

# Memorandum

<b>To:</b>	<b>Environment and Community Committee and Local Board Members</b>
<b>Subject:</b>	<b>Update on Coastal Compartment Management Plans</b>
<b>From:</b>	Natasha Carpenter – Practice Lead Coastal Management Paul Klinac – Head of Specialist Delivery Unit Sarah Sinclair – Chief Engineer

## Purpose

1. To provide an update on the development of Coastal Compartment Management Plans.

### Summary

- Auckland has the largest population density to coastline ratio in New Zealand. It is characterised by 3,200km of dynamic coastline, which is subject to several coastal hazards.
- In August 2017 a Coastal Management Framework was approved to provide a best practice, operational framework for coastal management in Auckland (resolution ENV/2017/116). This framework highlighted the need to better understand and address the ongoing impacts of climate change (sea level rise, increased storminess), human modification and future growth. Funding was made available via the Long-Term Plan to undertake further work to implement the framework.
- Coastal Compartment Management Plans (coastal plans) are now being developed across the council group to guide long-term planning and decision making in the coastal zone. These plans will build on the climate change risk assessments recently completed by RIMU as part of the development of the Auckland Climate Action Plan.
- Coastal plans will provide site-specific strategies for mitigating the risks of coastal hazards over at least the next 100 years using a range of management policies and options. The options employed are likely to change over time in response to ongoing sea level rise and increases in the risks from coastal hazards to our communities. This 'adaptive planning' approach is aligned with the recent 'Coastal Hazards and Climate Change: Guidance for Local Government' report from the Ministry for the Environment.
- Coastal plans are currently being developed in four initial areas which were selected based on factors such as sensitivity to coastal hazards and location of priority planned coastal investment by the council group. The areas are the Whangateau Estuary (including Omaha Beach), South Manukau Harbour, Whangaparaoa Peninsula, and Maraetai through to Matingahari. Coastal plans will be completed for the entire Auckland region on a rolling programme, until all 16 have been completed.
- Accurate baseline data is critical to the effectiveness of current planning and future coastal decision making. Work is being undertaken to update Auckland's baseline data on coastal erosion, coastal inundation and tsunami hazard mapping. Targeted asset condition assessments for Auckland's coastal structures have also been initiated.
- Mana whenua engagement and support is key to the development of coastal plans and the supporting decision-making process. Staff have met with mana whenua operational kaitiaki representatives to discuss how Māori values can best be incorporated into the development of the coastal plans. A meeting with the Mana Whenua Kaitiaki Governance Forum was also held on 31 May 2019. Mana whenua expressed support for the approach to coastal planning and advised staff on how to achieve an ongoing partnership with mana whenua.
- Stage one draft technical reports (collating all baseline coastal hazards, asset and risk information) for the first four coastal plans will be completed by January 2020.

- This will be followed by staged community, stakeholder and mana whenua engagement to determine recommended coastal management options.
- Staff will engage with the relevant local boards and mana whenua on the first four coastal plans before these are completed. The approval process for the final plans will be confirmed at a later date.

## Context

2. Due to Auckland's density to coastline ratio and the significant proportion of Auckland's development that is concentrated towards the coast, Auckland faces a number of coastal management challenges. These challenges including coastal hazards such as erosion, inundation and potential tsunami risk, the changing coastline, and the expectations of the role of council and communities in managing these challenges. Impacts of any coastal hazards will be influenced by the future effects of climate change.
3. For effective long-term coastal management, the council must consider appropriate and cost-effective management of existing structures and ensure new structures meet the requirements for sustainable and holistic future management.
4. Coastal plans will provide a long-term (100+ years) planning tool for managing our coastline at a site-specific level. Coastal plans take a comprehensive systems-based approach which follows the guidance presented in the Ministry for the Environment's updated Coastal Hazards and Climate Change: Guidance for Local Government (2017).
5. Coastal plans will use updated research and data to make a site-specific assessment of coastal risk. A series of possible appropriate management options (such as doing nothing, holding the line, or managed retreat) will be developed. Options for management will be assessed with consideration given to the economic cost and impacts to amenity, environmental and cultural values through a multi-criteria analysis. This will be supported by iwi, local board, stakeholder and community engagement to determine key values for the site.
6. The coastal plans, upon completion, will provide site-specific coastal management strategies. The strategies will outline the agreed management response for each site over time and associated funding implications. This will support the identification of any required changes to council policies to support the implementation of each management response.

