

**BEFORE A BOARD OF INQUIRY
EAST WEST LINK PROJECT**

UNDER of the Resource Management Act 1991 (**RMA**)

AND

IN THE MATTER of notices of requirement for designation and resource consent applications by the New Zealand Transport Agency for the East West Link Project (the **Project**)

CLOSING STATEMENT ON BEHALF OF AUCKLAND COUNCIL

13 September 2017



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1. INTRODUCTION

1.1 These closing submissions are filed on behalf of Auckland Council (**Council**), and address the following matters:

- (a) Positive effects/project benefits:
 - (i) Transportation;
 - (ii) Stormwater treatment;
 - (iii) Groundwater benefits; and
 - (iv) 'Naturalised' coastline;
- (b) Ecological effects and management:
 - (i) Mitigation package – quantum and certainty;
 - (ii) Designation of Anns Creek land;
- (c) Dredging and Reclamation:
 - (i) Sub-tidal dredging;
 - (ii) Reclamation;
- (d) Severance effects:
 - (i) Te Hopua/Neilson Street;
 - (ii) Waikaraka Cemetery and Park;
- (e) Waikaraka Cemetery;
- (f) Waikaraka Park South Sports Fields;
- (g) Heritage – Relationship between the RMA and HNZPTA;
- (h) Transpower – undergrounding;
- (i) Conditions;
- (j) Conclusion.

1.2 The Council acknowledges the constructive way in which the NZTA team has engaged with the Council – which has resolved many of the Council's concerns. Except to the extent expressly modified in this closing statement, the Council maintains the position as set out in its opening statement.

1.3 **Attachment 2** to these submissions addresses some miscellaneous matters raised by the Board.

2. PROJECT BENEFITS

Transportation Benefits

2.1 As recorded in the Council's opening statement and evidence, the Council supports the EWL Proposal, primarily because it will deliver significant transportation benefits:

- (a) allowing more efficient freight movement – with consequential economic benefits;
- (b) removing heavy vehicle traffic from local roads – increasing their safety and amenity, and creating opportunities for improved walking, cycling and public transport; and
- (c) additional walking and cycling facilities – creating improved connectivity between Onehunga, Māngere Bridge and Sylvia Park.

2.2 This will give effect to numerous Auckland Plan and Unitary Plan provisions.¹

2.3 In addition, the Council still seeks the following to optimise the transportation benefits:

- (a) a shared use path on the southern side of Sylvia Park Rd, for the reasons explained in Mr. Tindall's evidence. The inclusion of the Stratex site within the designation potentially addresses the NZTA's concerns about the space required for this;
- (b) consideration, at the detailed design stage, for the provision of a pedestrian crossing across Neilson St, as explained in Mr. Smith's evidence; and
- (c) consideration, at the detailed design stage, of the inclusion of a bus-only off-ramp from SH20 onto Onehunga Harbour Road. In this regard, we understand that the NZTA is concerned that no design work has been done to confirm whether the bus lane can fit and whether it will have any implications on the alignment of Orpheus Drive or Onehunga Harbour

¹ For example, the Auckland Plan Chapter 6, page 154; Chapter 13, page 322; Development Strategy map, page 55. Auckland Unitary Plan B3 (Infrastructure), E26.2, H10, H16.2(i), and H17.2(i).

Road, the land bridge and access to Gloucester Park South etc. However, in light of the evidence², and the severance effects (discussed below) it is submitted that there should be a requirement to, at least, consider this issue at detailed design stage and ensure that such an outcome is not precluded. Such an outcome is consistent with the NZTA's objective to "improve journey time reliability for buses between SH20 and Onehunga Town Centre". We understand that the NZTA will be proposing a condition to address this in the context of the landbridge design process.³

Stormwater Treatment

- 2.4** The Proposal will provide stormwater treatment for 611 ha of urban land within the Onehunga-Penrose catchment.⁴ There has been no substantive challenge to this being a good outcome. As Mr. Roa said in response to the Chair's question "would you put this in?".⁵

Yes, I would. I would and the reason for that is it is, in my view, the best use of that space. There are very, very limited opportunities to manage the quality of the storm water in the catchment, for the urbanised catchment, so I think it's a unique opportunity. As much as the project itself and the setup itself is unique, the opportunity is also one that I think is one that I would still do. I think it's a good opportunity to treat the wider catchments.

- 2.5** Three issues have arisen:

- (a) why is the NZTA proposing to treat existing stormwater?
- (b) whether the proposed stormwater facilities will deliver the anticipated benefits?
- (c) what will the Council's obligations to maintain the performance of the facilities on an on-going basis be?

2 Rebuttal Evidence of Andrew Murray, page 8 at 5.14 – 5.15 and Transcript of proceedings, page 1190, lines 15 – 20.

3 Adding a requirement to Condition LV.5C that the design not preclude and where practicable accommodate a buslane from the SH20 northbound off-ramp connecting to Onehunga Harbour Road in the vicinity of The Landing.

4 Summary of Evidence of Andres Roa at para 2(a).

5 Transcript of proceedings, 3 August 2017, page 3049, line 21 – 29.

Water treatment – why?

- 2.6** Questions have been raised about why the NZTA is proposing the stormwater treatment: Why is a 'roading' agency doing this? Is it mitigation? etc.
- 2.7** In the Council's submission, these questions are irrelevant.⁶ Directing existing stormwater discharges through the proposed stormwater wetlands is simply a part of the NZTA's proposal to be assessed along with the rest of the Proposal under the RMA. The NZTA has chosen to include the stormwater treatment in the Proposal; and the NZTA's reasons for seeking the RMA approvals for this, is irrelevant for the purposes of the Board's assessment under the RMA.
- 2.8** Furthermore, it is the Council's submission that the NZTA's proposal to enable the treatment of such a significant area of untreated stormwater, as part of a transport project, should be applauded (not criticised). Stormwater runoff treatment within the catchment is currently limited where industrial land use makes up approximately 45% of land area with associated elevated contaminant discharges.⁷ Stormwater runoff treatment equivalent to this scale is unlikely to be implemented by the Council in the context of future regional stormwater network management and water quality improvement interventions.

Water treatment – certainty of performance

- 2.9** As noted above, there are some unique aspects to the proposed stormwater treatment facilities, primarily because of its coastal location and that it is "unusual" to have both wetlands and biofiltration devices "operating and complementing each other".⁸
- 2.10** Proposed Condition C.1F sets out the outcomes to be achieved by the stormwater treatment devices, including achieving an average annual removal efficiency of at least 75% Total Suspended Solid levels. This is the orthodox treatment standard applied in Auckland and is to be confirmed by the NZTA through monitoring⁹ prior to handover of the treatment devices to the Council. In addition, the conditions require the design to minimise saltwater intrusion and take account of predicted changes in sea level and sea bed levels. Condition C.1G then requires a

6 The proposed wetlands do not require land to be designated. Accordingly, there is no need to consider whether they are "reasonably necessary" under section 171(1)(i)(c) of the RMA.

7 NZTA, Technical Report 12, section 5.7.1.2.

8 Transcript of proceedings, 3 August 2017, page 3048, line 34.

9 Condition C.1H.

Stormwater Operation and Maintenance Plan to be certified by the Council.¹⁰ Where applicable, this document will take into account the findings of the treatment device monitoring completed under Condition C.1H¹¹ and will detail how the devices are operated and maintained to achieve the outcomes listed in condition C.1F.

- 2.11** The Council is confident that, through the detailed design and handover process, the stormwater facilities can be successfully implemented and operated to achieve the outcomes sought in the conditions.

Water treatment – Council's on-going role

- 2.12** Mr. Parsonson made the following comment to counsel:¹²

...Mr. Sunich was a bit unclear about the long-term responsibility for the compliance with the consent condition associated with this particular coastal device on the basis that the Council would be taking over the management of the asset. I assume you've probably got this in train already, but could you provide us with some guidance on that at some stage whether or not the Council would take over responsibility for that particular condition? I don't know whether it's relevant, but obviously if a project like this was implemented and that reclamation occurred, then that becomes land and I'm not sure whether that might have some influence on then how the Council may or may not adopt a condition for a discharge.

- 2.13** As explained by both Mr. Sunich and Mr. Roa, the Council will be closely involved in both the design and implementation of the stormwater treatment devices, prior to them being vested in the Council.¹³ It is expected that the Council (in its capacity as potential future owner of assets) will continue to have a sufficient level of interaction with the NZTA and participation during the design process. When the devices are vested, the Council will assume responsibility for compliance with the conditions – including the obligation to operate them in accordance with the Stormwater Operation and Maintenance Plan, approved under conditions C.1G and SW.15.

10 Condition SW.15 also requires a Stormwater Operation and Maintenance Plan; and SW.16 requires the stormwater systems to be "managed in accordance with" this Plan.

11 Which is proposed to be expanded to address a significantly broader range of performance indicators. This condition also requires reviews and updates of the Operation and Maintenance Plan in response to the monitoring results (Condition C.1H(d)).

12 Transcript of proceedings 3 August 2017, page 3060, line 33.

13 Transcript of proceedings 3 August 2017, page 303, line 6; and Transcript of proceedings 2 August 2017, page 3014, line 6.

2.14 As noted by Mr. Roa "[e]ventually, the discharges from these new stormwater assets will be consented under the network discharge consent because it will be picking up discharges which are currently existing"¹⁴. This is because:

- (a) the proposed stormwater treatment devices will:
 - (i) receive stormwater from both the new NZTA works, and the existing stormwater from the adjacent urban catchment to the north; and
 - (ii) eventually be vested in, and managed by, the Council; and
- (b) the NZTA is only seeking consent for the stormwater diversions and discharges associated with the new impervious surfaces to be created by the EWL.

2.15 The existing stormwater discharges to the CMA (and associated structures) are authorised by a range of existing authorities and water rights (deemed resource consents under the RMA) and catchment (and sub-catchment) resource consents (Existing Authorisations). In March 2001 the former Auckland City Council and Metrowater Ltd lodged resource consent applications with the Regional Council to replace these Existing Authorisations. Because that application was lodged more than 6 months prior to the existing authorities/consents expiring, the stormwater discharges have been authorised under section 124 of the RMA.

2.16 The Council has lodged a new application for a new integrated stormwater network discharge consent. It is intended that, once granted, this consent will replace the current 'patchwork' of existing Authorisations with a set of regionally consistent requirements to deliver the outcomes specified in the consent and aligned with the Auckland Plan and Unitary Plan. Therefore, this consent will eventually replace the Existing Authorities.

2.17 Accordingly, the discharges from the existing catchment to the proposed stormwater devices, and on into the CMA, will be authorised by the Existing Authorisations, and then the new network discharge consent. We note that condition C.1F(e) expressly anticipates the stormwater treatment devices being

14 Transcript of proceedings 3 August 2017, page 3060, line 46.

designed to be consistent with the outcomes of the network discharge consent (should it be granted).

Leachate management benefits

2.18 There is no evidence to suggest that leachate from the closed landfills adjacent to the Māngere foreshore is not being managed appropriately. However, the proposed road, and new and extended leachate interception system will intercept leachate from the closed landfills, and direct it to the proposed stormwater treatment facilities (instead of directing it to the Māngere wastewater treatment plant). As explained in answers by Ms Eldridge, this creates benefits in terms of:

- (a) providing additional attenuation on contaminants in groundwater from the Galway Street landfill;¹⁵
- (b) extending the leachate collection system to include the entire length of Pikes Point East;¹⁶
- (c) reducing the risk of saltwater intrusion into the landfills, and generally separating the waste mass from coastal processes;¹⁷ and
- (d) reducing reliance on the trade waste system (and the Māngere wastewater treatment plant).¹⁸

2.19 In answers to questions Ms Eldridge also indicated that "more formalisation of the stormwater systems that pass in and around Pikes Point will reduce the amount of stormwater intrusion into Pikes Point which ultimately should reduce the amount of leachate being collected".¹⁹

'Naturalised' Coastline

2.20 As stated in the Council's opening statement, the 'naturalisation' of the Māngere Inlet is supported – subject however, to ensuring that the size of the reclamation is the minimum necessary to achieve the required landscape and recreational outcomes.

15 Transcript of proceedings 3 August 2017, page 3079, lines 12 – 15.

16 Transcript of proceedings 3 August 2017, page 3079, lines 31 - 45.

17 Transcript of proceedings 3 August 2017, page 3080, lines 40 – 41.

18 Transcript of proceedings 3 August 2017, page 3077, lines 1 - 22; page 3087, lines 25 - 28.

19 Transcript of proceedings 3 August 2017, page 3081, lines 37 – 41.

3. ECOLOGICAL EFFECTS AND MANAGEMENT

Mitigation package – quantum and certainty

- 3.1** The adverse ecological effects of the Proposal are significant, including significant adverse effects on unique, rare and threatened ecology – in areas identified as SEAs in the Unitary Plan. As explained in the Council's opening statement, the Council's primary concerns with the proposed ecological mitigation were the quantum of mitigation²⁰ and a lack of certainty as to outcome.
- 3.2** These concerns stemmed from a combination of: the significance of the effects; the lack of detail around biodiversity outcomes of the proposed mitigation; the potential for the Anns Creek viaduct to have ongoing negative effects on the remaining areas of lava shrubland; the fact that the mitigation package was "finely balanced" and relied on the successful implementation of all aspects of the package; and that the success of some aspects of the mitigation is inherently uncertain due to its use of untested restoration techniques and/ or the unusual nature of the ecosystems that are being restored. In addition, there was no 'redundancy', or acknowledgement that, while the adverse effects would be immediate, the mitigation would take time to create off-setting benefits.
- 3.3** These concerns, subject to the specific issues discussed below, have now been addressed as follows:
- (a) The proposed conditions clearly require ecological restoration and enhancement measures across at least 30ha²¹ comprising, in addition to the measures originally proposed by the NZTA:²²
- (i) removal of exotic wetland plants and restoration of an indigenous wetland ecosystem covering 0.6ha at the western end of Anns Creek East reserve; and
- (ii) pest plant control and restoration of 1.5ha of freshwater/brackish wetland complex at Blake Road Reserve

20 "Mitigation" is used as a short-hand reference to all proposed measures intended to address the adverse ecological effects.

21 Originally, the conditions required 10ha. We understand that more than 30ha might be possible, depending upon the NZTA's ability to access land and/or land owner approvals. Some of the 30ha includes land owned by 3rd parties. In the event that the NZTA is not able to obtain landowner approval, the proposed conditions require the NZTA to consult with the Council and identify alternative locations to achieve the 30ha requirement (Condition EM.2A(i)).

22 Condition EM.2A(f) and (h).

(Māngere East), and 2.0ha of buffer planting surrounding the wetland.

- (b) The NZTA will be required to use reasonable endeavours to achieve statutory protection of an existing high tide roost within the Manukau Harbour (in addition to Ngarango Otainui Island).²³ The proposed conditions now expressly state that the statutory protection may “include closure to public access or to access at particular times or by particular vessels”.²⁴
- (c) The proposed conditions now provide better certainty as to the outcomes to be achieved from the habitat enhancement measures. For example:²⁵
 - (i) the methodology for pest animal management as set out in the ECOMP must be designed to achieve (amongst other things) "Annual possum residual trap catch or wax tag index < 5%; and
 - (ii) the methodology for pest plant management must be designed to achieve (amongst other things) "no mature, fruiting and/or flowering individuals of weed species present within a control area and any weed species present are dead".

3.4 Accordingly, subject to the following exceptions the Council supports the NZTA's amended proposed ecological mitigation package:

- (a) **Number of areas to be protected:** As currently proposed the NZTA conditions only require the statutory protection of one existing wading bird high tide roost in addition to Ngarango Otainui Island.²⁶ The Council seeks that there should be at least two such areas protected because the wading birds that will be affected by the Proposal will require alternative areas to roost and feed. The existing high tide roosts in the southern Manukau Harbour are all important sites and are at risk from increasing levels of activity in the area. If only one roost has statutory protection, activities such as kite surfing may move to sites near the other roosts. There is no existing high tide roost in the Māngere Inlet

23 Note that there is no existing high tide shorebird roost within the intertidal zone in Māngere Inlet. However there is a mid-tide roost, which is covered at high water. The mid tide roost is near the centre of the inlet and reasonably inaccessible, as a result it probably does not need specific protection.

24 Condition EM.7A.

25 Conditions EM.3B and EM.3C.

26 Condition EM.7A(a).

and the protection of the island will only benefit shags and spoonbills. The existing mid-tide roost in the inlet should be protected to benefit species such as wrybill.

