held a level of local significance. An image from the engagement activities community comment 'post-its' is shown in **Figure 1** below, demonstrating the conflicting viewpoints:

Figure 1 – Image of consultation activity 'post-it' feedback comments of conflicting views on Atkinson tree

(ii) The Project team considered options for retention but noted that, even with judicious (and potentially unacceptable) pruning, retaining the Atkinson Tree would require the path to significantly encroach on the beach (with very little support for this), or to be narrowed to below 2.0m (in which case the tree would still present a safety hazard with restricted visibility). Therefore, the Project team could not support this outcome.

(iii) In response the Project team completed more in-depth optioneering with a small group from York Bay (including Bay community group chairperson) to consider options for the path width, road space reallocation and effects on the tree. One option that was strongly favoured by the working group was to move the road closer to the landward side (and to remove the tree). This was a costly option (involving significant road reconstruction) but was progressed on an initial basis as it was favoured by the working group.

(iv) It subsequently transpired that directly affected residents were strongly opposed to this outcome because of the road and noise effects closer to their dwellings. No real consensus was able to be established, but providing beach nourishment to retain useable beach space was proposed as an alternative, with no changes to the traffic lanes, and with a 3.5m wide path through York Bay. This is what is now proposed; the effect however is to require the removal of the Atkinson Tree.

(v) An arborist[2] has investigated the Atkinson Tree and advised that the tree is in poor health and concluded that it was unlikely to survive relocation to another location. Instead the Project has proposed replacement planting in the triangular piece of land behind the bus shelter in Taungata Road.

(c) ***Revetment removal***:

(i) The original consenting design intended to use more sections of rock revetment (in combination with a concrete vertical cantilevered seawall) as the coastal edge solution in order to achieve the upgraded seawall and the additional width to locate the Shared Path. Some locations were identified as being better suited to a revetment solution based on the local characteristics, such as localised wave climate and storm surges. However, as a result of the environmental (and consenting) challenges of additional encroachment into the coastal marine area ("**CMA**"), many of these revetment sections have now been removed. Where revetment was necessary it was agreed that rock rip rap would be used over concrete blocks (for example) as it was perceived as using a material with the feel of the local rock.

(ii) This was the case in northern Lowry Bay which is subject to exposure to southerly weather conditions and wave overtopping. Whilst there was strong community support here for extensive revetment to provide better coastal protection, due to the consenting challenges caused by encroachment into the CMA and extension into the sub-tidal zone, proposed revetment at this location has been replaced with a double or triple curved seawall.

(d) ***Edge Safety Barrier***:

(i) Throughout Project development a key issue for the local community has been how the Project would be sensitive to the coastal edge and limit interruption between the land and the water. The provision of an edge safety barrier between the water side path edge and the beach or headland has been contentious, with feedback from various bay communities strongly opposed to barrier provision. This is further detailed in the evidence of **Ms Williams**.

(ii) The issue is further complicated given the more recent York Bay section of path completed in 2007-2008 does not include an edge barrier and there is a locally held view that it should not be needed elsewhere.

[2] David Spencer, Arborlab Consultancy Services, March 2018.

(iii) The Project plan proposed to further consider barrier provision after the consenting phase; however, due to the associated effects of the barrier, this is now included as committed Project scope within the AEE. Considerations included safe design and safety from height, Building Code requirements, the tiered and overlapped design of the curved seawall, community feedback, visual amenity, access, and the undulating nature of the vertical height difference between road level coastal edge and the dynamic nature of beaches (meaning the vertical height frequently changes between tidal patterns and storms). The outcome of this assessment has been to propose up to 800m of edge barrier in locations where the fall height between the path level and the adjacent beach or headland would be close to 1.0m vertical height or greater.

(iv) I consider this approach (which will mean edge barriers are only situated in the locations of highest risk) to be an appropriate response to the safety from falling risk, without unnecessarily 'over-engineering' the coastal edge. In other locations where the fall height is reduced, a low-level wheel stop is proposed to prevent inadvertent roll over from path users (such as small children).