## Discussion

7. New guidance on coastal hazards was released by the Ministry for the Environment in December 2017. This provides a ten-step process for assessing and mitigating coastal hazards with community engagement at the centre of the process. The council's coastal plan process adheres to the guidelines and will apply positive lessons learned from implementation of the Hawkes Bay and Wellington City Council coastal strategies, which were the first two areas in New Zealand to produce strategies based on this guidance.
8. Due to the scale of the Auckland coast it was not considered prudent to develop coastal plans for the entire 3,200km of coastline in unison. As a result, the coast has been divided into 12 coastal cells, as shown in Attachment A. This has considered the geomorphology and natural coastal sediment transport boundaries of the Auckland coast. The preferred approach is to undertake a rolling programme of coastal plans, beginning with four pilot sites (phase one) before reviewing the methodology and continuing to apply it to the remaining coastal cells.

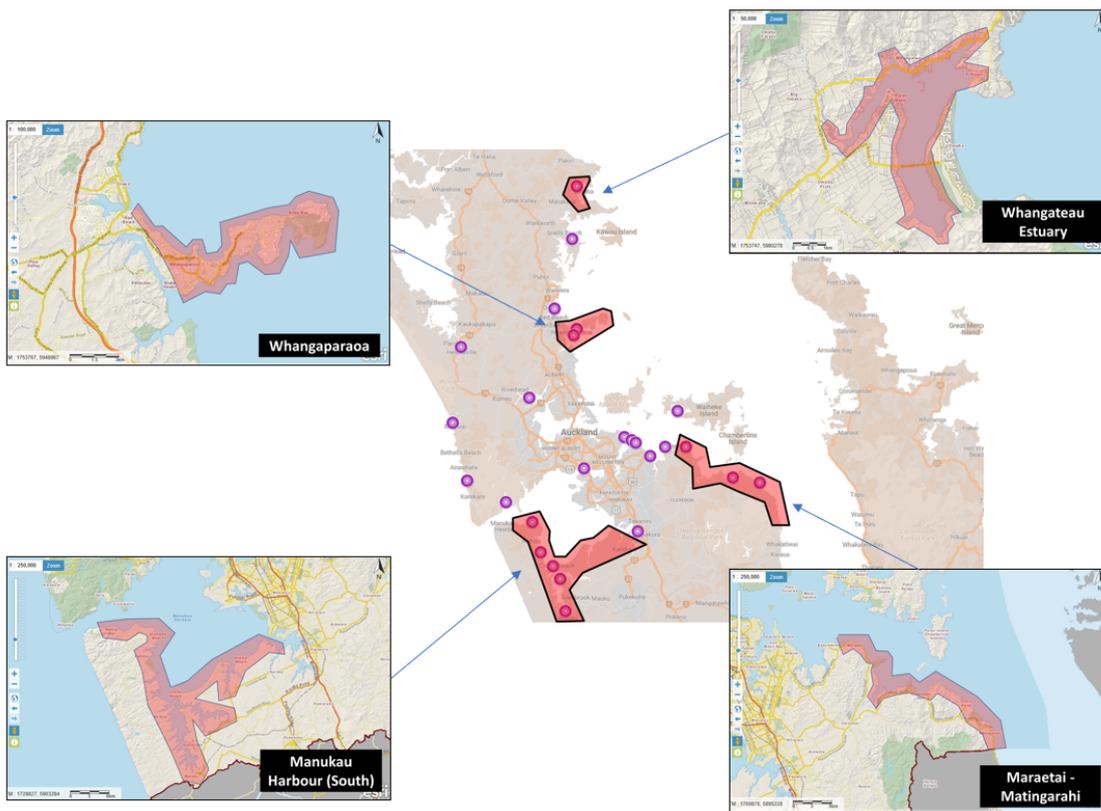
## Prioritisation of coastal plans

9. The first four coastal plan sites of the programme were selected based on the following criteria:
  - one of the 26 coastal management 'hotspot' areas, as presented in Auckland Council's Coastal Management Framework

- areas that have been repeatedly affected and impacted during recent and historical coastal storm events, including the most recent 2018 storm
- areas where funding has already been allocated to the coastal work programme
- areas where other investment workstreams and related initiatives are already in progress
- availability of quality data (such as coastal asset conditions assessments) and availability of improved hazard data.

10. The four coastal plan sites selected for phase one are: Whangateau Estuary and Omaha beach (Rodney); South Manukau Harbour (Franklin); Whangaparaoa Peninsula (Hibiscus and Bays) and Beachlands through to Matingahari (Franklin) as outlined in Figure 1 below.

**Figure 1: Initial sites for Coastal Compartment Management Plans**



11. Technical (stage one) reports providing coastal hazard, asset and risk information will be completed for the first four coastal plans, while draft plans will be completed by January 2020. They will be presented to council controlled organisations, ward councillors and relevant local boards, mana whenua and the community for feedback and development of the final coastal plans as further described below.

12. The remaining coastline will be prioritised in a rolling coastal plan programme. The locations of the next phase of coastal plans will be defined based on the same selection criteria used to determine the first four cells. The last phase of the stage one technical reports (to inform consultation) will be completed by December 2020.