- (b) **Period of works in the South Island:** As currently proposed the NZTA conditions will require the South Island breeding ground protection work to be funded for a period of 5 years following the completion of construction works.²⁷ The Council seeks that this be amended to 35 years because the 5-year period originally proposed is clearly insufficient to provide longer term benefit to species such as the wrybill.²⁸ A significant proportion (up to 20%) of the global wrybill population feeds in Māngere Inlet. If the South Island breeding ground protection work stops after just 5 years, predator numbers will quickly return to pre-control levels and the birds will be no better off, yet the EWL road will be permanently covering part of their Māngere Inlet feeding grounds. Therefore, in the Council's view, the South Island breeding ground protection work must run for at least the 35 year life of the consent as an absolute minimum, to provide adequate offset mitigation for the longer term.²⁹
- (c) **Extent of pest animal management:** As noted above the proposed conditions include specific performance measures for pest animal management. However, there are no conditions requiring these measures to be implemented, except in relation to the proposed South Island breeding ground off-set. The ecologists agreed that the mitigation measures set out in Ms de Luca's Table 7 should all be implemented. This Table includes pest animal management, including for areas around Anns Creek and on Ngarango Otainui Island, which should be reflected in the conditions.

Designation of the Anns Creek land

- 3.5** TR Group has challenged the proposed designation of its land within the Anns Creek area. The land is required to undertake ecological mitigation works and

27 Condition EM.7(b).

28 Summary of Evidence of Tim Lovegrove, paragraph 3(j)(iii).

29 There are precedents for similar longer term mitigation, e.g. Project River Recovery funded by Meridian Energy and Genesis Energy, which recognises the adverse effects of hydroelectric power development on upper Waitaki Basin rivers and wetlands, and which runs for the 35 year life of those consents. <http://www.doc.govt.nz/Documents/conservation/land-and-freshwater/Freshwater/PRR/prr-strategic-plan-2012-2019.pdf>.

there appears to be no challenge to the need for these works. As explained by Mr. Gouge, designating this land is appropriate because:

- (a) as a general principle designating land for mitigation works is appropriate where:
 - (i) the works are necessary to address the effects of a project (in order that the RMA approvals necessary to achieve the requiring authority's objectives can be granted);
 - (ii) the designation will authorise the mitigation works (from a 'district plan' point of view) and/or protect the land from activities that may "prevent or hinder" the designated works;
- (b) it is necessary to address the ecological effects of the entire Proposal in a comprehensive and integrated manner – across the entire Proposal;
- (c) this requires on-going ecological enhancement and protection works within the TR Group land;
- (d) the NZTA ecological mitigation works will effectively subsume the requirements of the TR Group resource consents (for the Stage 2 works) – but within the context of the wider ecological mitigation works across the entire project. Because the NZTA designation will be effectively replacing the TR Stage 2 consent it is not appropriate, in my submission, to assess the effects of the NZTA designation on the assumption that the TR Stage 2 works and the associated ecological mitigation is part of the receiving environment. This is because it is not unlikely, that the TR Stage 2 consent will be implemented if the NOR is confirmed;³⁰
- (e) given the unique and sensitive nature of the affected ecology it is important to give the proposed mitigation the best chance of success. Accordingly, by designating the land:
 - (i) there will be a greater level of certainty that the NZTA can acquire the property rights necessary to undertake the work, and it will facilitate the long-term protection of the area. The

30 Such an analysis was applied by the Environment Court in *Villages of NZ (Mt Wellington) Ltd v Auckland Council* A023/2009, at paragraphs [30] - [34].

long term protection is an important element in the ecologists' mitigation package. Mr. Bishop's evidence was that ecological management is more likely to be successful if NZTA is responsible for the area, due to its proposed "long term commitment to the site, and secure source of funding".³¹ NZTA also has previous experience with successful restoration projects and in-house experience in the management and rehabilitation of native biodiversity.

- (ii) the ecological mitigation works within the designated area will be carried out in way that will be integrated and consistent with the other ecological mitigation measures across the project.

3.6 Therefore, the greater the extent of designated area for mitigation works, the greater the likelihood of implementation of successful mitigation works.³²

4. DREDGING AND RECLAMATION

Sub-tidal dredging (except to re-align the Anns Creek channel)

4.1 The Council maintains the position set out in the opening statement that the proposed sub-tidal dredging to create mudcrete should not be allowed because:

- (a) it creates adverse ecological effects through disturbing and dispersing sediments and associated contaminants, leading to increased sedimentation in some areas. The sub-tidal dredging will remove 45% of the sub-tidal habitat within the Māngere Inlet, including all of the benthic and sub-surface fauna in that area. All of the ecological experts agreed that "avoiding dredging would be a better ecological outcome",³³
- (b) it is not necessary to construct the EWL;³⁴
- (c) the effects of any increase in truck movements to bring in the required material to construct the reclamation can be adequately managed and mitigated.³⁵

31 Summary of Evidence of Craig Bishop, page 5 at 3(i).

32 Summary of Evidence of Craig Bishop, page 4 at 3(e).

33 Expert Conferencing Joint Witness Statement Ecology dated 23 May 2017, page 10 at 9(g).

34 Rebuttal Evidence of Stephen Priestly.

- 4.2 Therefore, avoiding sub-tidal dredging will avoid adverse ecological effects in the context of a project that has significant effects on ecological values recognised by the statutory planning provisions, and where the ecological mitigation package is "finely balanced". Accordingly, the Council seeks that the resource consents sought for this sub-tidal dredging be declined.

Reclamation

- 4.3 The Council maintains the position as set out in the opening statement that there should be a positive obligation to reduce the reclamation scale through the detailed design process. However, any reduction should not compromise the positive outcomes of the reclamation in relation to landscape integration, public access etc. This is to ensure that the ecological effects of the reclamation are minimised to the extent reasonably practicable.

- 4.4 In particular, the 'finger headlands' on Landforms 2 and 3 have been identified as areas where reductions are possible. They will result in increased sedimentation and are not needed from a coastal processes perspective, or for stormwater treatment or public access. They are landscape features designed solely to provide 'visual coherence' and reduce the visual impact of the new road. As Mr. Parsonson observed, "[i]t's my recollection that Mr. Lister was the witness that was most strongly wedded to the retention of those headlands and that most other witnesses to varying degrees suggested that they could be modified or reduced, so I accept that".³⁶ In the context of the adverse ecological effects and the relevant statutory provisions, mitigation of visual effects should not significantly increase an area of reclamation.³⁷

5. SEVERANCE EFFECTS

- 5.1 The NZTA has chosen a route that places (at least) 4 lanes of roading between the land and the coast. While there are sound transportation reasons for this, it inevitably creates severance related effects, which are most acute at:

- (a) Te Hopua a Rangi/Neilson St; and

35 Confirmed by Mr. Wu in response to questioning from Mr. Parsonson, Transcript of proceedings 19 July 2017, page 1927.

36 Transcript of Proceedings 8 August 2017, page 3477, lines 36 - 40.

37 Evidence in Chief of Kathryn Coombes.

- (b) Waikaraka Cemetery and Park.

Te Hopua/Neilson St

5.2 The severance effects of the EWL at Te Hopua are significant, and need to be addressed. There are three key reasons for why the severance issues are so significant:

- (a) As shown by the photomontages in Exhibit 10, the proposed NZTA works will introduce significant transport infrastructure (including a bridge approx. 8m, a trench approx. 400m long, 8m deep and 21m wide, several traffic lanes and associated retaining structures) between the coast and Te Hopua and Onehunga. Not only is the infrastructure of a significant scale, it will be part of this environment for the foreseeable future. And, as explained by Mr. Brown, the trench in particular will be a permanent part of the environment.³⁸
- (b) While severely compromised by previous uses and existing infrastructure, the area contains significant cultural values to Mana Whenua, and the wider community in terms of heritage (historic and natural), open space and connectivity to and along the coast.
- (c) Moreover it is an area of strategic importance:
- (i) It is the intersection of east-west and north-south access routes – linking, for example, Taumanu, Māngere Bridge and Onehunga;
- (ii) Onehunga is a town centre, already in transition and identified for further development. Ms Rickard explained that the Auckland Plan is a very relevant document that is predicting growth, and has an intention to transition the Port of Onehunga area.³⁹ The Chair commented to Ms Kinzett that "Onehunga is going to become increasingly vibrant".⁴⁰

38 Transcript of proceedings 1 August 2017, page 2792, line 17.

39 Summary of evidence of Andrea Rickard page 3, at 13; Transcript of proceedings 28 July 2017, page 2502, line 32 and 49 – 51.

40 Transcript of proceedings 5 July 2017, page 742, lines 46 - 47.

5.3 Apart from the 5m wide foot/cycle bridge, the land bridge is the *only*⁴¹ mitigation for these effects. As explained in the opening statement, the Council seeks that the land bridge be as wide as is reasonably practicable to address the severance effects noted above and, to some extent wider severance effects (eg Waikaraka Cemetery, discussed below). The rationale for this has never rested on the future redevelopment of the Onehunga Wharf – even though this is an important ‘aspiration’ for the community⁴² that should not be discounted – especially given the scale and permanence of the proposed infrastructure.

5.4 However, the NZTA has focused on the extent to which the future redevelopment of the Wharf is part of the ‘receiving environment’. The NZTA case appears to be that the redeveloped Wharf cannot be considered as part of the receiving environment and, therefore, there is no justification for a wider land bridge. With respect, too much emphasis has been placed on this issue. In this regard:

- (a) it is accepted that, even though it is inevitable that the current uses of the Wharf will change, “a redeveloped wharf” is not part of the receiving environment for the purposes of an assessment of effects under the RMA – because it will be the subject of a future plan change (and/or resource consent) process;
- (b) however, as the residential and employment activity in Onehunga increases, so will the importance of access to the Wharf *area* (whether or not the Wharf it is redeveloped) and connectivity to Taumanu Reserve, Gloucester Park, Māngere Bridge and the Māngere Inlet; and
- (c) therefore, whether or not the Wharf is redeveloped there will be severance effects and, over time, as Onehunga develops and there is more public activity generally in the area, the significance of these effects and the importance of the connection across the EWL trench will increase. The importance of the area will only increase when the Wharf is redeveloped.

5.5 In light of the above, the scale and design of the land bridge is a critical element of the EWL Proposal because:

41 The 4m wide shared path between Taumanu Reserve and the Wharf is acknowledged but it does not directly address the severance issue, created by the trench etc.

42 Noting, that Panuku's role in developing the Wharf reflects this community aspiration. It is not appropriate to regard the future development of the wharf as a 'commercial venture' in this regard.

- (a) The Proposal has significant severance effects to the coastal edge and the land, including severance around Te Hopua Tuff Ring and along the Māngere Inlet.⁴³ As explained by Mr. McIndoe, the proposed land bridge should be increased in length to "offset the effects of severance caused by the East West Link along its length and specifically in its local sector."⁴⁴ The Council was concerned that as previously worded, the conditions did not encourage any extension of the land bridge, but simply provided for a minimum length of 70m, with no incentive to go further than that.
- (b) During cross-examination, Ms Hancock accepted that through detailed design process there is the opportunity to result in a wider land bridge.⁴⁵ As the land bridge would provide the only means of mitigation in terms of severance, it needs to be as big as possible within the acceptable constraints. Referring to an increase in length, Mr. Lister said that up to a point "more is always better".⁴⁶
- (c) In this regard, the Council considers that its position is consistent with Mr. Wickman's view that "the East West Link is a project that is of local, regional and national significance and we are committed to getting it right".⁴⁷

5.6 In light of the above, the Council supports the conclusions of the Statement to the Board of Inquiry: Proposed Land Bridge at Onehunga Harbour Road dated 23 August 2017.⁴⁸ Accordingly, subject to one exception, the Council has now agreed the wording of conditions⁴⁹ that:

- (a) require the NZTA to facilitate a collaborative design process involving:
 - (i) a range of parties, including Auckland transport, Council, Panuku, Mana Whenua, the Local Board, adjacent land owners, Heritage New Zealand and TOES;
 - (ii) experienced facilitation and expert technical advice; and
 - (iii) independent review.

43 Summary of Evidence of Graeme McIndoe, page 3 at 2(c).

44 Summary of Evidence of Graeme McIndoe, page 3 at 2(a).

45 Transcript of proceedings 11 July 2017, page 1264, line 19.

46 Transcript of proceedings page 12 July 2017, page 1315, line 9.

47 Rebuttal Evidence of Scott Wickman page 13 at 12.3.

48 Statement to the Board of Inquiry proposed Land Bridge at Onehunga Harbour Road dated 23 August 2017.

49 Conditions DC.11A and LV.5C.

- (b) require the trench and land bridge to achieve a range of outcomes, including:
- (i) "a generous connection between the Landing and Onehunga Wharf" with a length of at least 80m, taking into account a range of technical considerations. The Council seeks an amendment to the wording of condition LV.5C so that the width of the land bridge is "a maximum of 130m and a minimum of 80m";
 - (ii) providing for local traffic;
 - (iii) enhancing pedestrian and cycle access;
 - (iv) incorporating appropriate parking and secure vehicle access to Gloucester Park South;
 - (v) responding to the historical context; and
 - (vi) providing acoustic treatment within the trench.

Waikaraka Cemetery and Park

- 5.7** The severance effects along the approximately 500m long Waikaraka Cemetery and Park 'frontage' to the Māngere Inlet are severe. The current *and potential* connections to the coast are to be replaced with a pedestrian/cycle bridge at Alfred St and an at-grade crossing at Captain Springs Rd. Moreover, the need to mitigate adverse effects on the amenity of the Cemetery will necessarily require some form of physical separation between the Cemetery and the EWL, and the coast.
- 5.8** As explained by Mr McIndoe the land bridge offers some opportunity to off-set the severance effects in this part of the project.⁵⁰

6. WAIKARAKA CEMETERY

- 6.1** The Cemetery is a place of quiet contemplation that has direct access to the coastal edge. It is an environment with unique and highly significant values. The EWL will place 4 lanes of traffic on an embankment – separating the Cemetery from the coast. The adverse effects on the Cemetery are significant. There has been no dispute in this regard.

50 Summary of Evidence of Graeme McIndoe, page 3 at 2(a).

- 6.2 Proposed condition LV.5F will require an innovative design solution to address the interface between the Cemetery and the EWL. Necessarily this will require a balance between reducing effects on amenity within the Cemetery (eg noise) and the consequential effects on the connection with the coastal edge. However, in the circumstances, this is the most appropriate method to address the effects on the Cemetery.

7. WAIKARAKA PARK SOUTH SPORTS FIELDS

- 7.1 As explained in the opening statement, the Council's plans to develop sports fields in accordance with its designation at Waikaraka Park South were put on hold because of the NZTA's proposal to use the areas as a construction yard.
- 7.2 Initially, the NZTA adopted a view that no mitigation was required, despite the evidence of Ms Hannan that it is needed to mitigate the effect of loss of planned sports fields provision, which is needed to address active sport shortfall both currently and into the future.⁵¹
- 7.3 The Council's concern remains that the effect of NZTA's proposed construction yard at the site is a loss of community access to these sports facilities. During cross-examination, Ms Linzey accepted that if the sports fields were already developed, and therefore part of the receiving environment, the NZTA would have to mitigate the effects of its proposed construction yard.⁵²
- 7.4 The planned sports fields should be considered as part of the receiving environment. In making its decision, the Board will need to consider the planned sports fields in its s 171 assessment. The Court of appeal, in *Queenstown-Lakes District Council v Hawthorn Estate Ltd* [2006] NZRMA 424, stated that:⁵³

the word "environment" embraces the future state of the environment as it might be modified by the utilisation of rights to carry out permitted activity under a district plan. It also includes the environment as it might be modified by the implementation of resource consents which have been granted at the time a particular application is considered, where it appears likely that those resource consents will be implemented.

51 Evidence in Chief of Mimouk Hannan, page 14 at 7.22(b).

52 Transcript of proceedings 20 July 2017, page 2008 at line 31.

53 *Queenstown-Lakes District Council v Hawthorn Estate Ltd* [2006] NZRMA 424, at [84].