ASSESSMENT OF ALTERNATIVES

36. Throughout the development of the Project, alternatives and options associated with the design were investigated and recorded. The geography and terrain in the Eastern Bays area, and the lack of any other alternative transport routes, means that the focus has been on alignments based on Marine Drive.

37. The Project has been developed on the seaward side of Marine Drive, following a detailed alternatives assessment.[3] Due to the physical constraints on the landward side of Marine Drive, the widening of the road on the seaward side to accommodate the Shared Path is the preferred option.

38. The key reasons for favouring a "coastal edge" option are:

(a) To avoid the steep hill slopes along large sections of the landward side of the road. Widening on the landward side would require major earthworks and cuts on the headlands, which would result in significant effects to the environment.

(b) To avoid adverse effects to properties and dwellings. Much of the landward side of Marine Drive is lined with residences and road widening inland would bring the road closer to houses, resulting in

[3] See Appendix G of the AEE.

increasing adverse amenity effects. It would also require considerable property purchases.

(c) To reduce car and cycle/pedestrian conflicts. A shared path on the landward side of Marine Drive would both reduce visibility during egress from and entry to properties, and connectivity to the coast. This would result in cyclists and pedestrians having to pass across all the street and property exits onto Marine Drive. In addition, the Shared Path would need to cross from inland to coastal sections at various stages resulting in an increase in traffic and cycle/pedestrian conflicts.

(d) To enhance the connection to the coast and thereby increase recreational benefits. Many beach areas have very poor existing access, especially at high tide. A coastal option enables public access to be enhanced.

(e) To align with the Great Harbour Way / Te Aranui O Pōneke which, apart from the section past the port, is intended to follow the coast.

(f) To integrate with coastal hazard protection and respond to the effects of climate change. It enables the efficient use of natural and physical resources by providing the Shared Path on an enhanced, consistent and fit-for-purpose seawall option. This will lead to reduced road closures and increased resilience of Marine Drive and the associated underground services.

(g) To enhance environmental outcomes through providing a modern seawall and design features that respond to environmental effects on issues such as fish and penguin passage and natural character, among others.

(h) To offer an affordable option to the community and provide medium to long-term benefits.

39. As part of the assessment of alternatives, a number of design options for the Shared Path were investigated by the technical experts. The options development process undertaken during the IBC identified two principal considerations that influenced the Shared Path along the Eastern Bays foreshore. The first was the path width that could safely accommodate pedestrians and cyclists along the route with the least amount of widening onto the CMA. The second consideration was the types of seawall that could be used to gain path width where there is currently insufficient width.

40. An MCA process was used to assess options, where options were scored against a number of factors, including: safety, resilience, upgrade potential, consentability and beach impact. Two options for widening the road (2.5m and 3.5m path widths) were favoured throughout this process. Feedback

through community consultation and alignment to the investment objectives also reinforced the two preferred options.

41. Both these path width options were considered throughout the DBC process. Constructing a path of consistent width along the corridor was generally preferred. However, it was recognised that it was appropriate to narrow the path at environmentally sensitive locations, and to retain the full width where there are expected to be higher number of pedestrians. I believe that this flexibility in design enables the Shared Path to respond to the constraints unique to the various bay environments, and to avoid or minimise effects on the environment.

42. Alternative seawall designs were considered. Vertical curved seawalls have been chosen across the majority of the Project area because they deflect wave overtopping most effectively and create a reduced footprint on the foreshore compared to other non-vertical seawalls.

43. A detailed assessment of road space reallocation was also undertaken as part of the alternatives assessment[4]. In summary, this assessment noted the following:

    (a) HCC District Plan classifies Marine Drive as a Minor District Distributor road, which should have an associated minimum carriageway width in the plan rules of 16m[5]. This is almost entirely not achieved with the existing layout and road width.