### **Contents of coastal plans**

13. Complete coastal plans will contain the following information:

- an outline of the coastal processes operating within the wider coastal cell and site-specific units

- description of likely hazard risk to each sub-unit for the present day and future time frames with consideration of climate change impacts out to a 100-year horizon
- an inventory of assets owned by the council and wider council family and, at a high level, private property that may be at risk under the climate change scenarios. This will not only include built assets, but public access and open space amenity values provided by beaches, reserves and parks
- the condition of current council coastal defence assets, approximation of design life and performance given expected changes in coastal hazards due to climate change
- environmental, cultural and natural heritage, landscape and natural character values defined in combination with community engagement and consultation with local iwi
- a range of coastal management options for adaptively managing the coastline over at least the next 100 years, including rough order costs.

### **Baseline data assessment**

14. In order to develop robust coastal plans, it is necessary that the council's baseline coastal asset data is accurate and defensible. Existing datasets were reviewed over a six-month period beginning October 2018, and a range of required improvements were identified and initiated. Resultant projects are underway as further outlined below.

### Regional erosion study

15. Erosion is defined as permanent loss of cliffed areas or long-term regression of natural beach systems. Erosion can also occur in front of coastal defences, carrying the potential to undermine structures, increasing maintenance costs or the risk of failure. Climate change is predicted to increase the current rates of erosion, mainly as a result of sea level rise.

16. This study will provide site-specific data for the coastal plan development process, in particular the understanding of how erosion under the 'do nothing' scenario (with no or limited coastal defences) will change our coastline over the next 100 years, including anticipated climate change effects. The study is due for completion in December 2019.

### Coastal inundation data update

17. Coastal inundation extents for the region have been mapped for present day and future sea level rise scenarios by NIWA in two studies completed in 2013 and 2016. New LiDAR data was flown in 2016 and the NIWA coastal inundation layers are currently being remapped to this new dataset, for completion by November 2019.