7.5 Ms Linzey accepted that the development plans scheduled to commence this year were progressing. Ms Linzey also accepted that the development was not progressing because of the East West Link. Ms Linzey stated that after reviewing Ms Hannan's evidence, she accepts that "there was a clear intention to provide those sports fields and that the project is likely to result in a deferment of the ability to deliver those sports fields."⁵⁴ She further went on to accept that "the provision of sports fields is a matter within but a discrete component of open space impacts during construction".⁵⁵

7.6 Despite discussions regarding potential conditions to address this issue no agreement has been reached with the NZTA. We are unclear as to whether the NZTA will be proposing any conditions. This is particularly disappointing to the Council given the significant permanent adverse effects on the Waikaraka Cemetery and Park area generally. Accordingly, the Council seeks a condition requiring:

The Requiring Authority shall fund the consenting and construction of a recreational facility incorporating two sand carpet sports fields, or an alternative sports field configuration as agreed with the Manager, in accordance with a final design developed by the Council. This design shall provide at least 54 hours of playing capacity per week. In addition to the sports fields, this recreational facility will contain lighting, two cubicle changing rooms, a toilet block, and a carpark unless otherwise excluded by the final design. This recreational facility shall be located on Council owned land at a location agreed with the Manager and in the general vicinity of the project area. This facility will be constructed to offset the delayed implementation of planned sports fields in Waikaraka Park South.

Alternatively, a financial payment shall be made to Auckland Council (in lieu and as equivalent of the facilities outlined above) in full at least 20 working days prior to occupation of Construction Yard 3 and valued on the basis of the provision of the recreational facilities outline above.

7.7 This condition is appropriate because:

- (a) If the sports fields existed now there would be little argument that using them for a construction yard would require mitigation.

54 Transcript of proceedings 20 July 2017, page 2009, line 6.
55 Transcript of proceedings 20 July 2017, page 2009, line 9.

- (b) It is unfair for the NZTA to argue that the Council's development plans are not sufficiently certain/detailed – because, as explained in Ms Hannan's evidence, the Council did not progress the plans when it knew about the NZTA's need to use the land for the EWL.⁵⁶
- (c) On the same basis that the NZTA has argued that the Onehunga Wharf redevelopment is not part of the receiving environment the sports fields are part of the receiving environment because.⁵⁷
 - (i) the development is authorised by the Council's existing designation;
 - (ii) on the basis of the Council's evidence it is (or at least was) likely that the sports fields would be available for the public in 2018; and
 - (iii) the proposed use of the land for a construction yard will prevent the sports fields development and, therefore, the availability of the facilities for the public.

7.8 The Council appreciates that the condition it seeks creates a degree of uncertainty for the NZTA and it would be 'cleaner' if there could be a payment to the Council of an amount that would enable the Council to undertake the works. However, because of the way this issue has played out there is no evidence before the Board to justify a specific amount. Accordingly, the Council's proposed condition is based on a similar approach adopted for the Waterview Connection project. For example, Waterview Connection condition OS.5 requires the following:⁵⁸

The Waterview Reserve Open Space Restoration Plan shall be prepared in general accordance with the UDL Plans (Refer Schedule A, Row 17). The following shall be provided:

- (a) Equivalent reinstatement of the following recreational facilities:

⁵⁶ Rebuttal Evidence of Mimouk Hannan, page 2, at 1.6(d).

⁵⁷ It is also notable that the Council has used the existence of the existing Auckland Transport designations as the basis for arguing that the effects of concern to Ports of Auckland can be dismissed. In the Rebuttal Evidence, Ms Rickard argues that witnesses for EnviroWaste/ChemWaste, Ward and Ports of Auckland, have made an omission failing to "acknowledge that the sites are already affected by transport designations that form part of the existing environment, and could reasonably be expected to be given effect to in future." – Rebuttal Evidence of Andrea Rickard, page 24 at 6.47.

⁵⁸ The Waterview Connection Board of Inquiry considered that there was jurisdiction, to impose ' financial construction' conditions of this sought - see pages 116 - 127.

- (i) A children's playground with the design and equipment targeted at "junior" and "youth" ages; and
 - (ii) One ablution block; and
 - (iii) One basketball court (28m by 15m); and
 - (iv) One volleyball court.
- (b) Other restorations and enhancement:
 - (i) ...
- (c) ...
- (d) A financial payment shall be made to the Auckland Council (in lieu and as equivalent of a playing field at Waterview Reserve), in full at least 20 working days prior to the occupation of the constructions yards 6 and 7, valued on the basis of provision of one "open for play" full size sand-carpeted football (soccer) field with a clear 10m space for spectators on all sides and associated changing facilities and parking requirements at Waterview Reserve or as proposed by UDL Plans...

8. HERITAGE – RELATIONSHIP BETWEEN THE RMA AND HNZPTA

8.1 This particular issue was addressed in Auckland Council's memorandum to the Board of 1 September 2017, which included proposed amendments to the heritage conditions. For the reasons explained in that memorandum the Council's view is that it is not appropriate for the operation of the conditions imposed under the RMA to address adverse effects of the EWL on archeology to 'drop away' if an Authority has been granted by Heritage New Zealand.

8.2 On 7 September 2017 we were asked by the Board to provide more comment on this issue following the representation by Heritage New Zealand.⁵⁹ We respond as follows:

- (a) The role of the Board is to (amongst other things) consider the resource consent applications and NoRs⁶⁰ for the EWL against the relevant *provisions of the RMA*, which are well known to the Board. This includes:

59 Transcript of proceedings, 7 September 2017, page 6051, lines 4 - 16.

60 In this regard we note that the representation on behalf of Heritage New Zealand focussed on the decisions made by the Independent Hearings Panel in respect of the AUP rules. The Independent Hearings Panel was dealing with the extent to which the AUP should impose rules to control potential effects on undiscovered heritage. This is not the same issue as to what conditions should be imposed on designations and non-complying resource consents.

- (i) considering the actual and potential effects on historic heritage – including archaeology – including archaeology that might be discovered in the course of the construction works;
 - (ii) if appropriate, imposing conditions on the resource consents and/or the designations to adequately manage any adverse effects. The need for, and nature of, any conditions should be informed by the relevant RMA provisions (including sections 6(e), 7(a) and 8), the relevant AUP provisions and the views of submitters and expert witnesses. The views of Mana Whenua are of particular importance in the context of archaeology.
- (b) There is no debate that there are potential adverse effects on yet-to-be discovered archeology that are best addressed through conditions requiring 'accidental discovery protocols' (**ADP**). In addition there appears to be no debate that a Heritage Management Plan (**HMP**) is an appropriate method to manage effects on heritage generally. The HMP condition acknowledges that it will address both pre and post-1900 heritage. Heritage New Zealand seeks that the requirement for the ADP and HMP not apply where an Authority is granted. Assuming that the Board agrees that the conditions are necessary and appropriate, the key question is whether it is appropriate that the conditions no longer apply if Heritage New Zealand grants an Authority in relation to the relevant "activity or area". In other (and perhaps colloquial) words, is it appropriate to rely on the Authority to 'do the job' in terms of the Board's obligations under the RMA?
- (c) In the case of archeology Heritage New Zealand has an important statutory role, which is exercised *in accordance with the Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA)*. This has a narrower focus compared with the sustainable management purpose of the RMA. The Purpose and Principles of this Act are similar to, but not the same as, Part 2 of the RMA:
 - (i) the Purpose of the HNZPTA is "to promote the identification, protection, preservation, and conservation of the historical and cultural heritage of New Zealand";⁶¹

61 Heritage New Zealand Pouhere Taonga Act 2014, s 3.

(ii) The Principles state that all persons performing functions and exercising powers under this Act must recognise.⁶²

- (a) the principle that historic places have lasting value in their own right and provide evidence of the origins of New Zealand's distinct society; and
- (b) the principle that the identification, protection, preservation, and conservation of New Zealand's historical and cultural heritage should—
 - (i) take account of all relevant cultural values, knowledge, and disciplines; and
 - (ii) take account of material of cultural heritage value and involve the least possible alteration or loss of it; and
 - (iii) safeguard the options of present and future generations; and
 - (iv) be fully researched, documented, and recorded, where culturally appropriate; and
- (c) the principle that there is value in central government agencies, local authorities, corporations, societies, tangata whenua, and individuals working collaboratively in respect of New Zealand's historical and cultural heritage; and
- (d) the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tūpuna, wāhi tapu, and other taonga.

(d) A detailed comparison between the nature and scope of decision-making between the HNZPTA and the RMA would be complex and probably, for current purposes, unhelpful. But, at face value there are potentially significant differences. The key difference is that in the current case, Heritage New Zealand's jurisdiction relates to one aspect of historic heritage (archaeology) – and does not extend (as the Board's does) to the integrated management of historic heritage with other aspects of the environment. Moreover, the statutory obligation under the HNZPTA is to "have regard to" the Purpose and Principles⁶³, which differs from the more directive language of the RMA eg decisions under sections 104 and 171 are "subject to Part 2", effectively requiring the purpose of the RMA to be achieved; and the obligation to "recognise and provide for"

62 Heritage New Zealand Pouhere Taonga Act 2014, s 4.
63 Sections 49(2) and 59(1)(a)(ii).

the matters of national importance, including "(f) the protection of historic heritage from inappropriate subdivision, use, and development".⁶⁴

- (e) It may be that an Authority will be granted subject to appropriate conditions that will effectively replicate the requirements on the conditions imposed by the Board. But, in our submission, because of Heritage New Zealand's statutory role there can be no guarantee of that outcome.
- (f) More broadly, however, it is submitted that the Council's proposed conditions are more appropriate because:
 - (i) As a matter of law neither statute excludes the operation of the other. As the Environment Court said in the *Gordon* decision "the two statutes... run in parallel, and both deal with issues of heritage protection." There is no legal basis, for example, to exclude "areas" that may be covered by an Authority, from the HMP (which covers all heritage);
 - (ii) The Council's proposed conditions provide for two levels of heritage protection;
 - (iii) Any issues of "duplication or contradictory conditions", which seems to be the primary concern of Heritage New Zealand, are unlikely to occur given that the NZTA's archaeologist will be preparing both the ADP, HMP and the applications to Heritage New Zealand. And, in any event, the same risk arises in respect of the other statutory approvals the NZTA must obtain for the wider EWL project;
 - (iv) The Council's proposed amendments remove the potential for debate over whether a future Authority does apply so as to displace the conditions imposed by the Board ie is a particular activity or area "covered" by the Authority?

64 Resource Management Act 1991, s 6(f).

9. UNDERGROUNDING TRANSPOWER INFRASTRUCTURE

9.1 There is a long-standing desire by the community and Council to remove the Transpower power lines that cross Onehunga Bay/Gloucester Park. Of particular concern to the Council is the Māngere-Mt Roskill A 110kV overhead line, which runs between the Aotea Sea Scouts building and the Wharf. As noted in the opening statement the Council appreciates the challenges to requiring the undergrounding/removal of the Transpower infrastructure as part of the EWL project. At the very least however, it is important that the EWL project does not make the undergrounding/removal more difficult.

9.2 In regards to Transpower's Long-term strategy for the National Grid into, within, and across Auckland, Mr. Noble re-stated that:⁶⁵

Developing this strategy could take 18-24 months. Following the strategy being complete, detailed engineering, consenting/property rights acquisition of the options would still be required. Until this work is complete, Transpower will not know the long-term role of the MNG-ROS A line or whether the line could or should be undergrounded.

9.3 Mr. Noble also indicated in answers to questions that a result of the Transpower review might be a decision to remove some of the lines.⁶⁶ The evidence is that if Transpower decided not to remove the Māngere-Mt Roskill A 110kV line, there are options for future undergrounding of it along Orpheus Drive (or other various routes).⁶⁷ During cross-examination, Mr. Noble made it clear that the East West Link does not preclude the opportunity for future undergrounding of the line.⁶⁸

9.4 Accordingly, the Council supports a condition requiring this issue to be addressed through detailed design. The condition should avoid NZTA from including in its detailed design, anything which might create a barrier to any future undergrounding of lines. We understand that the NZTA will propose the following condition:

If, prior to the Commencement of Construction, Transpower has developed a proposal to underground any transmission line through the designated land of a sufficient detail of design that resource consents and/or a notice of requirement

65 Summary of Evidence of Roy Noble, page 3 at [14].

66 Transcript of proceedings 23 August 2017, page 4831, lines 25 – 29.

67 Transcript of proceedings 23 August 2017, page 4814, line 25.

68 Transcript of proceedings 23 August 2017, page 4815, line 3.

could be sought by Transpower, the Requiring Authority shall take all reasonable measures to accommodate that work in the design and construction of the EWL. The measures taken to accommodate any proposed undergrounding of transmission lines shall be set out in the Outline Plan or Plans prepared in accordance with Condition DC.7.

- 9.5** The rationale for linking an NZTA obligation to an undergrounding proposal developed by Transpower to a relatively high degree of detail is understood (ie to create some certainty). However, in the Council's view the conditions also need to provide for a situation where Transpower has not progressed an undergrounding proposal to such a high level of certainty (which is the more likely outcome given the timing of Transpower's strategic review). At the very least the NZTA should be required to engage with Transpower and the Council and to ensure that, when developing the detailed design for the EWL, careful consideration is given to, where reasonably practicable, avoiding potential obstacles to undergrounding. Accordingly, the Council seeks the following additional condition:⁶⁹

Prior to the Commencement of Construction, the Requiring Authority shall engage with Transpower and the Council to ensure that thorough consideration is given to ensuring that, where reasonably practicable, the design and construction of the EWL does not preclude any proposed undergrounding of the Māngere to Mt Roskill A 110kV line.

The measures taken to accommodate any proposed undergrounding of transmission lines shall be set out in the Outline Plan or Plans prepared in accordance with Condition DC.7.

- 9.6** If more certainty was required, the condition could be amended to limit the NZTA's obligation to consider undergrounding options that have been agreed between Transpower and the Council.

10. CONDITIONS

- 10.1** The Council has continued to engage with the NZTA and other parties to resolve the wording of the proposed conditions. The Council has reviewed a set of amended conditions proposed by the NZTA on 8 September 2017 but, given the timeframes, they have not been reviewed by all Council experts. The Council understands that this set of conditions will be provided to the Board when the

69 Condition NU.1B.

NZTA provides its closing at the end of the hearing. This conditions set is generally acceptable to the Council subject to:

- (a) the specific matters set out in this closing submission; and
- (b) the amendments set out in **Attachment 1**.

10.2 We note that the Council has relied on an indication by the NZTA that the conditions it proposes to present at the end of this hearing is materially the same as the 8 September condition set. However, where there are differences the Council wishes to reserve the right to make further comment. In my submission, this is particularly important given the Council's responsibility as consent authority.

Mercury Energy/Southdown conditions

10.3 As the Board will be aware, the Council has not participated in the debate relating to the Southdown site. The Council's view has been that this is primarily an issue to be resolved between the NZTA and Mercury. This is still the Council's position and will abide by the Board's decision on how the matter should be resolved. However, given that it will be responsible as 'consent authority' for the conditions, the Council does wish to record the following:

- (a) We understand that the proposed conditions will generally operate as 'condition precedent', in that they require certain matters (risk analysis and agreement) prior to the EWL project commencing.
- (b) Such an approach is likely to be appropriate (in principle) if there is a reasonable prospect that the requirements can be satisfied (i.e. that there are design solutions that can adequately address the risks).
- (c) The Council understands that the NZTA's advice is that the risks can be adequately addressed in detailed design. Nevertheless, the conditions envisage a situation where this does not occur. The Council accepts that this is, ultimately the NZTA's risk and it is no different, in principle, from other aspects of the project that will require third party approvals etc (eg Council/Local Board approvals for works within Waikaraka Park South).

- (d) In the unlikely event that a design solution within the scope of the designations and resource consents cannot be found, NZTA may seek to alter the designation and/or resource consent to, for example, alter the alignment. That will require a separate statutory process. However, the Council wishes to reiterate its concerns with any movement of the alignment further south or other alteration to the project that may have adverse effects on ecology and the ONF, as recorded in its evidence. In this regard, the Council notes the careful balancing that the NZTA has undertaken through its options assessment process which recognised the significant values of the Anns Creek area.

11. CONCLUSION

- 11.1** For the reasons set out in the Council's opening and this closing statement, the Council supports the confirmation of the NORs and granting of the resource consent applications sought by the NZTA (except in relation to the sub-tidal dredging for mudcrete), subject to the conditions addressed in this closing.



G C Lanning / W E Bell

13 September 2017

Attachment 1 – Conditions

Auckland Council - Summary of recommended changes to conditions

Council Closing Version – 13 September 2017

- The colour coding in the following conditions is consistent with the NZTA coding of the proposed conditions in both the 19 July 2017 and 8 September 2017 versions of the proposed designation and resource consent conditions for the Project.
- The Council seeks any consequential changes within the balance of the conditions to give effect to the relief sought below.