    (b) Given this is an existing road and this criteria is not achieved, I have instead considered the Austroads Guide to Road Design Standards[6] of 3.5m being the appropriate traffic lane width, with widths 3.0-3.4m noted as being suitable for low speed environments with low truck volumes'. Given the speeds, volumes and numbers of buses using Marine Drive, I do not believe reducing traffic lane widths below 3.5m is appropriate. Austroads also notes there should be a minimum of 0.5m sealed shoulder[7] which is often also not available on Marine Drive.

    (c) Given the curvilinear nature of the horizontal alignment of Marine Drive, Austroads also recommends curve widening[8]; that is each lane should be widened to allow for over-tracking of larger vehicles through tighter (lower) radii horizontal curves. I estimate that there are numerous curves within Marine Drive that would meet the requirement for curve widening, in the order of 0.2-0.8m, per lane. Again, this is often not present, or available, within the current seal width.

[4] See Section 5.3 of Appendix G of the AEE
[5] HCC District Plan Rule 14A(i)2
[6] Austroads Guide to Road Design Part 3, Table 4-3
[7] Austroads Guide to Road Design Part 3, Table 4-7
[8] Austroads Guide to Road Design Part 3, Section 7.9, Table 7-13

(d) On this basis, reduction in lane widths along Marine Drive is not considered a viable option (in terms of safety and operation) as lane widths are mostly 3.5m or less throughout i.e. already at or below minimum standard described in Austroads, and do not include sufficient curve widening, and in many instances the absolute minimum road shoulder (or less).

(e) Notwithstanding the above, the project team, did consider whether there were opportunities to reallocate road space, particularly if additional width was available on the landward side, without reducing the existing road cross section. Two such locations were identified, with one taken forward to the final proposal, Sorrento Bay[9].

THE PROJECT'S DESIGN FEATURES

Path Width

44. Path width has been a key consideration throughout the various phases of the Project's development. As the design lead my preference from a design perspective has been for a wider path, given the additional level of service and comfort this is expected to provide.

45. However, I acknowledge that the Project area is extremely constrained and highly sensitive. Given these factors, it has been necessary to seek a balanced outcome that achieves the desired Project objectives, but that remains acceptable to the community and consentable in the highly protected CMA.

46. Therefore, a minimum standard path width of 2.5m has been the design requirement in the most constrained locations, with 3.5m width used elsewhere.

47. I am comfortable that the combination of these two path widths is an acceptable outcome. I also note that the majority of the Shared Path (83 %, or 3.65km) is the full 3.5m width, and only a limited length (17%[10], or 0.75km) is the reduced 2.5m width.

48. In accepting this outcome of path width, I have been cognisant of national and international standards and guidelines and the anticipated path usage.[11]

49. The analysis completed in the *Transport Assessment* (Appendix L of the AEE) has identified the following:

[9] York Bay was also originally proposed for road space reallocation, however this was opposed by local residents, and ultimately, with the addition of beach nourishment to the project scope for York Bay, road space reallocation was removed from York Bay, and deemed unnecessary.
[10] The transition lengths, i.e. the sections that connect the different path widths between 2.5m and 3.5m, and by definition are always greater than 2.5m in width, have been included in the statistics for the 2.5m sections, for conservatism.
[11] For instance, VicRoads Cycle Notes 21 (August 2013), Austroads Cycling Aspects of Austroads Guides (2017), London Cycling Design Standards, Section 4.5 (TfL. 2014)

(a) Current estimated usage: includes around 100 pedestrians every day walking up to 2km, and cycle use of 110 cyclists per day (based on survey count data completed in 2017).

(b) Forecast future use: additional 60 pedestrians per day and 120 additional cyclists per day. Total future volumes of around 400 users per day, broadly equating to double the amount of current users.