18. The study will importantly also map inundation levels for Aotea Great Barrier Island and Hauturu, Little Barrier Island, which were excluded from previous inundation studies owing to insufficient data. Extreme storm and climate change water levels for the islands have been commissioned from NIWA and will enable consistent current and future inundation mapping of the entire Auckland region.

### Coastal asset data

19. The council's current coastal asset data has been reviewed, with some inconsistencies identified at a site-specific level. This is the result of a combination of factors including recent storm activity which has impacted the condition of existing structures, some of which now require increased frequency of inspections and resultant maintenance.

20. A comprehensive coastal asset inspection manual has been developed to ensure consistency in coastal structure condition assessments and reporting across the council. To support this an app has been developed for completion of efficient on-site condition assessments.

21. Targeted coastal asset condition assessments are now underway, commencing in the four initial coastal plan areas. These also include a stocktake of private coastal defences. Although not the

responsibility of the council, poorly designed private coastal defences can exacerbate erosion issues on adjacent sections of coast.

22. Asset information will help inform the coastal plan long term management strategy and likely requirements for upgrading, replacing or removing coastal structures where options exist to retreat or naturalise the coastal edge.

#### Tsunami risk

23. Auckland Emergency Management and Engineering and Technical Services are currently reviewing and refining the tsunami risk zones based on the latest research and modelling.
24. As a high impact, low probability event, the construction of coastal defences is unlikely to mitigate against tsunami risk. However, this data provides important information for evacuation planning, warning systems and future land use planning which will be presented in the coastal plans.

#### **Process for developing coastal plans**

25. The process of developing a coastal plan at each site will be carried out in two stages as outlined below.

#### Stage one technical report

26. The first stage will comprise a technical report on the coastal hazards predicted to affect each site and how they will be affected by climate change over the next 100 years. This will form a site-specific risk assessment (hazard exposure and vulnerability) over different time periods for both private and public infrastructure.
27. Based on the site's risk, a range of mitigation options will be presented, ranging from managed retreat of infrastructure, through to hard and soft coastal defence solutions.
28. These responses will likely have to change over time to accommodate the increasing hazard risk as the climate changes, consequently responses will be grouped in to adaptation pathways that may cover a series of responses over a 100-year timeframe (as directed by the Ministry for the Environment) to ensure prudent and timely decision-making.
29. Stage one will assist in development of detailed coastal asset management plans including ongoing asset maintenance and renewal, and hence in securing funding for future coastal asset management.

#### Consultation

30. The suite of management options from stage one technical reports will then form the basis for consultation with asset owners, communities, mana whenua, ward councillors and local boards. The aim of the consultation will be to inform local communities about risk (working with other parts of Council to ensure we achieve broad Council objectives in relation to resilience planning), then define and agree a recommended adaptation pathway for each site.
31. Consultation will be combined with an evaluation of economic, environmental, cultural and social impacts using a multi-criteria analysis tool. This was developed in draft for the Coastal Management Framework and will be refined for each coastal plan to recommend preferred coastal management options.

#### Stage two

32. Stage two will confirm the preferred management approach and address the timing and feasibility of its implementation. This will include funding requirements and an assessment of the necessary policy and planning regime required to support the recommended proposal.
33. The project team will engage and collaborate with the relevant local boards and ward councilors to ensure that their views and preferences are taken into account in the development of each coastal plan.

34. Each completed plan will guide the future coastal management response over the next 100 years for each site considering recommendations for the adaptive management of coastal assets.

### **Council group impacts and views**

35. Mitigating coastal hazards will become increasingly expensive. It will not be affordable or feasible to defend everywhere and the commissioning of coastal plans will result in significant decisions that need to be made by council. The coastal plans are intended to provide the evidence base and decision matrix to support appropriate decision making.
36. A collaborative approach is being used across the council group to prepare coastal plans. Staff are working closely with all parties, including Auckland Transport, Watercare, Community Facilities, Parks Sport and Recreation, the Chief Sustainability Office and Healthy Waters to ensure that site-specific coastal hazards including climate change are coherently and strategically managed.