Condition Reference	Change/Response	AC Comments
NU.1B	<p>If, prior to the Commencement of Construction, Transpower has developed a proposal to underground any transmission line through the designated land of a sufficient detail of design that resource consents and/or a notice of requirement could be sought by Transpower, the Requiring Authority shall take all reasonable measures to accommodate that work in the design and construction of the EWL.</p> <p>Prior to the Commencement of Construction, the Requiring Authority shall engage with Transpower and the Council to ensure that thorough consideration is given to ensuring that, where reasonably practicable, the design and construction of the EWL does not preclude any proposed undergrounding of the Mangere to Mt Roskill A 110kV line.</p> <p>The measures taken to accommodate any proposed undergrounding of transmission lines shall be set out in the Outline Plan or Plans prepared in accordance with Condition DC.7.</p>	AC seeks edits highlighted based on the 8 September 2017 version of the proposed conditions
DC.11A	<p>(a) Commencing at least 3 months prior to preparation of the Outline Plan under section 176 of the RMA, the Requiring Authority shall facilitate a collaborative design process to develop the design details for the EWL Land Bridge.</p> <p>(b) The purpose of the design process is to achieve the design outcomes for the EWL Land Bridge as set out in Condition LV.5C.</p> <p>(c) The Requiring Authority shall invite the following parties to participate in the collaborative design process:</p> <p style="margin-left: 20px;">(i) Auckland Transport;</p> <p style="margin-left: 20px;">(ii) Council;</p> <p style="margin-left: 20px;">(iii) Panuku Development Auckland;</p> <p style="margin-left: 20px;">(iv) Mana Whenua Group;</p> <p style="margin-left: 20px;">(v) HNZPT;</p> <p style="margin-left: 20px;">(vi) Maungakiekie-Tāmaki Local Board;</p> <p style="margin-left: 20px;">(vii) The Onehunga Enhancement Society; and</p> <p style="margin-left: 20px;">(viii) Owners of land immediately adjacent to the Land Bridge.</p> <p>(d) The Requiring Authority shall appoint a Suitably Qualified Person to assist with development of the methodology and programme for the collaborative design process, and to facilitate joint meetings with the parties above.</p> <p>(e) The design process shall include technical advice from Suitably Qualified Persons to provide direction and oversight of the engineering considerations, including geology, structures, geometrics, fire life safety, and surface and groundwater management.</p> <p>(f) The design process shall be iterative, with input from engineering, urban design and other directly relevant environmental disciplines.</p> <p>(g) The Requiring Authority shall appoint a panel of independent experts to review the design. The membership of the panel shall be agreed with Auckland Council. The Requiring Authority shall seek comment from the panel on the design outcomes set out in Condition LV.5C prior to finalisation of the design details.</p> <p>The collaborative design process, and the outcomes of it, shall be set out in the Outline Plan.</p>	AC agrees this condition in the 8 September version of the proposed conditions
DC.11AA	<p>When preparing the Outline Plan(s) under section 176A of the RMA, the Requiring Authority shall consider options for providing the design features listed below. The Outline Plan(s) must include the features unless it is not reasonably practicable to do so. Where a design feature has not been incorporated into the Outline Plan(s), the reasons why shall be set out.</p> <p style="margin-left: 20px;">(a) A SH20 northbound bus off ramp to Onehunga Harbour Road;</p>	<p>AC seeks this condition <u>in addition</u> to the 8 September version of the proposed conditions.</p> <p>AC was made aware that discussions between the NZTA and AT on 12 September 2017 have resulted in the NZTA proposing a modification to LV.5C to accommodate consideration of the bus off ramp. For this reason,</p>

	<p>(a) <u>A 3.0m wide at grade shared use path along the southern side of Sylvia Park Road to the south east corner of the Great South Road intersection (between chainage 5100 and 5500 as illustrated on Drawings AEE-AL-108 and AEE-AL-109); and</u></p> <p>(b) <u>A crossing facility for active modes between Gloucester Park Road North and destinations to the south of Neilson Street.</u></p>	<p>clause (a) submitted to the Board of Inquiry on 11 September 2017 is withdrawn.</p>
LV.5C	<p><u>The ULDMP shall include developed design details for the EWL Trench and EWL Land Bridge and immediately adjacent land to achieve the following outcomes:</u></p> <p>(a) <u>Provide a generous connection between the vicinity of The Landing (2 Onehunga Harbour Road) and Onehunga Wharf, with the length of the EWL Land Bridge (i.e. the distance between its western and eastern end) to be a maximum of 130m and a minimum of 70m 80m in length, being the distance between its western and eastern end. In determining the appropriate length of the Land Bridge, the Requiring Authority shall take account of the outcomes in (b) to (f) below, along with the following technical considerations:</u></p> <p>(i) <u>design to retain the vertical alignment of the EWL trench, maintaining appropriate gradients between the trench and the bridge over SH20 (to the west) and Galway Street intersection (to the east);</u></p> <p>(ii) <u>design to avoid Dangerous Goods Vehicles from being prevented from using the EWL trench;</u></p> <p>(iii) <u>design to avoid the trench being classified as a tunnel to the extent that forced ventilation / deluge systems / active monitoring or similar would be required, with the design input to include a Fire Life Safety Assessment;</u></p> <p>(iv) <u>retention of Onehunga Harbour Road in its current (or similar) vertical alignment to maintain appropriate gradients of the local road;</u></p> <p>(v) <u>design to minimise ongoing operation and maintenance requirements; and</u></p> <p>(vi) <u>minimise visual severance on either side of the land bridge, including between Onehunga Harbour Road and the harbour and wharf, and between Gloucester Park South and the rim of Te Hōpua a Rangi.</u></p> <p>(b) <u>Provide physical connectivity for local traffic over the EWL Trench and for traffic accessing Onehunga Wharf, including heavy vehicle access to existing and future activities on Onehunga Wharf;</u></p> <p>(c) <u>Enhance Incorporate pedestrian and cycle access, including legible connections to parking on Onehunga Harbour Road, to Gloucester Park South and to Old Māngere Bridge, Onehunga Wharf, Taumanu, EWL, and Onehunga town centre;</u></p> <p>(d) <u>Incorporate appropriate parking facilities and service vehicle access to Gloucester Park South;</u></p> <p>(e) Accommodate a high amenity open space on the EWL Land Bridge complementary to the area in front of The Landing;</p> <p>(fe) Respond to the historic context of the former Manukau Tavern (now The Landing at 2 Onehunga Harbour Road) and the Onehunga Wharf, aligning the land bridge between the two to and reference their historic relationship and heritage values and historic relationships including interpretive signage as required by LV.5(b)(viii) identified in the Auckland Unitary Plan as an Historic Heritage Extent of Place;</p> <p>(f) Not preclude further design and landscaping to integrate with potential redevelopment of the Onehunga Wharf for mixed use or public activities; and</p> <p>(hf) Where practicable, acoustic treatment within the EWL Trench (e.g. surface treatment on the trench walls) to manage operational noise effects from traffic in the EWL Trench on pedestrians, cyclists and users of adjacent public open space areas.</p> <p><u>(g) Not preclude and where practicable accommodate a bus lane from the SH20 northbound off-ramp connecting to Onehunga Harbour Rd in the vicinity of The Landing.</u></p> <p><u>The design details for the EWL Land Bridge shall be developed in a collaborative design process in accordance with Condition DC.11A.</u></p>	<p>AC seeks edits highlighted based on the 8 September 2017 version of the proposed conditions noting that clause (g) is a recent amendment agreed between the NZTA and AT. AC is supportive of this amendment.</p>
TR.2	<p>Trees over 4 metres in height or 400mm in girth (at Commencement of Construction) within parks, reserves and local roads that require removal for the Project shall be replaced with trees of suitable/comparable species and size or to achieve comparable canopy cover footprint after 10 5 years in a location agreed with Council (for parks and reserves) or Auckland Transport <u>and Auckland Council</u> and Council (for local roads and paths). Details of the location, species and size of the replacement trees shall be included in the ULDMP prepared in accordance with Condition LV.1.</p>	<p>AC seeks edits highlighted based on the 8 September 2017 version of the proposed conditions.</p>
CL.12	<p><u>If Municipal Solid Waste material remains beneath the EWL Embankment and the replacement Pikes Point Closed Landfill interception drain does not capture leachate from that material then:</u></p> <p>(a) <u>Up to three groundwater wells shall be installed beneath the EWL Embankment for monitoring purposes;</u></p> <p>(b) <u>The water levels in the wells shall be monitored at 6 monthly intervals for a minimum of 2 years following Completion of Construction;</u></p>	<p>AC seeks to revert to the 19 July version of the draft conditions with the addition of a new clause (e). Changes shown are based on 8 September version of draft conditions.</p>

	<p>(c) If water is detected in the wells, samples shall be analysed for total ammoniacal nitrogen (NH4N) and the result compared with the trigger level established under (d) below;</p> <p>(d) The trigger level NH4N concentration shall be derived from the Australian and New Zealand Environmental Conservation Council, Australian Guidelines for Fresh and Marine Waters, 2000 (ANZECC 2000) marine water quality guideline, 90% level of protection (1.2 mg/L) allowing for attenuation downgradient of the EWL Embankment and reasonable mixing in the receiving water;</p> <p>(e) The trigger level established under (d) above and the actions to be taken to comply with the requirements of (e) and (f) below shall be documented by the consent holder and provided to and obtain the approval of the Manager prior to being implemented.</p> <p>(ef) If a trigger level exceedance occurs, then further monitoring of the water quality in the marine receiving environment shall be undertaken to identify if an adverse effect is occurring;</p> <p>(fg) If the monitoring indicates that an adverse effect is occurring and is verified by a Suitably Qualified Person as being directly attributable to associated with the Municipal Solid Waste material which remains beneath the EWL Embankment, a Remedial Action Plan shall be developed in consultation with Council and implemented to mitigate that adverse effect. This may include, for example, extraction of leachate from the wells until such time as NH4N drops below the trigger level;;</p> <p>(eh) If there are no trigger level exceedances over the 2 year period then monitoring shall be discontinued; and</p> <p>(fi) In the event of a trigger level exceedance, the monitoring shall be extended for 6 months from the date of the last exceedance.</p> <p>The results of the monitoring shall be provided to the Manager on request.</p>	
C.1	<p>At least 20 working days prior to Commencement of Construction in the CMA (excluding Site Investigations and Enabling Works), the Consent Holder shall submit to the Manager for approval certification the following documentation to be prepared in general accordance with the documents listed in Condition RC.1 and referred to in Condition RC.3:</p> <p>(a) Detailed engineering designs and drawings (including dimensioned cross sections, elevations, site plans of all areas of proposed reclamation, declamation, permanent and temporary structures);</p> <p>(b) A UDLMP-ULDMP for the areas of the Project within the CMA which reflects the Key Design Principles and Sector Outcomes of the Project's ULDF for those areas; with the ULDFMP to be prepared in consultation with Council and the Mana Whenua Group; and</p> <p>Specifications for the works authorised by this consent.</p>	AC agrees with C.1 to C.4C as listed based on the 8 September 2017 version of the proposed conditions (noting that the Council opposes sub-tidal dredging beyond the need to create a new Anns Creek tidal channel). The balance of the conditions (C.5 to C.15) as proposed in the 8 September version of the conditions is supported by Council.
C.1A	All permanent structures within the CMA shall be designed for long-term durability, ease of maintenance access, and to minimise ongoing operation and maintenance requirements.	AC agrees this condition in the 8 September version of the proposed conditions
C.1B	The total reclamation area and footprint of permanent occupation in the Māngere Inlet for the road embankment, landscape and amenity features, access, and stormwater treatment areas is not to exceed the area identified in the documents listed in Condition RC.1.	AC agrees this condition in the 8 September version of the proposed conditions
C.1C	<p>The design details for the reclamation, coastal paths and boardwalk shall:</p> <p>(a) Be prepared in consultation with Council and the Mana Whenua Group;</p> <p>(b) Be in general accordance with the drawings listed in Condition RC.1 and referred to in Condition RC.3;</p> <p>(c) Give effect to the ULDFMP referred to in Condition C.1(b);</p> <p>(d) Reflect the intended Give effect to the relevant outcomes of the Ecological Management Plan to be prepared in accordance with Condition EM.1;</p> <p>(e) Integrate with the design of the stormwater treatment system developed in accordance with Condition C.1F;</p> <p>(ef) Be developed as part of an integrated design process which includes input from a range of technical experts to achieve the desired outcomes in Conditions C.1D to C.1F; and</p> <p>(fg) Include consideration of:</p> <p>i) Crime Prevention Through Environmental Design principles; and</p> <p>ii) Safety in Design requirements.</p>	AC agrees this condition in the 8 September version of the proposed conditions
C.1D	<p>The detailed design of the shape and form of the reclamation shall achieve the following desired outcomes:</p> <p>(a) Integration of the road embankment, landscape and amenity features, access, and stormwater treatment areas in a manner which</p>	AC agrees this condition in the 8 September version of the proposed conditions

	<p><u>minimises the required area of reclamation, particularly in the area identified in the Auckland Unitary Plan as Significant Ecological Area;</u></p> <p><u>(b) A landform profile which incorporates a variety of landscape features in an aesthetically coherent design which:</u></p> <p><u>i) References natural features and patterns such as lava flows of the original Mangere Inlet northern shoreline, estuarine wetlands, and scoriaceous gravel banks and beaches;</u></p> <p><u>ii) Includes a varied vertical profile to appear as part of the Māngere Inlet, for example, an outer bund (i.e. gravel banks) lower than the EWL Main Alignment, and elevated headlands higher than the EWL Main Alignment;</u></p> <p><u>iii) Minimises adverse effects on coastal processes such as water flow patterns or potential for increased sedimentation;</u></p> <p><u>iv) Incorporates design refinements to minimise temporary and permanent adverse effects on avifauna; and</u></p> <p><u>v) Incorporates opportunities for habitat enhancement and bird roosting areas.</u></p>	
<u>C.1E</u>	<p><u>The detailed design of the coastal path on the reclamation and the boardwalk in the CMA shall achieve the following desired outcomes:</u></p> <p><u>(a) Enhanced public access to and along the coastal edge for pedestrians and cyclists;</u></p> <p><u>(b) Enhanced recreational experience of Māngere Inlet for users of the path and boardwalk including a meandering alignment, varied landscape features and incidents and a sequence of views;</u></p> <p><u>(c) Opportunities for pausing and passive recreation adjacent to the path;</u></p> <p><u>(d) Contouring of the landforms to provide separation of the coastal path from the EWL Main Alignment, where practicable;</u></p> <p><u>(e) Sufficient separation between the boardwalk and EWL Main Alignment to maintain amenity for users of the boardwalk, whilst also seeking to minimise adverse effects on avifauna and encroachment into intertidal areas;</u></p> <p><u>(f) Where practicable, design features to achieve aural amenity (such as low walls along the EWL Main Alignment), whilst maintaining visibility to the Māngere Inlet;</u></p> <p><u>(g) Regular connections between the coastal path and boardwalk (at approximately 200m intervals tailored to access points across the EWL Main Alignment) to enhance user choice and safety;</u></p> <p><u>(h) Discourage public access to parts of the eastern most landform to minimise potential adverse effects on avifauna; and</u></p> <p><u>(i) Fit for purpose gradient and surfacing to provide for universal access.</u></p>	AC agrees this condition in the 8 September version of the proposed conditions
<u>C.1F</u>	<p><u>The Consent Holder shall consult with Council during detailed design of the stormwater treatment system to be located within the reclamation. The design shall be in general accordance with the drawings listed in Condition RC.1 and referred to in Condition RC.3. The detailed design shall take account of the outcomes to be achieved in Condition C.1D and shall achieve the following desired outcomes:</u></p> <p><u>(a) Provide best practicable stormwater quality treatment for the contributing catchment, taking account of the outcomes to be achieved in Condition C.1D above;</u></p> <p><u>(a) Achieve an average annual removal efficiency of at least 75% Total Suspended Solid levels (TSS), unless an alternative TSS removal efficiency is agreed with the Manager. If a higher or lower TSS removal efficiency is proposed, the Consent Holder shall demonstrate that the design provides the best practicable stormwater quality treatment for the contributing catchment, taking account of the outcomes to be achieved in Condition C.1D above and (b) to (i) below;</u></p> <p><u>(b) LimitMinimise salt water intrusion into the stormwater treatment system;</u></p> <p><u>(c) Future proof to enable adaptation to climate change effects including sea level rise;</u></p> <p><u>(d) Design of stormwater outfalls to take account of predicted changes in sea bed level;</u></p> <p><u>(e) Consistency with desired outcomes of Council's Auckland Stormwater Network Discharge Consent (if granted by the time of detailed design for the Project);</u></p> <p><u>(f) Integrate with the design of the reclamation, coastal paths and boardwalk developed in accordance with Condition C.1C;</u></p> <p><u>(g) Ability to treat leachate from the Pikes Point Closed Landfill interception drain; and</u></p> <p><u>(h) The stormwater treatment system shall be dDesigned for long-term durability, ease of maintenance access, and to minimise ongoing operation and maintenance requirements.</u></p>	AC agrees this condition in the 8 September version of the proposed conditions
<u>C.1G</u>	<p><u>A Stormwater Operation and Maintenance Plan shall be submitted to the Manager for certification 20 working days prior to commencement of the operation of the stormwater treatment system. The Stormwater Operation and Maintenance Plan shall include, but not be limited to:</u></p>	AC agrees this condition in the 8 September version of the proposed conditions