50. **Figures 1 and 2** in **Appendix A** show the Austroads[12] recommendations for path width for shared and separated walking and cycle paths depending on patronage levels, with 50/50 and 75/25 directional splits respectively. The 75/25 split would occur when many users are heading in the same direction during the morning or afternoon commute. The minimum recommended width for any shared path is 2.5m. A path width of 3m with a 50/50 directional split allows for approximately 90 two-way pedestrians at peak hour and approximately 300 two-way cyclists at peak hour. This exceeds likely patronage levels for the Shared Path (considering also extra provision for tourists); with the projected level of use of the Shared Path over a day close to the Austroads standard for an hour. On this basis I have recommended the Shared Path width of a minimum of 2.5m on limited sections lengths (with appropriate design features, as described below).

51. The *Alternatives Assessment* (Appendix G to the AEE) also notes the various standards used in New Zealand and other jurisdictions globally which recognise that on occasion, 2.5m widths are used for two-way shared paths.

52. I do, however, note that the geographic location of the Project means that there are constraints on either side of the path (trafficable roadway and coastal edge) and that this will influence the path usage. **Mr Greenaway** refers in his evidence to the *Waka Kotahi Pedestrian Planning and Design Guide,*[13] which refers to leaving a lateral clearance of one metre on both sides of the path to allow for recovery by cyclists after a loss of control or swerving. Given the constrained nature of the environment, it has not been possible to achieve this. However, the Project will instead provide delineation and physical measures on either side of the path, in the form of bevelled concrete intermittent kerbs on the roadway side, and safety barrier or low-level wheel stops on the seaward side. I consider this to be a suitable compromise in place of buffered run out space given the spatial constraints throughout Marine Drive.

53. In the limited sections of the Project subject to the 2.5m path width (17% of the length), the Project will also ensure suitable advanced warning and direction is used to inform path users of the change in width and appropriate behaviours, such as reducing their speed and sharing the space with other users. This was the recommendation of the independent road safety audit

[12] Austroads Cycling Aspects of Austroads Guides (2017), Figures 7.2 and 7.3
[13] *Pedestrian planning and design guide* (NZTA 2009), page 14-20.

undertaken, and I concur with this recommendation. I also note that the Shared Path is not anticipated to be used by high speed sport cyclists given the shared two-way nature of the path and leisure users, dog walkers etc., with the expectation that higher speed cyclists will continue to utilise the roadway/traffic lanes. I concur with the view of **Mr Greenaway** that less width will require slower passage than a route with greater width would.

54. Based on the forecast usage, the proportion of the path that is 3.5m width, and the associated user safety measures and information that will be provided to guide path users, I am satisfied that the proposed path width and Shared Path design will provide a safe and comfortable facility for users that adequately balances the desire to provide an attractive coastal facility, while managing the environmental effects of further encroachment. I also note that the Shared Path is a significant improvement on the current provision that continues to be used by two-way walkers and cyclists despite the limited width and safety and discomfort concerns.

Wall type

55. Different wall types have been considered throughout the Project's development and options have been progressively rejected; this is described in greater detail in the IBC, DBC and Appendix G *Alternatives Assessment Report* and Appendix J *Design Features Report* of the AEE.

56. In summary, the wall types that have been selected for the Project are either curved seawalls (single, double, or on occasion, triple height) or revetment (rock rip rap) in conjunction with a reinforced vertical concrete cantilevered seawall.

57. These wall design solutions have been selected on the basis of suitability for the coastal marine environment, to achieve a minimum theoretical design life of 100 years and designed in accordance with the *Waka Kotahi Highway Structures Design Guide for concrete structures*[14] and the *Code of Practice for Maritime Structures*[15]. Durability is essential to ensuring the walls will be able to withstand wave conditions and storm events in this environment and to protecting the road structure and buried services. In addition to durability, the proposed wall types have also been selected on the basis of providing reasonable consistency in the existing environment, being constructable in the Project area, and being and affordable. The proposed wall types are conventional methods utilised for seawalls in coastal environments and do not rely on new or untested technologies.