### **Local impacts and local board views**

37. Coastal management is a complex subject with strong local interest. Workshops will be held with the relevant local boards during the development of the coastal plan, to capture their views and preferences. An options assessment panel, which will include two local board members, will provide feedback on the options identified and the preferred management approach for each site.
38. The draft coastal plan will be considered by the local board, prior to being considered for approval by a committee of the governing body.
39. A presentation was given to the Local Board Chairs Forum in February 2019 on the coastal plan process. The forum was supportive of the proposed approach.

### **Financial implications**

40. Improved knowledge (baseline data), and understanding with respect to climate change impacts, will likely result in an increased funding requirement for management of coastal assets.
41. Completed coastal plans will help guide the expenditure of the coastal management and response to climate change budget which was approved in the 2018-2028 Long-Term Plan (resolution GB/2018/108). The plans will therefore also inform future Long-term Plan considerations, funding requirements and how these could be apportioned over time.
42. Mechanisms for co-funding coastal management by Auckland Council and major asset owners will be explored as part of the consultation work.

### **Risks and mitigations**

43. High public interest has the potential to slow the coastal plan delivery process. This will be mitigated through frequent public engagement events to encourage discussion and empower communities in the process including the development of policies and appropriate management responses.
44. Opposition to proposed policies and options will be mitigated through education regarding coastal hazards and the role of coast protection structures. Taking a systems-based approach will enable an appreciation and holistic treatment of each coastal plan area.

### **Next steps**

45. To promote public understanding of coastal hazards and climate change, a communications plan has been developed to raise awareness of coastal management issues. Communication activities will commence in January 2020, with a regional update on the Coastal Management Framework and subsequent coastal plan process prior to local scale engagement activities.