	<p><u>(a) A commissioning plan for the stormwater treatment system including introduction of leachate from the replacement Pikes Point Closed Landfill interception drain;</u></p> <p><u>(b) Details of the person or organisation that will hold responsibility for operation and maintenance of the stormwater treatment system on commissioning and in the long-term, including any processes for changing responsibilities as required;</u></p> <p><u>(c) A programme for regular maintenance and inspection of the stormwater treatment system;</u></p> <p><u>(d) A programme for the collection and disposal of debris and sediment collected by the stormwater management devices or practices;</u></p> <p><u>(e) Procedures for post storm inspection and maintenance;</u></p> <p><u>(f) A programme for inspection and maintenance of the outfalls;</u></p> <p><u>(g) General inspection checklists for all aspects of the stormwater treatment system, including visual checks; and</u></p> <p><u>(h) A programme for inspection and maintenance of vegetation associated with the stormwater management devices; and</u></p> <p><u>(i) Details of the monitoring to be undertaken in accordance with Condition C.1H.</u></p>	
<u>C.1H</u>	<p><u>(a) The Consent Holder shall assess the performance of the stormwater treatment system located within the reclamation for a period of 5 years following Completion of Construction of the reclamation.</u></p> <p><u>(b) The purpose of the assessment is to confirm that the stormwater treatment system is operating as designed and as such is expected to achieve the outcomes in Condition C.1F(a) and (g).</u></p> <p><u>(c) The assessment shall include monitoring of the foreshore stormwater treatment system consisting of:</u></p> <p class="list-item-l1">(i) <u>Annual monitoring of vegetation cover with a performance target of greater than 95% coverage;</u></p> <p class="list-item-l1">(ii) <u>Annual monitoring of weed cover with a performance target of less than 5% coverage;</u></p> <p class="list-item-l1">(iii) <u>Annual monitoring of saturated hydraulic conductivity of biofiltration with a performance target of greater than 150mm/hr;</u></p> <p class="list-item-l1">(iv) <u>Annual measurement of sediment build up within the forebay, wetland and surface of the biofiltration devices;</u></p> <p class="list-item-l1">(v) <u>Quarterly measurement of TSS concentration following storm events from wetland and biofiltration outlets and comparing measured TSS to predicted modelled TSS. This will be conducted on two of the treatment devices;</u></p> <p class="list-item-l1">(vi) <u>Monthly during dry weather (October to March) and then quarterly measurement of the leachate concentrations at wetland inlets and outlets during dry weather and comparison to the leachate design trigger value for Ammonical Nitrate. This will be conducted on two of the treatment devices.</u></p> <p><u>(d) If the monitoring undertaken under (c) indicates a lower level of performance compared to the designed performance, the Consent Holder shall review the Stormwater Operations and Maintenance Plan prepared under Condition C.1G and update the Plan to include measures to improve performance to align with the design intent.</u></p> <p><u>(e) A review of the Stormwater Operations and Maintenance Plan prepared under Condition C.1G shall be conducted on an annual basis for a period of 5 years following Completion of Construction of the reclamation.</u></p> <p><u>(f) Any updates to the Stormwater Operations and Maintenance Plan shall be provided to the Manager.</u></p> <p>The Consent Holder shall assess the removal efficiency of the stormwater treatment system to be located within the reclamation for a period of 5 years following Completion of Construction of the reclamation. The purpose of the assessment is to confirm that the stormwater treatment system is performing to the TSS removal efficiency design under Condition C.1F(a).</p> <p>If the assessment indicates a lower level of performance compared to the designed performance, the Consent Holder shall review the Stormwater Operation and Maintenance Plan prepared under Condition C.1G and update the plan to include measures to improve performance to align with the design efficiency.</p>	AC agrees this condition in the 8 September version of the proposed conditions
<u>C.23</u>	The right to temporarily occupy part of the CMA during construction is limited to the areas and structures identified in the documents listed in Condition RC.1.	AC agrees this condition in the 8 September version of the proposed conditions
<u>C.3</u>	The total reclamation area in the Māngere Inlet (the area above Mean High Water Springs) for the road embankment, stormwater treatment areas and landscape features is limited to the areas and structures identified in the documents listed in Condition RC.1.	AC agrees this condition in the 8 September version of the proposed conditions
C.4	(d) (a) Prior to Commencement of Construction in the CMA (excluding Site Investigations and Enabling Works), the Consent Holder shall submit a Coastal Works CEMP to the Manager in accordance with <u>the process set out in</u> Condition RC.9 to certify compliance and consistency	AC agrees this condition in the 8 September version of the proposed conditions

	<p>with the conditions of this consent relating to works in the CMA.</p> <p>(e)(b) The purpose of the Coastal Works CEMP is to confirm the proposed methodology for construction works within the CMA and to set out the specific management procedures and construction methods to be undertaken in order to avoid, remedy or mitigate potential adverse effects arising from those works.</p> <p>(f)(c) In addition to the details required by Condition RC.11 the Coastal Works CEMP shall include the following information:</p> <ul style="list-style-type: none"> i) Confirmation of the construction methodology, including: <ul style="list-style-type: none"> a. The nature of reclamation fill material and the method(s) by which these materials will be deposited; <u>b. The process for demolition and removal of existing structures, including the methodology to minimise discharges to the CMA;</u> b-c. Finalised details of the temporary structures in the CMA (e.g. silt fence); c-d. Methods to remedy disturbance resulting from the works. ii) Proposed staging of reclamation activities in the Māngere Inlet to minimise exposed areas; iii) <u>Programme of works to minimise the duration of disturbance in the CMA;</u> iv) <u>Erosion and sediment control measures and perimeter controls for foreshore works and bridge construction;</u> iii)v) Monitoring of sediment discharges from dredging, declamation and reclamation works; iv)vi) Trigger event criteria for undertaking additional monitoring of sediment discharges <u>and the process to review, and if necessary, modify the works methodology where there is an exceedance of the criteria;</u> v)vii) Contingency plans in case of unexpected sediment discharges to the CMA during works; vi)viii) Site management, including details of: <ul style="list-style-type: none"> a. Site access; b. Methods to be used to minimise the need for refuelling, maintenance and storage of equipment or machinery in the CMA; <u>c. Methods to ensure that barges and equipment used in the CMA is clean and certified as free of invasive species identified by the Ministry of Primary Industries;</u> c-d. Procedures for refuelling, maintenance and storage of equipment or machinery in any part of the CMA if this is required, and measures to avoid discharges of contaminants during cleaning, refuelling, and maintenance activities in the CMA; d-e. Plant and animal pest management during construction; e-f. Methods to achieve compliance with the <u>Project</u> construction noise and vibration standards <u>as set out in Conditions CNV.4 and CNV.5 of the designation;</u> f-g. Site clean-up following works completion vii)ix) Details of all temporary structures in the CMA and their associated construction methodology including the expected duration of occupation; viii)x) Identification of all construction access points to the CMA and along the foreshore; ix)x) <u>Erosion and sediment control measures and perimeter controls for foreshore works and bridge construction;</u> x)xi) Details of the quantities, sources and physical (textural and geological) and chemical (bulk chemistry and leaching potential) characteristics of reclamation fill materials; and xi)xii) Details of all other practicable steps to be taken to minimise disturbance of the seabed during the <u>eConstruction Works activities.</u> <p>(g)(d) The Coastal Works CEMP shall be consistent with the ECOMP prepared under Condition EM.1.</p>	
C.4A	<p><u>(a) The Consent Holder shall undertake the following enhancement works in the foreshore area adjacent to Orpheus Drive and Onehunga Harbour Road identified in the Auckland Unitary Plan as Outstanding Natural Feature:</u></p> <ul style="list-style-type: none"> <u>(i) Remove rubbish, concrete debris and broken disused pipes from the Outstanding Natural Feature foreshore; and</u> <u>(ii) To the immediate north of the Aotea Sea Scouts Building remove loose boulders from the base of the sea wall to improve visibility of the intertidal volcanic tuff exposure.</u> <p><u>(b) The debris removal shall be carried out under the guidance of a Suitably Qualified Person and in a manner which does not damage the</u></p>	AC agrees this condition in the 8 September version of the proposed conditions

	<p><u>ONF or compromise the structural integrity of the existing seawall.</u></p> <p><u>(c) The methodology for this work shall be described in the Coastal Works CEMP and shall be undertaken in accordance with the relevant Permitted Activity standards in F2.21 of the Proposed Auckland Unitary Plan.</u></p>	
C.4B	<p><u>The Consent Holder shall identify and assess options for construction of the reclamation which minimises both the extent of intertidal dredging required and the extent of sediment dispersal within the Mangere Inlet. For example, this may include options for sequencing of inner and outer bund construction, use of sheet piling, or other methods to create a coffer dam. The options shall be identified and assessed in consultation with Council, and the confirmed methodology shall be described in the Coastal Works CEMP to be prepared in accordance with Condition C.4.</u></p>	AC agrees this condition in the 8 September version of the proposed conditions
C.4C	<p><u>The Consent Holder shall construct a new tidal channel to replace the existing secondary tidal channel that feeds into Anns Creek near the eastern end of the reclamation. The new channel shall be designed and constructed with similar dimensions and geometry to minimise morphological changes in this part of the Mangere Inlet. The proposed construction methodology shall be developed in consultation with Council, and the confirmed methodology shall be described in the Coastal Works CEMP to be prepared in accordance with Condition C.4.</u></p>	AC agrees this condition in the 8 September version of the proposed conditions noting that the Council opposes sub-tidal dredging beyond the need to create a new Anns Creek tidal channel
C.5	Where mangrove removal is required, the vegetation shall be removed and disposed of at an approved facility as soon as practicable in order to avoid potential adverse effects arising from decaying vegetation on remaining habitat.	AC agrees this condition in the 8 September version of the proposed conditions
C.6	The Consent Holder shall notify the Manager in writing of the proposed date of Commencement of Construction in the CMA, at least 20 working days prior to the proposed start date.	AC agrees this condition in the 8 September version of the proposed conditions
C.7	Within 40 days following Completion of Construction in the CMA, the Consent Holder shall remove all erosion and sediment control measures, construction materials and temporary staging from the CMA in accordance with the approved Coastal Works CEMP under Condition C.4.	AC agrees this condition in the 8 September version of the proposed conditions
C.8	The Consent Holder shall notify the Auckland Harbour Master in writing of the proposed date of Commencement of Construction in the CMA, including dredging operations, at least 20 working days prior to the proposed start date.	AC agrees this condition in the 8 September version of the proposed conditions
C.9	The Consent Holder shall consult the Auckland Harbour Master in regard to any lighting or navigational aids required for the temporary and/or permanent structures in the CMA.	AC agrees this condition in the 8 September version of the proposed conditions
C.10	The right to permanently occupy part of the coastal marine area is limited to the areas and structures identified in the documents listed in Condition RC.1.	AC agrees this condition in the 8 September version of the proposed conditions
C.11	Within three months of Completion of Construction in the CMA, the Consent Holder shall supply a complete set of As-Built Plans to the Manager. The As-Built Plans shall include a location plan, a plan which shows the area of occupation, structure dimensions, and a cross-sections.	AC agrees this condition in the 8 September version of the proposed conditions
C.12	The Consent Holder shall prepare a survey plan that shows and defines the areas reclaimed, including their location and the position of all boundaries in accordance with the requirements of section 245 of the RMA.	AC agrees this condition in the 8 September version of the proposed conditions
C.13	In accordance with section 245 of the RMA, the plan of survey shall be submitted to the Manager for approval as soon as reasonably practicable after completion of the reclamation. The plan of survey shall be prepared in accordance with regulations made under the Cadastral Survey Act 2002 relating to survey plans within the meaning of those Regulations.	AC agrees this condition in the 8 September version of the proposed conditions
C.14	The Consent Holder shall take all steps necessary to ensure the survey plan is deposited under the Land Transfer Act 1952 or with the Registrar General of Land as soon as reasonably practicable after the date the survey plan is approved by the Manager under section 245 of the RMA.	AC agrees this condition in the 8 September version of the proposed conditions
C.15	The structures permitted to occupy part of the CMA by this consent shall be maintained in a good and sound condition, and any repairs that are necessary shall be made, subject to obtaining any necessary resource consents, <u>if required.</u>	AC agrees this condition in the 8 September version of the proposed conditions
D. 1	<p>In addition to the matters in Condition C.4, the Coastal Works CEMP shall also include the following matters relating to dredging, filling of dredged channels and placement of dredged material in the CMA:</p> <p>(a) The results of contaminant and ecological surveys undertaken in accordance with Condition D.1A to confirm the location and extent of</p>	AC seeks the edits highlighted to the 19 July 2017 version of the dredging conditions. The 8 September 2017 version of the conditions has not yet been reviewed by the Council expert at the time of the Council's closing.

	<p>subtidal dredging;</p> <p>(b) Location of the activities;</p> <p>(c) Details of equipment and methods to be used including the option to use an environmental dredge bucket (with a closing lid to reduce sediment dispersal);</p> <p>(d) Proposed staging of the reclamation to minimise exposed areas;</p> <p>(e) Details of proposed quantities of dredged material removed and placed in the CMA, and</p> <p>(f) Timing of activities.</p>	
D.6	<p>Samples shall be analysed for total suspended solid levels (TSS), and in-situ monitoring of visual clarity and turbidity carried out as per the 1994 Ministry for the Environment Water Quality guidelines for the management of water colour and clarity. For waters such as those in Māngere Inlet where visual clarity is unlikely to be considered a key recreational characteristic the guidelines recommend that “visual clarity should not be changed by more than 33-50% depending on site conditions”. Measuring turbidity and clarity in-situ will facilitate an immediate response to exceedances of trigger values rather than waiting for TSS result to be returned from the laboratory. Samples shall also be analysed for pH, dissolved and total copper, zinc, and arsenic, lead, nickel and ammoniacal nitrogen for Condition D.2 and TSS and pH for Condition D.3.</p> <p>Unless amended in accordance with Condition D.8, the proposed trigger levels shall be 25g/m³ above TSS at the control site for TSS, and a pH of 8.5 and ANZECC 90% protection levels for dissolved copper, zinc arsenic, lead, nickel and ammoniacal nitrogen.</p>	AC seeks the edits highlighted to the 19 July 2017 version of the dredging conditions. The 8 September 2017 version of the conditions has not yet been reviewed by the Council expert at the time of the legal closing.
D.7	<p>Following three weeks of initial weekly sampling the wider suite of contaminants outlined in D.6 could be reduced with the written approval of the manager to those parameters exceeding trigger levels outlined in D.8. After three months of weekly sampling, and subject to written approval of the Manager, the monitoring programme may be further amended, for example compositing of surface and depth samples, and reduction of the frequency (e.g. to fortnightly / monthly).</p>	AC seeks the edits highlighted to the 19 July 2017 version of the dredging conditions. The 8 September 2017 version of the conditions has not yet been reviewed by the Council expert at the time of the legal closing.
D.8	<p>The Consent Holder shall review the proposed TSS trigger level of 25g/m³ and pH trigger level of 8.5 and ANZECC 90% protection levels for dissolved copper, zinc arsenic, lead, nickel and ammoniacal nitrogen against the results of the one-off comprehensive monitoring, including comparison of the baseline TSS and pH and dissolved copper, zinc arsenic, lead, nickel and ammoniacal nitrogen levels against the TSS and pH and dissolved copper, zinc arsenic, lead, nickel and ammoniacal nitrogen levels during dredging .</p> <p>The Consent Holder shall provide a report to the Manager confirming the above trigger level(s) or proposing alternative trigger level(s) with the basis for the alternative(s). The report shall be provided within 20 working days of the receipt by the Consent Holder of the analytical results for the comprehensive water sampling.</p> <p>The alternative trigger level(s) may be used for regular monitoring subject to approval in writing by the Manager.</p>	AC seeks the edits highlighted to the 19 July 2017 version of the dredging conditions. The 8 September 2017 version of the conditions has not yet been reviewed by the Council expert at the time of the legal closing.
D.9	<p>During regular monitoring, an exceedance shall be:</p> <p>(a) A TSS level in any sample collected at the compliance site that exceeds the trigger level plus the TSS level measured in the updrift control sample collected during the same sampling run and ANZECC 90% protection levels for dissolved copper, zinc arsenic, lead, nickel and ammoniacal nitrogen. The trigger TSS level shall be identified from the analytical results of the water quality samples in accordance with Conditions D.5 and D.6.</p> <p>(b) A pH in any sample collected at the compliance sites that exceeds s the pH trigger level. The pH shall be identified from the analytical results of the water quality samples in accordance with Conditions D.5 and D.6.</p>	AC seeks the edits highlighted to the 19 July 2017 version of the dredging conditions. The 8 September 2017 version of the conditions has not yet been reviewed by the Council expert at the time of the legal closing.
D.10	<p>The Consent Holder shall prepare a Contingency Plan which sets out the actions to be undertaken in the event of an exceedance. These shall include further monitoring measures, in the first instance, or a site specific effects assessment, and practical modifications to the relevant activities, where further monitoring identifies repeated exceedances. Such modifications could include suspending or altering the dredging approach focusing dredging activities around slack tide and using silt fences or other containment approaches including encapsulation of intertidal dredging areas with coffer dams. More stringent requirements should be applied when dredging the areas for the wetland reclamations around existing stormwater outfalls where contaminant levels are considerably more elevated. The Contingency Plan shall be provided to the Manager at least 20 working days prior to the commencement of dredging.</p>	AC seeks the edits highlighted to the 19 July 2017 version of the dredging conditions. The 8 September 2017 version of the conditions has not yet been reviewed by the Council expert at the time of the legal closing.
D.12	<p>The Consent Holder shall undertake sediment deposition monitoring in the Māngere Inlet at the locations specified in Table D1 and (if not already covered in Table D.1) at locations to the west of the western wetland reclamation, between the western and eastern wetland reclamations, adjacent to the outfall of each of the stormwater wetlands, to the east of the eastern reclamation and on the southwestern shore</p>	AC seeks the edits highlighted to the 19 July 2017 version of the dredging conditions. The 8 September 2017 version of the conditions has not yet been reviewed by the Council expert at the time of the legal closing.