58. The curved seawall solution will use the same profile as the curved seawalls used in York Bay south. This curved redirecting seawall arrangement is frequently used and follows the design practices noted in seminal

[14] Waka Kotahi Highway Structures Design Guide 1st Edition (NZTA, 2016).
[15] BS6349-2:2010 Code of Practice for Maritime Structures Part 2: Design of quay walls, jetties and dolphins (BSI, 2010).

publications on seawall design[16]. The effects of the proposed wall types on coastal processes is covered in the evidence of **Dr Allis**.

59. The curved and cantilevered vertical seawalls have been designed such that they may be adapted in future for additional vertical height in response to climate change and sea level rise. Whilst it is recognised that the form, function or timing of changes to the seawall are unknown, an allowance has been made in the preliminary design for adding a further seawall barrier, such as an additional curved section onto the seawall without requiring significant structural changes. It is, however, noted that should this be the case, then depending on the design undertaken, this may have future effects on the width and usability of the Shared Path.

Other design features

60. The Project will include a number of other design features that are required to enable the Shared Path to be constructed and operate successfully. These include beach access provisions (steps, ramps), landscaping, bus stops and comfort facilities such as seating. These are described in Appendix J *Design Features Report* of the AEE.

61. The preliminary design has considered these items sufficiently so that the effects of the Project can be adequately assessed. However, many of these items are subject to the final detailed design and ongoing community consultation, and will be included in the Landscape and Urban Design Plan ("**LUDP**") and Bay Specific Urban Design Plans ("**BSUDP**"). The preliminary design plan set (Appendix N of the AEE) provides a preliminary level of detail for a number of other design features such as bus stops and beach access, and this is based on feedback from stakeholder and community feedback on the Project.

Project Cost

62. The overall cost of the Project construction is estimated to be in the region of $30M. During the DBC phase the originally anticipated project cost was closer to $15M. This figure has increased through more recent project estimates on the basis of; considerable construction cost increases being witnessed nationally, and in particular within the Wellington region, and also due to sizeable scope additions through design development and measures (for example in respect of beach nourishment, seawall texturing, and kororā / little penguin and avifauna).

63. As a comparison, the project team has estimated the likely maintenance cost to replace the same extent of seawalls in the existing location using the same seawall types (as proposed for the Shared Path) but with no shared path

[16] Including CIRIA Seawall Design (Thomas & Hall, 1992), and Coastal structures and breakwaters (J.P. Ahrens and T. Bender, 1992, Thomas Telford, London).

provision (or associated works), the construction cost would likely be at least $15.7M[17].

CONSTRUCTION

Wall Construction

64. The new seawalls are expected to be cast in-situ on site, as opposed to pre-cast concrete. The design team have carefully considered different options and assessed the advantages and drawbacks of the different options.

65. An in-situ solution appears to provide a better engineering solution from an adaptability, flexibility and practicality perspective, particularly when considering the length of the Project, the potentially variable horizontal and vertical curves and construction challenges associated with the road, bedrock levels and varying types of existing structures. It is also worth noting that the existing York Bay section of seawall utilised in-situ construction and this appears to have worked well during construction and continues to perform adequately.

66. A precast option would provide quicker installation times with high quality, consistent finishes However, these benefits are countered by other construction and maintenance issues such as: less adaptability/flexibility, problems associated with securing the new units to the existing structures, grouting of interstices between new and existing structures and increased whole-of-life costs due to the higher number of construction joints.

67. As such the current approach is to design for cast in-situ. However, to enable market flexibility, the Project will also allow alternative tenders for all or part of the walls to be pre-cast solutions. This will enable the supplier market to determine the most efficient methodology that can still meet the Project's requirements, but can do so more economically, or can deliver the construction works more quickly.

Construction Staging

68. Construction staging is described in Appendix J *Design Features Report* of the AEE. In summary it is anticipated that construction of the entire Project will be undertaken on a sequential basis over a number of years (ie 'bay-by-bay'), with the Project intended to be fully complete no longer than six years from commencement, and potentially sooner.