46. The next steps for development of the first batch of coastal plans are outlined in Table 1 below.

**Table 1. Next steps for first phase of coastal plans**

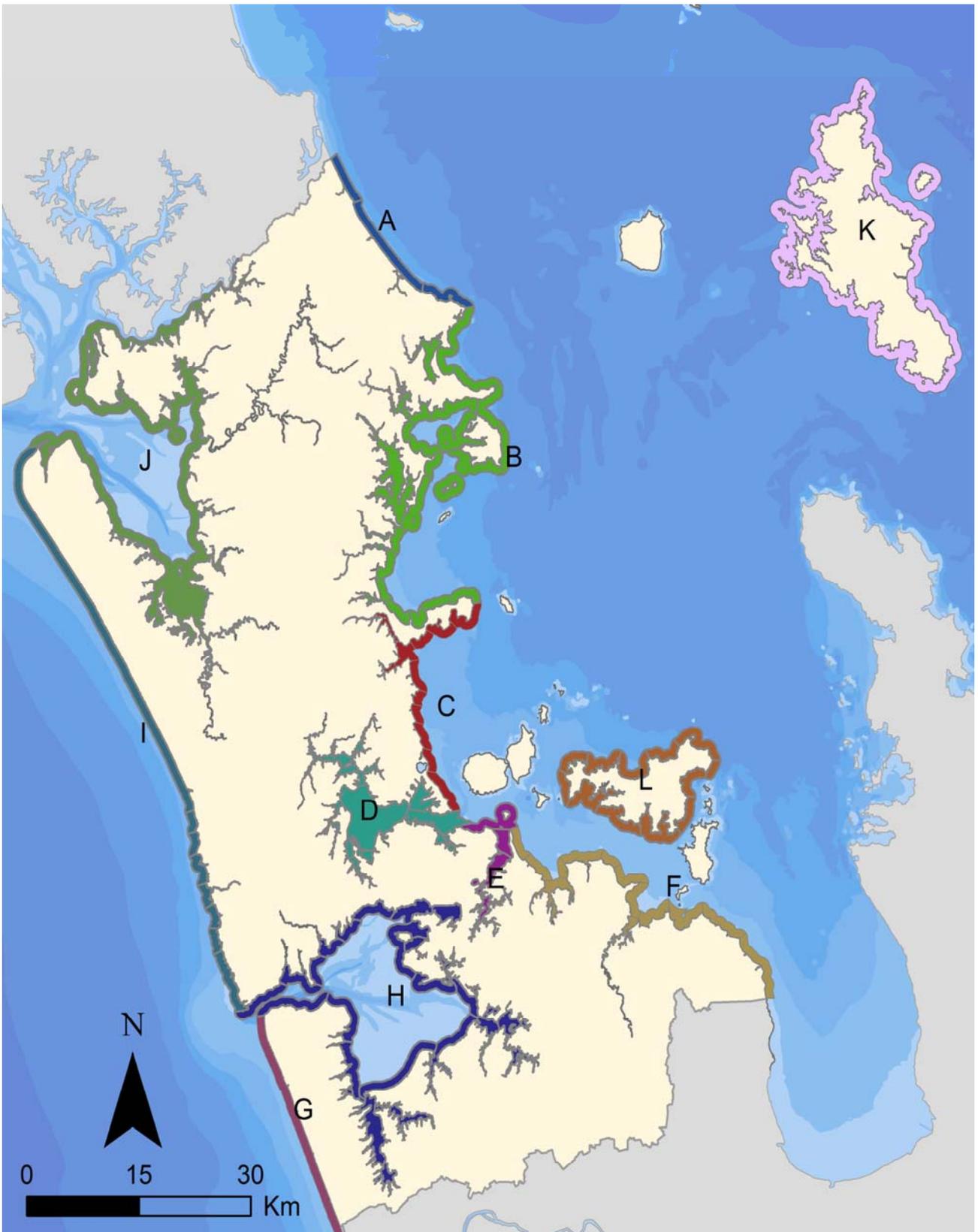
<b>Action</b>	<b>Timeframe</b>
Baseline data for coastal plans complete.	December 2019
Draft stage one technical reports for first four coastal plans.	January 2020
Local board, community, stakeholder and mana whenua communications and engagement.	June 2019 to April 2020
Draft coastal plans presented to local boards for review.	May 2020
Final coastal plans approved.	June 2020

46. The remaining coastal plans will start being developed collaboratively across the council group. They will be developed in phases of four on a 4-month rolling basis, with all stage one technical reports for the Auckland region completed by December 2020.

### **Attachments**

- A. Map of the 12 coastal cells in the Auckland region.

**Attachment A: Map of the 12 coastal cells in the Auckland region**



Refer to next page for key

## Key

Coastal Cell	Geographical boundaries	Local boards included
A	Mangawhai – Leigh	Rodney
B	Leigh to Whangaparaoa (including Kawau Island)	Rodney/Hibiscus & Bays
C	Whangaparaoa – North Head	Hibiscus & Bays/Devonport-Takapuna
D	Waitemata Harbour (North Head – Mission Bay)	Devonport-Takapuna/Kaipatiki/Upper Harbour/Henderson-Massey/Whau/Albert-Eden/Waitemata/Orakei
E	Mission Bay to Musick Point	Orakei-Maungakiekie-Tamaki/Howick/Mangere-Otahuhu/Otara-Papatoetoe
F	Musick Point – Matingarahi	Howick/Franklin
G	Kariotahi to Awhitu	Franklin
H	Manukau Harbour (Awhitu to Whatipu)	Franklin/Papakura/Manurewa/Otara-Papatoetoe/Mangere-Otahuhu/Maungakiekie-Tamaki/ Puketapapa/Whau/Waitakere Ranges
I	Whatipu to South Head	Waitakere Ranges/Rodney
J	Kaipara Harbour (South Head to Tapora)	Rodney
K	Aotea Great Barrier	Aotea Great Barrier
L	Waiheke	Waiheke