	<p>of the inlet in the area of greatest predicted increases in sedimentation and at a site of least expected sedimentation.</p> <p>Table D1: Sediment Deposition Monitoring Locations</p> <table> <tr> <th>Location Reference</th><th>Latitude</th><th>Longitude</th></tr> <tr> <td>A1</td><td>36°55'56" S</td><td>174°49'34"</td></tr> <tr> <td>A2</td><td>36°56'32" S</td><td>174°49'28"</td></tr> </table>	Location Reference	Latitude	Longitude	A1	36°55'56" S	174°49'34"	A2	36°56'32" S	174°49'28"	
Location Reference	Latitude	Longitude									
A1	36°55'56" S	174°49'34"									
A2	36°56'32" S	174°49'28"									
D.13	<p>The Consent Holder shall deploy a square plate at least 4m by 4m 0.5m by 0.5m in size at the monitoring locations specified in Table D1 Section D.12. The plate shall be deployed 6 months prior to the commencement of dredging and placement of dredged material in the CMA. Changes in bed levels shall be assessed by measuring sediment deposition relative to the plate at four evenly spaced at least 10 random points. Measurements shall be made at all four ten points and averaged to give a single measure for each location.</p> <p>Alternative monitoring techniques may be used subject to written approval by the Manager.</p>	AC seeks the edits highlighted to the 19 July 2017 version of the dredging conditions. The 8 September 2017 version of the conditions has not yet been reviewed by the Council expert at the time of the legal closing.									
D.14	<p>Sediment deposition measurements shall be made at the monitoring locations specified in section D.12 at least monthly from 6 months prior to the dredging and construction operations commencing until at least 6 months after dredging and construction activities are completed. Sediment deposition measurements should then be carried out annually for five years after dredging and construction activities are completed. The results of this monitoring shall be provided to the Manager. Baseline sediment deposition measurements shall be made at the monitoring locations specified in Table D1 at 3 monthly intervals, commencing 6 months prior to the commencement of dredging and placement of dredged material in the CMA.</p>	AC seeks the edits highlighted to the 19 July 2017 version of the dredging conditions. The 8 September 2017 version of the conditions has not yet been reviewed by the Council expert at the time of the legal closing.									
D.15	<p>Routine sediment deposition measurements shall be made at the monitoring locations specified in Table D1 at 3 monthly intervals, for the duration of dredging and placement of dredged material in the CMA and starting at the commencement of those operations.</p>	AC seeks the edits highlighted to the 19 July 2017 version of the dredging conditions. The 8 September 2017 version of the conditions has not yet been reviewed by the Council expert at the time of the legal closing.									
D.16	<p>For post-project monitoring, the sediment deposition measurements shall be repeated as a one-off event 5 years after completion of dredging. The results of this monitoring shall be provided to the Manager.</p>	AC seeks the edits highlighted to the 19 July 2017 version of the dredging conditions. The 8 September 2017 version of the conditions has not yet been reviewed by the Council expert at the time of the legal closing.									
D.17	<p>The results of the sediment deposition monitoring shall be compared to LiDAR measurements obtained at the commencement of dredging and placement of material in the CMA, at the completion of dredging and construction activities, and 5 years after completion of the Project. The results of the 5 year sediment deposition monitoring shall be compared with the change in levels of the Māngere Inlet intertidal flats measured using LIDAR. The LIDAR measurements shall be obtained at the commencement of dredging and placement of dredged material in the CMA and 5 years after completion of the Project.</p> <p>The timing of the LIDAR data collection shall coincide with data collected by Auckland Council as far as practicable.</p>	AC seeks the edits highlighted to the 19 July 2017 version of the dredging conditions. The 8 September 2017 version of the conditions has not yet been reviewed by the Council expert at the time of the legal closing.									
EM.1A	<p>(a) The Consent Holder shall prepare and submit an Ecological Management Plan (ECOMP) to the Manager in accordance with the process set out in Condition RC.9.</p> <p>(b) The purpose of the ECOMP is to set out the specific management procedures, construction methods, mitigation and monitoring to be undertaken in order to achieve the following outcomes:</p> <ul style="list-style-type: none"> (i) Avoid or minimise the extent of effect on valued ecological and geological areas within the Project site as far as practicable; (ii) Avoid or minimise the extent of effect on the mosaic of lava shrubland, saltmarsh and wetland habitat in Anns Creek East as far as practicable in accordance with Designation Condition DC.15 (Anns Creek Construction Restriction Area); (iii) Ensure that valued ecological and geological areas, or parts of those areas, which are to be avoided are clearly delineated (e.g. by secure fencing) to protect them during construction; (iv) For those valued ecological and geological areas which cannot be avoided, but where complete loss of the ecosystem, vegetation, habitat, or geological feature is not required, reduce the impact on those areas as far as practicable (e.g. minimising the construction footprint within those areas and placement of construction material outside of those areas); and (v) To avoid, remedy or mitigate potential adverse effects arising from construction activities on terrestrial ecology (including Herpetofauna), freshwater ecology, marine ecology and avifauna. <p>(c) The ECOMP shall be prepared by a Suitably Qualified Person and in collaboration with the development of the Urban Landscape and</p>	AC agrees with this proposed condition as per the 8 September version of the conditions									

	Design Management Plan to be prepared for the Project by the NZ Transport Agency.	
<u>EM.1B</u>	<p><u>(a)</u> The ECOMP shall be prepared in consultation with:</p> <ul style="list-style-type: none"> (i) Council; (ii) Department of Conservation; (iii) The Mana Whenua Group; and (iv) Owners of land in which any ecological mitigation works are proposed to be undertaken. <p><u>(b)</u> Any comments and inputs received from the parties listed above shall be summarised within the ECOMP or supporting document, along with explanation of where any comments or suggestions have, or have not been incorporated and, <u>if not incorporated</u>, the reasons why.</p>	AC agrees with this proposed condition as per the 8 September version of the conditions
<u>EM.1C</u>	<p><u>The ECOMP shall include:</u></p> <ul style="list-style-type: none"> <u>(a) The specific management procedures, construction methods, mitigation and monitoring to be undertaken in order to achieve the outcomes in Condition EM.1A;</u> <u>(b) The matters set out in Condition EM.2B relating to Māngere Inlet Foreshore, Anns Creek Estuary and Anns Creek West;</u> <u>(c) The matters set out in Condition EM.2C relating to Anns Creek East;</u> <u>(d) Details of the salt marsh restoration trial and salt marsh replacement as set out in Condition EM.4A and EM.4B;</u> <u>(e) Measures to minimise potential adverse effects of construction on native fish as set out in Condition EM.5;</u> <u>(f) Measures to minimise potential adverse effects of construction on avifauna as set out in Condition EM.6; and</u> <u>(g) Shall reference the Lizard Management Plan (if one is required) to be prepared in accordance with Condition EM.8A-D.</u> <u>(h) A summary of how all other matters in Conditions EM.1 to EM.12 have been or will be complied with.</u> 	AC agrees with this proposed condition as per the 8 September version of the conditions
EM.2A	<p>The ECOMP shall include details of the <u>Consent Holder shall undertake ecological restoration and habitat enhancement measures</u> across the Project area <u>and in the vicinity</u>, covering a minimum of 30ha, as identified in map GIS-AEE-EC-001-6-8 (attached to Technical Report 16); <u>Subject to Conditions EM.2B and C below, those measures shall comprise consisting of:</u></p> <ul style="list-style-type: none"> (a) Subject to landowner approval, a Approximately 1.1ha of salt marsh enhancement/recreation and pest plant <u>and pest animal control management</u> at the existing saltmarsh wetland in Gloucester Park South (Te Hopua); (b) Ecological planting at Miami Stream, and Clemow Stream; (c) <u>Pest plant and pest animal management and ecological planting within Anns Creek Estuary and Anns Creek West in accordance with Condition EM.2B;</u> (d) Subject to landowner approval, rRiparian planting and other measures to enhance instream habitat, such as placement of rocks, cobbles and woody debris where appropriate, along an 80 metre length of Southdown Stream in Southdown Reserve, a 140 metre length of Southdown Stream to the north of Hugo Johnston Drive, and along a 90 metre length of Clemow Stream; and (e) <u>Pest plant and pest animal management, ecological planting and planting of inanga spawning areas along Anns Creek within Anns Creek East in accordance with Condition EM.2C;</u> (f) <u>Remove exotic wetland plants and restore an indigenous freshwater wetland ecosystem covering 0.6ha at the western end of Anns Creek Reserve,</u> to offset the loss of raupo habitat within Anns Creek East which provides habitat for <i>Threatened</i> and <i>At Risk</i> avifauna species (such as Australasian bittern) and subject to landowner approval, undertake Glyceria control and create 280m² of additional raupo wetland within Anns Creek Reserve; (g) Restoration of saltmarsh and riparian vegetation at Ōtāhuhu Creek; (h) <u>Pest plant and pest animal management and restoration of 1.5ha freshwater/brackish wetland complex at Blake Road Reserve, Māngere East, and 2.0ha of buffer planting surrounding the wetland; and</u> (i) <u>The implementation of the above ecological restoration and habitat enhancement measures is subject to the grant of landowner approval for works in sites that are not owned by the Consent Holder (Items (a), (c), (d), (e), (g) and (i) above). In the event that landowner approval is unable to be obtained for access to those sites, the Consent Holder shall consult with Council to identify alternative locations in order to achieve the minimum 30ha area, and shall implement ecological restoration and habitat enhancement measures at those alternative locations.</u> 	AC proposed edits are <u>highlighted</u> . The balance of the wording is agreed as per the 8 September version of the conditions.

	(j) Subject to landowner approval planting and fencing of at least 10ha of riparian margins and erosion prone land in sediment source catchments of the Manukau Harbour to offset the increase in deposited sediment caused by the reclamation areas. For clarity this planting and fencing is in addition to any other planting proposed in the ECOMP.	
EM.2B	<p>The ECOMP shall include the following information related in relation to <u>the Māngere Inlet Foreshore</u>, Anns Creek Estuary <u>and</u> Anns Creek West and the Mangere Inlet Foreshore:</p> <p>(a) Details of Construction Works including:</p> <ul style="list-style-type: none"> (i) Measures to avoid the addition <u>placement</u> of soil or other material that might obscure bare-exposed remaining lava surfaces in Anns Creek Estuary and Anns Creek West; (ii) Removal of pest plant <u>material</u> from lava surfaces at Anns Creek Estuary and Anns Creek West; <p>(b) Details of <u>ecological</u> restoration and habitat enhancement measures including:</p> <ul style="list-style-type: none"> (i) Pest plant <u>and pest animal</u> control <u>management</u> for the remaining basalt lava flows and lava shrubland at Victoria Street and Pikes Point; (ii) <u>Where practicable</u>, transplanting indigenous coastal species (e.g. saltmarsh) and vegetation from lava outcrops <u>which will be</u> directly affected by the Project works where reasonably practicable into coastal restoration areas on the Māngere Inlet foreshore; (iii) <u>Implementation of measures to avoid encroachment of Construction Works in threatened plant habitats in Anns Creek Estuary which are located outside of the Project site</u> Pest plant management and protection of threatened plant habitats in Anns Creek Estuary; (iv) Restoration and recreation of salt marsh along the coastal foreshore and within Anns Creek Estuary where there is appropriate substrate, elevation and hydrodynamic environment; (v) Planting along the foreshore using eco-sourced local genetic stock and threatened coastal species consistent with the Urban Design and Landscape Framework; (vi) Planting of stormwater wetlands and along the coastal foreshore using coastal plant species; <p>(c) Details of integration with proposed planting in stormwater management devices (e.g. treatment / conveyance swales) to be undertaken in accordance with Conditions SW.10 to SW.12;</p> <p>Details of how ecological planting will be maintained following initial planting, including as a minimum six monthly pest plant control <u>management</u>, release of plantings, and replacement of defective or dead stock.</p>	AC agree wording as per 8 September version with additional edit highlighted
EM.2C	<p><u>The ECOMP shall include the following information in</u> in relation to Anns Creek East, the ECOMP shall include:</p> <p>(a) Detail of works to be undertaken in and immediately adjacent to the Anns Creek East Construction Restriction Area. The design of Construction Works in that area shall:</p> <ul style="list-style-type: none"> (i) Align permanent transport infrastructure (road, pedestrian and cycle facilities) to the northern-most extent of the Anns Creek East Construction Restriction Area as far as practicable; (ii) Avoid the placement of temporary and permanent piers; (iii) Avoid earthworks and vegetation removal that directly impacts on lava shrubland and lava outcrops, and minimise any vegetation alteration; and (iv) Minimise the footprint of temporary works required for construction of permanent works. <p>For the avoidance of doubt, only the following activities which may be undertaken within the Anns Creek East Construction Restriction Area: include weed removal, pest plant and <u>pest</u> animal management, geological heritage restoration, restoration planting, interpretative signage relating to cultural, ecological and geological heritage, protective fencing, and associated earthworks to undertake those activities.</p> <p>(b) Measures to be undertaken by the Consent Holder to minimise potential adverse effects on the lava shrubland, saltmarsh and wetland habitats in Anns Creek East including:</p> <ul style="list-style-type: none"> (i) Confirmation of the construction works to be undertaken in the Anns Creek East Construction Restriction Area under Condition EM.1A(b)(ii) and how those works will be managed in that area; (ii) Measures to clearly delineate the Anns Creek East Construction Restriction Area on site including protective fencing and signage; (iii) Construction procedures and practices that apply to the areas of Anns Creek East that are not within the Anns Creek East 	AC agree wording as per 8 September version of conditions