69. The staging of works will be firmed up during detailed design, and prior to tendering, and will be dependent upon a number of factors such as: anticipated start date in the construction season (as larger bays will require

[17] This is a rough order cost estimate for comparison purposes only. The estimate assumes the same wall type and extent, same traffic management costs, same proportional Prelim & General costs, some environmental management and temporary works. This cost is a base estimate and excludes any contingency allocation or professional fees.

more time), funding availability, management plan completion and sequencing with other bays.

70. It may be possible (and favourable) to undertake works in more than one bay concurrently, and this will be investigated prior to construction starting, but the level of disruption to road users will be a key consideration given the lack of an alternative route, and given that in many locations it will be necessary to remove a full traffic lane and for traffic to be managed under stop/go conditions. Similarly, there are clear consenting requirements around seasonal working and restricted periods to limit disruption for ecological requirements.

71. As well as disruption to road users and environmental management requirements, construction activities will also be required to work around tidal and weather conditions which further limit the working windows available, and therefore the productivity, which necessitates the works spanning multiple years of construction.

Beach nourishment

72. Beach nourishment is covered by the evidence of **Mr Reinen-Hamill** and (in terms of ecological effects of beach nourishment) **Ms McMurtrie** and is not considered further in my evidence.

Other construction effects

73. Other effects such as noise, dewatering of excavations and sediment control will be included in the Construction and Environmental Management Plan which is a condition of consent.[18]

INCORPORATION IN PLANS AND PROPOSED CONDITIONS

74. Proposed conditions **C.1** to **C.3** set out requirements for Engineering Plans and specifications. These conditions note, among other things, that:

> *"At least 30 working days prior to the Commencement of Construction, the Consent Holder shall submit detailed engineering plans and specifications (including tidal levels, dimensioned cross sections, elevations, site plans of all areas of proposed reclamation and de-reclamation, permanent and temporary structures, outfalls structures, associated permanent and temporary coastal zone occupations and areas where the construction area will extend into the subtidal zone), prepared in general accordance with the documents listed in Conditions GC.1 and GC.2(a), to the Manager, Environmental Regulation for certification using the process in Condition GC.5.*

[18] See proposed conditions **GC.6 – GC.10**.

The requirements for certification set out in Condition GC.5 apply equally to the certification of the detailed engineering plans and specifications under this condition".[19]

75. Proposed conditions **LV.1** to **LV.4** set out the requirements for the LUDP, while conditions **LV.5** to **LV.7** detail the requirements for the BSUDPs. These conditions note, among other things, that:

    (a) one of the purposes of the LUDP is to: "*Provide a detailed design for the Project that responds to local landscape character, identity and land use and is in general accordance with the Design Features Report (dated January 2019), and other relevant plans and documents referred to in Conditions GC.1 and GC.2(a)"*;[20]

    (b) the LUDP must also address how the detailed design of the Project achieves and responds to certain things, including the design principles in Appendix J *Design Features Report* of the AEE and relevant industry standards;[21] and

    (c) the LUDP must include the final BSUDPs,[22] and the BSUDPs must include special landscape and urban design detail for various aspects including the seawall structures, beach access and safety barriers and railing.[23]

RESPONSE TO SUBMISSIONS

General

76. A significant number of submitters responded in support of the Project.[24] A common theme in many responses provided in support was that the Shared Path would improve safety for walkers and cyclists.

Path width

77. A number of submissions were received relating to path width, with no clear theme emerging. Some were in support of the proposed path widths, while others opposed the path width either in a general sense, or having identified concerns at specific geographic locations.