	<p>Construction Restriction Area, in order to minimise to the extent practicable the removal or alteration of vegetation; and</p> <p>(iv) Specific education of staff and contractors to assist their understanding of the ecological and geological sensitivity of the area.</p> <p><u>(c) Identification of any areas in Anns Creek East where fill can be practicably removed from edges of the lava flow and restoration planting undertaken in these areas using eco-sourced local genetic stock and threatened coastal species;</u></p> <p><u>(d) Measures to avoid the placement of soil or other material that might obscure exposed remaining lava surfaces in Anns Creek East;</u></p> <p><u>(e) Removal of rubbish from Anns Creek East for the duration of the Construction Works;</u></p> <p><u>(f) Details of how ecological planting will be maintained following initial planting, including as a minimum six monthly pest plant management, release of plantings, and replacement of defective or dead stock.</u></p> <p><u>Advice note</u></p> <p><u>Condition DC.15 requires that the Requiring Authority include within the Outline Plan prepared under section 176A of the RMA, details of how the design responds to the Anns Creek Construction Restriction Area.</u></p>	
EM.3A	<p>The outcome of the methodology for ecological restoration planting mitigation measures and habitat enhancement measures as set out in the ECOMP Condition EM.2A shall be designed to achieve the following desired outcomes:</p> <p>a) To manage Management of vegetation ecological planting to achieve at least 90% cover of native species in ecological restoration planting areas (excluding areas of lava flow) after five years; and</p> <p>b) To manage Management of invasive exotic pest plants to a level where cover is less than 5% within all ecological restoration areas after five years (this relates to Condition EM.2A (a), (b), (c), (d), (f), (h)).</p> <p><u>The maintenance period for ecological planting shall be as set out in Designation Condition LV.6(g) and (h) or until the percentage coverage targets in EM.3A(a) and (b) are achieved, whichever is the latter.</u></p>	AC agree wording as per 8 September version of conditions with additional edit highlighted.
EM.3B	<p><u>The methodology for pest animal management as set out in the ECOMP shall be designed to achieve the following outcomes:</u></p> <p><u>(a) Annual possum residual trap catch or wax tag index ≤5%;</u></p> <p><u>(b) Rats tracking tunnel index ≤5% prior to the bird breeding season (October); and</u></p> <p><u>(c) Mustelid residual trap catch ≤5% and/or tracking tunnel index ≤0.5%.</u></p>	AC agree wording as per 8 September version of conditions
EM.3C	<p><u>The methodology for pest plant management as set out in the ECOMP shall be designed to achieve the following outcomes:</u></p> <p><u>(a) No mature, fruiting and / or flowering individuals of weed species present within a control area and any weed species present are dead; and</u></p> <p><u>(b) No areas where weed species are smothering and / or out competing native vegetation including suppressing the natural regeneration processes.</u></p>	AC agree wording as per 8 September version of conditions
EM.4A	<p>The ECOMP shall include details of a salt marsh restoration trial within Anns Creek Estuary along the western <u>eastern</u> shore of the Māngere Inlet. The purpose of the saltmarsh restoration trial is to determine the potential for re-establishment of the natural estuarine vegetation sequence and provide habitat for <i>Threatened</i> and <i>At Risk</i> avifauna. The trial details shall include:</p> <p>(a) The methodology – for (for example this may include, removal of mangroves from three strips of 30m x 20m adjacent to the coastal edge and replanting with oioi at three different bed heights (being the existing bed height, at substrate height 0.25m above existing and 0.5m above existing);</p> <p>(b) The location, area, monitoring and duration of the trials; and</p> <p>The process to reinstate the area should the trials be unsuccessful.</p>	AC agree wording as per 8 September version of conditions
EM.4B	<p>(a) At completion of the salt marsh trials undertaken in accordance with Condition EM.4A the Consent Holder shall provide a report to the Manager setting out the outcomes of the trial.</p> <p>(b) If the salt marsh trials are successful, the Consent Holder shall:</p> <p>(i) Provide the Manager with a confirmed methodology and <u>proposed</u> location of the recreated saltmarsh covering an area of approximately 10,000m² (or as otherwise agreed with the Council); and</p>	AC agree wording as per 8 September version of conditions

	<p>(ii) Undertake annual monitoring and maintenance (including pest plant control-management and planting) of the planted recreated saltmarsh for a period of 5 years after planting, or until 90% cover of indigenous saltmarsh vegetation has established and <5% cover of pest plants is achieved.</p> <p>(c) Should the saltmarsh trials not be successful, the Consent Holder shall consult with the Manager to identify and implement an alternative and equivalent mitigation or offset measure.</p>	
<u>EM.5</u>	The ECOMP shall include measures to be undertaken by the Consent Holder to minimise potential adverse effects on native fish during works in watercourses related to Construction Works. These measures will include the capture and relocation of native fish where present prior to works within the relevant watercourse.	AC agree wording as per 8 September version of conditions
<u>EM.6</u>	<p><u>The ECOMP shall include the following information</u> in relation to Avifauna; the ECOMP shall include:</p> <p>(a) Measures proposed to minimise potential adverse effects of construction on banded rail and Australasian bittern including:</p> <p class="list-item-l1">(i) Non-intrusive survey of nesting activity within (impact) and adjacent (control) to the Project footprint prior to Commencement of Construction in Anns Creek Estuary and Anns Creek East. This information shall be used to inform the construction programme for works in the vicinity of nesting areas including, where required, any recommended seasonal restrictions for certain construction activities to minimise the effect on nesting birds;</p> <p class="list-item-l1">(ii) If nesting activity is confirmed adjacent (control) to the Project footprint, monitoring of nesting activity for two years following Completion of Construction to determine whether the works have adversely affected nesting activity and inform future assessments of effects for other projects;</p> <p class="list-item-l1">(iii) Specific mechanisms to manage effects on banded rail and Australasian bittern during construction works including:</p> <ul style="list-style-type: none"> Where practicable, removal of rail and bittern habitat during the non-breeding season; If rail and bittern are observed, undertake measures to encourage the birds away from the area, and commence vegetation clearance only when the birds have left the area; <p>(b) Measures to implement the Transport Agency's Guidelines for Managing Endangered Dotterels on NZ Transport Agency <u>Land</u> (dated <u>November 2012</u>) during Construction Works along the Māngere Inlet foreshore;</p> <p>(c) Details of measures to discourage or prevent access for pedestrians and dogs to roosting areas on the eastern most landform of the proposed reclamation foreshore headland in accordance with Condition C.1E(h).</p>	AC agree wording as per 8 September version of conditions
<u>EM.7A</u>	<p>(a) In order to partially offset the adverse effects of the Project on avifauna values, the Consent Holder shall use reasonable endeavours to achieve statutory protection of:</p> <p class="list-item-l1">(i) An eExisting wading bird high tide roosts within the Manukau Harbour (e.g. Puhinui, Kidds, Karaka or Clarks Beach shell banks); and</p> <p class="list-item-l1">(ii) An existing <u>high mid</u>-tide roost within the Māngere Inlet; and</p> <p class="list-item-l1">(iii) <u>An existing high tide roost at</u> Ngarango Otainui Island.</p> <p>(b) This statutory protection may include, for example, classification of the high tide roost as a conservation area under the Conservation Act 1987, or as a wildlife sanctuary or wildlife refuge under the Wildlife Act 1953 <u>and may include closure to public access or to access at particular times or by particular vessels.</u></p> <p>(c) The Consent Holder shall consult with the Department of Conservation, Council and the Mana Whenua Group regarding the method of statutory protection and location of the high tide roosts to be protected, and shall use reasonable endeavours to confirm both the method of protection and the locations of the high tide roosts to be protected, within 12 months of Commencement of Construction.</p> <p>(d) The Consent Holder shall offer to the Department of Conservation to contribute towards its costs to apply for the appropriate statutory protection for the high tide roosts <u>and for appropriate interpretation signage (with information about the bird roosts and any access restrictions) to be installed once the statutory protection is in place.</u> The value of that contribution shall be agreed between the Consent Holder and the Department of Conservation.</p>	AC seeks the edits <u>highlighted</u> based on the 8 September 2017 version of the proposed conditions.
<u>EM.7B</u>	<p>(a) In order to partially offset the adverse effects of the Project on avifauna values, the Consent Holder shall take reasonable steps to construct a suitable single purpose high tide wading bird roost in Māngere Inlet.</p> <p>(b) The Consent Holder shall consult with the Department of Conservation, Council and the Mana Whenua Group regarding the location and design of the high tide roost to be constructed.</p> <p>(c) Subject to obtaining any necessary property rights and resource consents, the Consent Holder shall construct the high tide roost as part of</p>	AC agree wording as per 8 September version of conditions

	the Construction Works, and maintain the high tide roost in a suitable state of repair for five years following the Completion of Construction.	
<u>EM. 7C</u>	<p>(a) In order to partially offset the adverse effects of the Project on avifauna values, the Consent Holder shall within no less than one-six months of prior to Commencement of Construction, offer to the Department of Conservation to contribute towards its management programmes at South Island breeding sites along the major braided rivers (e.g. Rakaia and Waiau), of avifauna species affected by the Project.</p> <p>(b) The value of that contribution shall be agreed between the Consent Holder and the Department of Conservation in consultation with the Auckland Council. The contribution will shall be sufficient to support pest animal control over a river length of at least 20km (or equivalent), continuing for the entire EWL construction period of the reclamation within the Māngere Inlet plus thirty five years after the Completion of Construction.</p>	AC seeks the edits highlighted based on the 8 September 2017 version
<u>EM.8A</u>	<p>Prior to the commencement of vegetation removal for Construction Works in areas identified as potential high and moderate quality habitat in <i>Technical Report 16: Ecological Impact Assessment</i> (dated November 2016), the Consent Holder shall provide to the Manager, information from a Suitably Qualified Person that identifies whether there are sufficient numbers of native lizards present within the area to trigger a requirement for a Lizard Management Plan (LMP).</p> <p>The information submitted shall include the results of a lizard survey undertaken to confirm the presence, or otherwise, of native lizards. The lizard survey shall be based on industry best practice survey methods and shall include all areas identified as potential high and moderate quality habitat within the Project footprint and shall be overseen by a Suitably Qualified Person.</p>	AC agree wording as per 8 September version of the conditions
<u>EM.8B</u>	<p>A LMP is required if the lizard survey results in the detection of:</p> <p>(a) 1 or more individuals of a threatened or at-risk native lizard species within the survey area; or</p> <p>(b) 3 or more individuals of a not threatened native lizard species within a survey area as per the New Zealand Threat Classification series 17 'Conservation Status of New Zealand Reptiles', dated 2015.</p>	AC agree wording as per 8 September version of the conditions
<u>EM.8C</u>	<p>The purpose of the LMP is to achieve the following objectives:</p> <p>(a) The population of each species of native lizard present on the site at which vegetation clearance is to occur is maintained or enhanced, either on the same site or at an appropriate alternative site; and</p> <p>(b) The habitat(s) that lizards are transferred to (either on site or at an alternative site, as the case may be) will support viable native lizard populations for all species present pre-development.</p> <p>The LMP shall be prepared by a Suitably Qualified Person and shall address the following (where relevant):</p> <p>(a) Timing of implementation of the LMP;</p> <p>(b) A description of methodology for survey, trapping and relocation of lizards rescued including but not limited to: salvage protocols, relocation protocols (including method used to identify suitable relocation site(s)), nocturnal and diurnal capture protocols, supervised habitat clearance/transfer protocols, artificial cover object protocols, and opportunistic relocation protocols;</p> <p>(c) A description of the relocation site(s); including discussion of:</p> <ul style="list-style-type: none"> provision for additional refugia, if required e.g. depositing salvaged logs, wood or debris for newly released native skinks that have been rescued; any protection mechanisms (if required) to ensure the relocation site is maintained (e.g.) covenants, consent notices etc.; and any pest plant and pest animal management to ensure the relocation site is maintained as appropriate habitat. <p>(d) Monitoring methods, including but not limited to: baseline lizard surveys within the affected site (pre-translocation survey), surveys to identify potential translocation release sites, monitoring to evaluate translocation success (post-translocation monitoring), and monitoring of any pest control; and</p> <p>(e) A post-vegetation clearance search for remaining lizards.</p>	AC agree wording as per 8 September version of the conditions
<u>EM.8D</u>	If a LMP is required under Condition EM.8A, this shall be submitted to the Manager for certification in accordance with Condition RC.9 prior to the commencement of any vegetation removal in areas of potential high and moderate quality.	AC agree wording as per 8 September version of the conditions
	<p>Advice note:</p> <p><i>The capture, handling and relocation of native lizards may require a Wildlife Permit under the Wildlife Act 1953.</i></p>	AC agree wording as per 8 September version of the conditions

EM.9	<p>The Consent Holder shall engage a Suitably Qualified Person during Construction Works to advise on day-to-day measures to achieve the outcomes in Condition EM.1A(b) and to oversee ecological restoration planting in the areas set out in Condition 2.B below to ensure that this is implemented in accordance with best practice. <u>The Suitably Qualified Person shall also advise on the landscape planting to be undertaken along the northern Māngere Inlet as part of the Project.</u></p> <p>(a) Ecological planting in Gloucester Park South; (b) Landscape planting along the Northern Māngere Inlet; (c) Ecological planting in Anns Creek Estuary; (d) Ecological planting Anns Creek East; (e) Ecological planting at; and (f) Ecological planting at.</p>	AC agree wording as per 8 September version of the conditions
EM.10	<p><u>(a) The Consent Holder shall implement research (e.g. through scholarships or a specific project) which investigates opportunities to increase scientific knowledge enof <u>succession and</u> recolonisation of intertidal soft and hard shore food sources for foraging birds in the Māngere Inlet.</u></p> <p><u>(b) The research shall commence following Completion of Construction within the Māngere Inlet.</u></p> <p><u>(c) Unless otherwise agreed between the Consent Holder and the Manager, the research shall involve:</u></p> <p class="list-item-l1">(i) Monitoring the recolonisation of intertidal soft and hard shore sediment organisms within areas of disturbed sediment annually, at the same time of year, for five years. <u>The research shall comprise collection of replicate core samples within areas of disturbed intertidal sediment and at similar sites where sediment is not disturbed (control sites), sieving sediment using a 0.5mm mesh and analysis of benthic invertebrate community composition in the residual fraction. Community composition, species abundance and diversity shall be analysed among years; and for a period of at least 12 months within control and treatment plots (assessing survival, percentage cover, species abundance and diversity); and</u></p> <p class="list-item-l1">(ii) <u>Monitoring the natural recolonisation of newly created artificial intertidal hard shore substrate by marine invertebrate species over a three-year period. The research shall compare natural recolonisation of hardshore species to new artificial hardshore to similar areas where organisms are experimentally transplanted in order to determine if recolonisation processes can be accelerated. A range of hardshore species (including snails and limpets) shall be experimentally transplanted and confined within structures. Community composition, species diversity and abundance or percentage cover shall be analysed among years. Comparison to existing similar artificial hardshore areas within the inlet should also be undertaken if possible. Scientifically testing if transplantation of organisms assists with the rate of community establishment and the biodiversity of that community.</u></p> <p><u>(d) In the event that the Consent Holder and the Manager agree to an amended research methodology, the amended methodology shall be designed to achieve the purpose in (a) above.</u></p> <p>(e) The research shall be undertaken in conjunction with a suitable tertiary institution and with supervision from a Suitably Qualified Person. The outcomes of the research shall be provided to Council and the Department of Conservation within 12 months of Completion of Construction, <u>unless otherwise agreed with the Manager,</u> and submitted to a relevant scientific journal if appropriate to do so.</p>	AC agree wording as per 8 September version of the conditions
EM.11A	<p>The Consent Holder shall use its best endeavours to establish and facilitate a working group to identify proposed measures for long term integrated environmental management of the Anns Creek East area, being the area in the immediate vicinity of Section 1 SO 69440 at Anns Creek East.</p>	AC agree wording as per 8 September version of the conditions
EM.11B	<p>(a) The following parties shall be invited to participate in the <u>Anns Creek Working Group</u> working group:</p> <p class="list-item-l2">(a) The owners of land in the Anns Creek East area; (b) Department of Conservation; (c) Auckland Council; (d) Auckland Transport; (e) KiwiRail; and (f) The Mana Whenua Group.</p> <p><u>(b) The Requiring Authority shall be responsible for all reasonable costs associated with administrative support to the Anns Creek Working</u></p>	AC agree wording as per 8 September version of the conditions