78. Submissions were received on the basis of the path width being excessive, with East Harbour Environmental Association Incorporated (80) stating that anything beyond 2.5m is unnecessary. Ruth Gilbert (163) also stated that a maximum width of 2.5m should be provided. Terence Pinfold (167), whilst in support of the Project, requested a reduction in path width to 2.5m in

[19] Proposed condition **C1**.
[20] Proposed condition **LV.2**.
[21] Proposed condition **LV.4**.
[22] Proposed condition **LV.5.**
[23] Proposed condition **LV.7.**
[24] 180 out of a total 200 submissions (this includes one submission in conditional support).

southern York Bay, and Carol Lough (173) also requested a narrow path in York Bay. This same position on the York Bay path width was also echoed by Morgan Sissons (174) and Margaret Sissons (175).

79. One submitter (Michael Sheridan – 66) considered a low-cost cycle lane had not been sufficiently investigated. I disagree with this assertion, as the IBC considered a 1.5m wide option (despite this being below best practice standards) and which was discarded through the MCA (scoring the poorest of all options considered when assessed with and without cost considerations). I also note that such an option was not favoured during public engagement.

80. However, other submitters (John Gibb – 85) are opposed on the basis that the path width, even at 3.5m is insufficient.

81. A number of submitters also noted that the path width was in their view appropriate (Jane Mautner – 99, Hugh Walcott - 180). Great Harbour Way Trust (159) submitted in support, and whilst noting the spatial constraints, did comment that a 5.0m path would be appropriate. Similarly, William Baisden (166) stated that a minimum width of 2.85m was preferred.

82. In summary, it is my view that the path width proposed through the entirety of the Project strikes the necessary balance needed; providing a safe and shared path for the anticipated usage levels, but responding to local constraints and environmental sensitivity, by narrowing the facility in a number of limited locations in responses to local constraints.

Edge barrier

83. A number of submissions were made in relation to edge barrier. I have addressed edge barrier earlier in this evidence and responses to the submissions are covered in the evidence of **Ms Williams**.

RESPONSE TO COUNCIL OFFICER'S SECTION 42A REPORT

HCC Council Officers Report

84. I have noted the content and recommendations of the Council Officers report, in relation to the Project's transport design considerations and the positive and adverse effects. I consider the additional conditions proposed, in relation to road staged road safety audits, to be appropriate and in accordance with industry practice, and therefore appropriate for the Project.

85. The report also notes that the Project will have positive effects such as enhanced accessibility and connectivity, increased mode choice, enhanced safety, increased resilience, recreation, health and social benefits.

GWRC Council Officers Report

86. I have reviewed the GWRC Officer's section 42A report, and noted the commentary in relation to the Project and the consideration of alternatives assessment and concur with the findings.

87. A new consent condition was recommended in the section 42 report requiring the consent holder to engage a suitably qualified and experienced disability auditor to prepare an accessibility statement to guide design, and undertake accessibility audits in accordance with NZS 4121 Design for Access and Mobility – Buildings and Associated Facilities as part of detailed design. I note that the proposed consent condition **LV.3** already requires input from a range of specialists to the Landscape and Urban Design Plan ("**LUDP**"). This will allow for coordinating the design for access and mobility, in accordance with the consented path widths. For this reason I do not consider it necessary to include the new condition.

88. I have confirmed the length of path at the respective path widths in my evidence, in response to a note of clarification.[25]

89. I have also reviewed Appendix G (Dr Iain Dawe Expert Review) and the recommendations supplied; these recommendations are addressed in the evidence of **Mr Reinen-Hamill** and **Dr Allis**.

90. **Ms Williams** addresses comments made in respect of the colour of the rock / concrete to be used for the Project. In practical terms, there will be limited options for the sourcing of suitably hard-wearing rock for the Project; seeking out specific coloured rock or concrete is not likely to be practicable (including for cost and maintenance purposes).

Jamie Joseph Povall

30 November 2020

[25] Page 6 of section 42A Report.

APPENDIX A

AUSTROADS, 2017. *CYCLING ASPECTS OF AUSTROADS GUIDES*. AUSTROADS INCORPORATED

Austroads (2017) summarises its path width models within two graphs, one for a movement scenario with a 50/50 split in directional movements (the same number of users heading in both directions) (**Figure 1**), which would be more common for a recreational route, and for a 75/25 split (**Figure 2**), which is a more likely scenario for a commuter route. The latter has more capacity at the same path style and width than the former. The Shared Path is likely to have both roles at different times of the day and week.

Figure 1: Austroads (2017) – Path widths for a 50/50 directional split

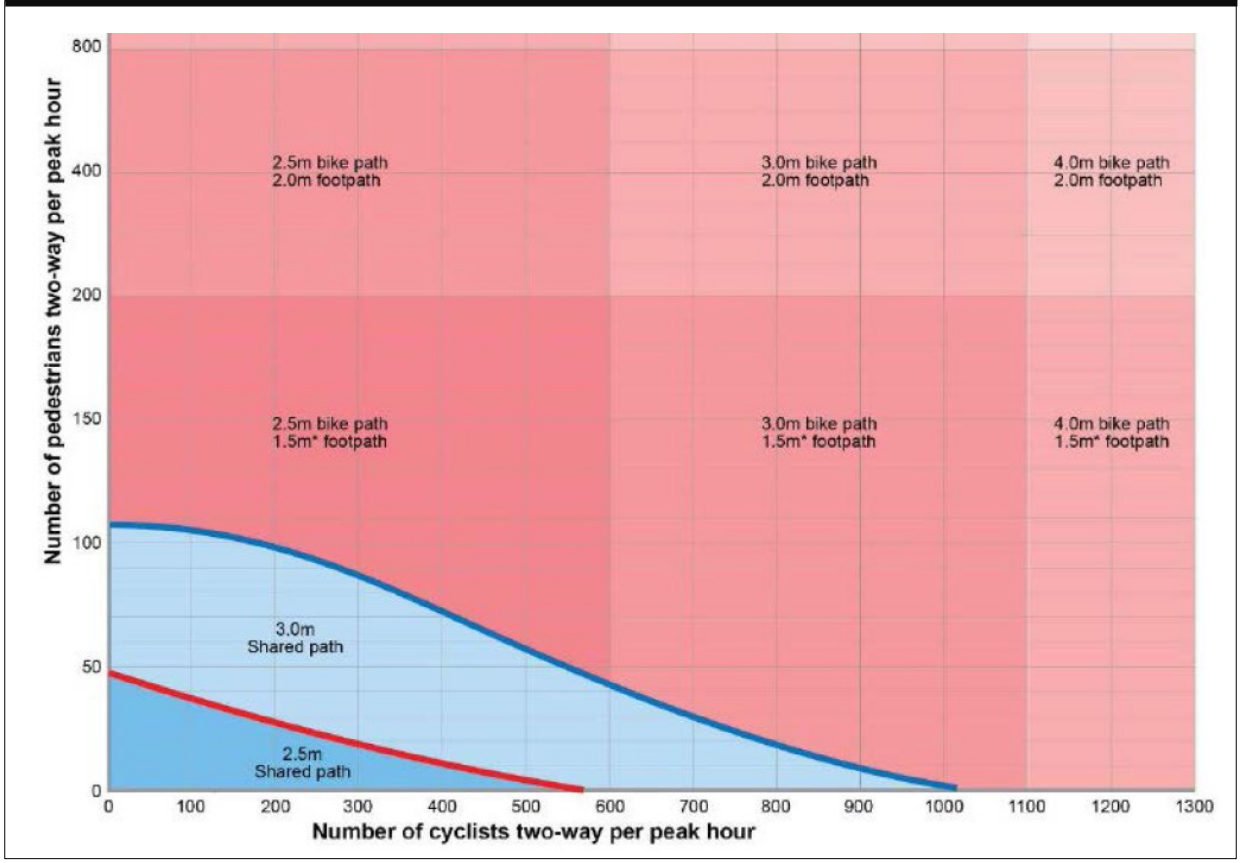

Figure 2: Austroads (2017) – Path widths for a 75/25 directional split