	<u>Group.</u>	
<u>EM.11C</u>	<p>The purpose of the Anns Creek Working Group is, in relation to the Anns Creek East area, to:</p> <ul style="list-style-type: none"> (a) Identify opportunities to integrate mitigation works associated with the Project with any other environmental enhancement activities being undertaken on land or in the CMA adjoining the boundary of the Project site; (b) Identify opportunities to provide long term integrated environmental management and legal protection of mitigation works associated with the Project and adjacent high value habitat including plant habitats and the mosaic of lava, saltmarsh and freshwater ecosystems; and (c) Identify the mechanisms to deliver the opportunities identified in (b) above. 	AC agree wording as per 8 September version of the conditions
<u>EM.11D</u>	The Consent Holder shall provide a report to the Manager on the activities and outcomes of the working group, including any agreed measures for long term integrated environmental management, within 12 months of Commencement of Works, and a further progress report on the implementation of those measures within 24 months of Commencement of Works.	AC agree wording as per 8 September version of the conditions
<u>EM.12A</u>	<ul style="list-style-type: none"> (a) The ECOMP shall include the following information related to habitat enhancement at Ngarango Otainui Island: <ul style="list-style-type: none"> (i) pest plant and <u>pest</u> animal control, (ii) planting for bird roosting; and (iii) erosion stabilisation with a preference for soft engineering solutions (b) The detail of those or other measures to be developed in accordance with Condition EM. <u>12B</u>. (c) The purpose of the habitat enhancement of the island is primarily to provide long term protection of safe high tide roost sites in the Māngere Inlet post-construction for species such as royal spoonbill, shags and herons. 	AC agree wording as per 8 September version of the conditions
<u>EM.12B</u>	<p>In relation to Ngarango Otainui Island, the Consent Holder shall engage with Department of Conservation, Council and <u>the</u> Mana Whenua <u>Group</u> to:</p> <ul style="list-style-type: none"> (a) Develop outcomes for long-term integrated ecological management of the island; (b) Undertaken site investigations to characterise habitat type and to identify ecological issues and opportunities for restoration and habitat enhancement; and (c) Prepare and implement an ecological management strategy and plan with outcomes, responsibilities, timeframes for implementation, and ongoing annual management and monitoring. 	AC agree wording as per 8 September version of the conditions
L.2	<p>The Consent Holder shall monitor leachate from the replacement Pikes Point Closed Landfill interception drain at the location where collected leachate is discharged via the piped network to the stormwater system.</p> <p>The monitoring shall include:</p> <ul style="list-style-type: none"> (a) Continuous monitoring of leachate flow for a period of 24 months following commissioning; (b) Monthly sampling of leachate for a period of 24 months following commissioning of the stormwater system. The samples shall be analysed for total ammoniacal nitrogen (NH4N) and the result compared with a trigger level; (c) The trigger level NH4N concentration -will-which shall be derived from the Australian and New Zealand Environmental Conservation Council, Australian Guidelines for Fresh and Marine Waters, 2000 (ANZECC 2000) marine water quality guideline, 90% level of protection (1.2 mg/L) allowing for reasonable mixing in the receiving water and treatment in the stormwater wetland/biofiltration system. <u>The trigger level shall be provided to the Manager;</u> <u>(d) The trigger level established under (c) above shall be provided to and obtain the approval of the Manager prior to being implemented.</u> (de) If the trigger level is exceeded on two consecutive monitoring events, then the leachate flow will be redirected to trade waste until further monitoring for at least two monthly monitoring events measures NH4N concentrations below the trigger level; (ef) If there are no trigger level exceedances over the 24 month period then leachate quality monitoring shall be discontinued; and (fg) In the event of trigger level exceedance(s), the monthly monitoring shall be extended for no less than 6 months from the date of the last exceedance. <p>The results of the leachate monitoring shall be provided to the Manager in an annual report submitted by February of each year, or an</p>	AC seeks the edits highlighted to the wording of the 8 September version of the conditions

	alternative date as agreed with the Manager.	
<u>ROS.6A</u>	<p><u>The Requiring Authority shall fund the consenting and construction of a recreational facility incorporating two sand carpet sports fields, or an alternative sports field configuration as agreed with the Manager, in accordance with a final design developed by the Council. This design shall provide at least 54 hours of playing capacity per week. In addition to the sports fields, this recreational facility will contain lighting, two cubicle changing rooms, a toilet block, and a carpark unless otherwise excluded by the final design. This recreational facility shall be located on Council owned land at a location agreed with the Manager and in the general vicinity of the project area. This facility will be constructed to offset the delayed implementation of planned sports fields in Waikaraka Park South.</u></p> <p><u>Alternatively, a financial payment shall be made to Auckland Council (in lieu and as equivalent of the facilities outlined above) in full at least 20 working days prior to occupation of Construction Yard 3 and valued on the basis of the provision of the recreational facilities outline above.</u></p>	AC seeks this condition <u>in addition</u> to the 8 September version of the conditions
ON.1	<p>For the purposes of Conditions ON.2 to ON.14:</p> <p>(a) BPO – means the Best Practicable Option;</p> <p>(b) Building-Modification Mitigation – has the same meaning as in NZS 6806:2010 <i>Acoustics – Road-traffic noise – New and altered roads</i>;</p> <p>(c) Habitable Space – has the same meaning as in NZS 6806;</p> <p>(d) Noise Assessment – Means the <i>Traffic Noise and Vibration Assessment Report</i> (Technical Report 7) submitted with the NoR;</p> <p>(e) Noise Criteria Categories – means the groups of preference for sound levels established in accordance with NZS 6806 when determining the BPO for noise mitigation (i.e. Categories A, B and C);</p> <p>(f) NZS 6806 – means New Zealand Standard NZS 6806:2010 <i>Acoustics – Road-traffic noise – New and altered roads</i>;</p> <p>(g) P40 – means NZ Transport Agency NZTA P40:2014 Specification for noise mitigation;</p> <p>(h) PPFs – means only the premises and facilities identified in green, orange or red in the <i>Noise Assessment</i>; and</p> <p>(i) Structural Mitigation – has the same meaning as in NZS 6806.</p>	AC agree wording as per 8 September version of the conditions
ON.2	The road-traffic noise mitigation measures identified as the ‘Recommended Traffic Noise Mitigation’ in the <i>Noise Assessment</i> must be implemented to achieve the Noise Criteria Categories indicated in the <i>Noise Assessment</i> (‘Identified Categories’), where practicable and subject to Conditions ON.3 to ON.14.	AC agree wording as per 8 September version of the conditions
ON.3	<p>Prior to Commencement of Construction, a s<u>S</u>uitably q<u>Q</u>ualified p<u>P</u>erson must undertake the detailed design of the Structural Mitigation measures in the <i>Noise Assessment</i> (the ‘Detailed Mitigation Options’), which, subject to Condition ON.4, must include at least:</p> <p>(a) Noise barriers with location, length and height in general accordance with the <i>Noise Assessment</i>; and</p> <p>(b) Low-noise road surfaces with location in general accordance with the <i>Noise Assessment</i>.</p>	AC agree wording as per 8 September version of the conditions
ON.4	<p>If it is not practicable to implement a particular Structural Mitigation measure in the location or of the length or height included in the <i>Noise Assessment</i>, a changed design can be included in the Detailed Mitigation Options if either:</p> <p>(a) the changed design would result in the same Identified Category at all PPFs <u>or better</u>, and a s<u>S</u>uitably q<u>Q</u>ualified p<u>P</u>erson certifies to the Manager that the changed Structural Mitigation would be consistent with adopting the BPO in accordance with NZS 6806; or</p> <p>(b) the changed design would result in the Identified Category changing to a less stringent Category (e.g. from Category A to B or Category B to C at any PPF) <u>an increase in the noise level at any PPF of greater than 2dB</u> and the Manager confirms that the changed Structural Mitigation would be consistent with adopting the BPO in accordance with NZS 6806.</p>	AC agree wording as per 8 September version of the conditions
ON.5	<p>Prior to Commencement of Construction, a Noise Mitigation Design Report written in accordance with NZ Transport Agency <i>P40 Specification for Noise Mitigation 2014</i> must be provided to the Manager.</p> <p>The purpose of the Noise Mitigation Design Report is to confirm that the Detailed Mitigation Options meet the requirements of ON.2-Error! Reference source not found. The Noise Mitigation Design Report shall include confirmation that consultation has been undertaken with affected property owners for site specific design requirements and the implementation programme.</p> <p>Where a Noise Mitigation Design Report is required, it shall be included in the Outline Plan for the relevant stage(s) of the Project.</p>	AC agree wording as per 8 September version of the conditions
ON.6	The Detailed Mitigation Options must be implemented prior to Completion of Construction, with the exception of any low-noise road surfaces,	AC agree wording as per 8 September version of the conditions

	which must be implemented within twelve months of Completion of Construction.	
ON.7	Within twelve months of Completion of Construction, a post-construction review report written in accordance with NZ Transport Agency <i>P40 Specification for Noise Mitigation 2014</i> must be provided to the Manager.	AC agree wording as per 8 September version of the conditions
ON.8	The Detailed Mitigation Options must be maintained so they retain their noise reduction performance as far as practicable.	AC agree wording as per 8 September version of the conditions
ON.9	Prior to Commencement of Construction, a s <u>S</u> uitably q <u>Q</u> ualified p <u>P</u> erson must identify those PPFs which, following implementation of all the Detailed Mitigation Options, will not achieve Noise Criteria Category A or B and where Building-Modification Mitigation might be required to achieve 40 dB L _{Aeq(24h)} inside habitable spaces ('Category C Buildings').	AC agree wording as per 8 September version of the conditions
ON.10	Prior to Commencement of Construction in the vicinity of each Category C Building, the Requiring Authority must write to the owner of the Category C Building requesting entry to assess the noise reduction performance of the existing building envelope. If the building owner agrees to entry within twelve months of the date of the Requiring Authority's letter, the Requiring Authority must instruct a s <u>S</u> uitably q <u>Q</u> ualified p <u>P</u> erson to visit the building and assess the noise reduction performance of the existing building envelope.	AC agree wording as per 8 September version of the conditions
ON.11	For each Category C Building identified, the Requiring Authority is deemed to have complied with Condition ON.10 if: (a) The Requiring Authority's acoustics specialist has visited the building; or (b) The building owner agreed to entry, but the Requiring Authority could not gain entry for some reason (such as entry denied by a tenant and the building owner has been notified of that denial); or (c) The building owner did not agree to entry within twelve months of the date of the Requiring Authority's letter sent in accordance with Condition ON.10 (including where the owner did not respond within that period); or (d) The building owner cannot, after reasonable enquiry, be found prior to Completion of Construction. If any of (b) to (d) above apply to a Category C Building, the Requiring Authority is not required to implement Building-Modification Mitigation to that building.	AC agree wording as per 8 September version of the conditions
ON.12	Subject to Condition ON.11, within six months of the assessment required by Condition ON.10, the Requiring Authority must write to the owner of each Category C Building advising: (a) If Building-Modification Mitigation is required to achieve 40 dB L _{Aeq(24h)} inside habitable spaces; and (b) The options available for Building-Modification Mitigation to the building, if required; and (c) That the owner has three months to decide whether to accept Building-Modification Mitigation to the building and to advise which option for Building-Modification Mitigation the owner prefers, if the Requiring Authority has advised that more than one option is available.	AC agree wording as per 8 September version of the conditions
ON.13	Once an agreement on Building-Modification Mitigation is reached between the Requiring Authority and the owner of a Category C Building, the mitigation must be implemented, including any third party authorisations required, in a reasonable and practical timeframe agreed between the Requiring Authority and the owner.	AC agree wording as per 8 September version of the conditions
ON.14	Subject to Condition ON.11, where Building-Modification Mitigation is required, the Requiring Authority is deemed to have complied with Condition ON.13 if: (a) The Requiring Authority has completed Building-Modification Mitigation to the building; or (b) An alternative agreement for mitigation is reached between the Requiring Authority and the building owner; or (c) The building owner did not accept the Requiring Authority's offer to implement Building-Modification Mitigation within three months of the date of the Requiring Authority's letter sent in accordance with Condition ON.12 (including where the owner did not respond within that period); or (d) The building owner cannot, after reasonable enquiry, be found prior to Completion of Construction.	AC agree wording as per 8 September version of the conditions
CNV.1	A Construction Noise and Vibration Management Plan (CNVMP) shall be prepared by a s <u>S</u> uitably q <u>Q</u> ualified p <u>P</u> erson, and shall be implemented and maintained throughout the entire construction period. The purpose of the CNVMP is to provide a framework for the development and implementation of <u>Best Practicable Option for the management of measures to avoid, remedy or mitigate adverse</u> construction noise and vibration effects, and to minimise any exceedance of the <u>construction</u>	AC agree wording as per 8 September version of the conditions

	<u>noise and vibration</u> criteria set out in Conditions CNV.54 and CNV.65.																							
CNV.2	<p>(a) The CNVMP shall be prepared in accordance with <u>Annex E2 of New Zealand Standard NZS6803:1999 ‘Acoustics – Construction Noise’ (NZS6806:1999)</u> and the NZ Transport Agency’s <i>State highway construction and maintenance noise and vibration guide</i> (version 1.0, 2013).</p> <p>(b) The CNVMP shall, as a minimum, address the following:</p> <p>(i) <u>Description of the works, anticipated equipment/processes and their scheduled durations;</u></p> <p>(ii) <u>Hours of operation, including times and days when construction activities causing noise and/or vibration would occur;</u></p> <p>(iii) <u>The construction noise and vibration criteria for the project;</u></p> <p>(iv) <u>Identification of affected houses and other sensitive locations where noise and vibration criteria apply;</u></p> <p>(v) Requirement for building condition surveys at locations close to activities generating significant vibration, prior to and after completion of the works;</p> <p>(v) <u>Management and Mitigation options, including alternative strategies <u>adopting the Best Practicable Option</u> where full compliance with the relevant noise and/or vibration criteria cannot be achieved;</u></p> <p>(vi) <u>A procedure for developing and implementing the management plans <u>schedules</u> (as required by conditions CNV.6A, CNV.7A and CNV.7B) containing site specific information forming part of this CNVMP;</u></p> <p>(vii) <u>Methods and frequency for monitoring and reporting on construction noise and vibration;</u></p> <p>(viii) <u>Procedures for maintaining contact with stakeholders, notifying of proposed construction activities, <u>the period of construction activities,</u> and handling noise and vibration complaints;</u></p> <p><u>(ix) Identification of major construction work areas and activities which are anticipated to generate noise and / or vibration levels which will require site specific management plans (in accordance with Condition CNV.6A, CNV.7A and CNV.7B) as soon as reasonably practicable, and procedures for the early engagement with the receivers;</u></p> <p><u>(x) Construction equipment operator training procedures and expected construction site behaviours; and</u></p> <p>(xi) <u>Contact details of the site supervisor or project manager and the Requiring Authority’s Project Liaison Person (phone, postal address, email address);</u></p> <p><u>(xii) Procedures for the regular training of the operators of construction equipment to minimise noise and vibration as well as expected construction site behaviours for all workers; and</u></p> <p><u>(xiii) Identification of businesses which operate processes, machinery or equipment that may be unreasonably disrupted by construction vibration even where the Project vibration standards are met <u>or are sensitive to vibration due to the nature of the building materials (e.g. asbestos).</u> For any such businesses a site specific management plan in accordance with CNV.7B shall be prepared and implemented.</u></p>	AC agree wording as per 8 September version of the conditions																						
CNV.3	The CNVMP shall identify which mitigation measures required by Conditions ON 1 to ON.6 would also attenuate construction noise. Where practicable, those measures identified in the CNVMP shall be implemented prior to commencing major construction works <u>or early during construction that generate noise</u> in the vicinity.	AC agree wording as per 8 September version of the conditions																						
CNV.4	<p>(a) Noise arising from construction activities shall be measured and assessed in accordance with NZS 6803:1999 <i>Acoustics - Construction Noise</i> and shall comply, as far as practicable, with the noise criteria set out in the following table:</p> <p>Table CNV1: Construction noise criteria</p> <table><tr><th><u>DayTimeframe</u></th><th>Time</th><th>L_{Aeq}(15min)</th><th>L_{AFmax}</th></tr><tr><td colspan="4">Residential buildings</td></tr><tr><td>Sundays to Thursdays</td><td>0630h - 0730h</td><td><u>6055</u> dB</td><td>75 dB</td></tr><tr><td rowspan="3"><u>0630 Sunday to 0630 Friday</u></td><td>0730h - 1800h</td><td>70 dB</td><td>85 dB</td></tr><tr><td>1800h - 2000h</td><td>65 dB</td><td>80 dB</td></tr><tr><td>2000h - 0630h</td><td>60 dB</td><td>75 dB</td></tr></table>	<u>DayTimeframe</u>	Time	L _{Aeq} (15min)	L _{AFmax}	Residential buildings				Sundays to Thursdays	0630h - 0730h	<u>6055</u> dB	75 dB	<u>0630 Sunday to 0630 Friday</u>	0730h - 1800h	70 dB	85 dB	1800h - 2000h	65 dB	80 dB	2000h - 0630h	60 dB	75 dB	AC seeks the edits highlighted to the wording of the 8 September version of the conditions (reinstate noise levels from 19 July version).
<u>DayTimeframe</u>	Time	L _{Aeq} (15min)	L _{AFmax}																					
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	<table><tr><td></td><td></td><td></td><td>BS 5228-2* Table B.2</td></tr><tr><td></td><td>Vibration—continuous</td><td></td><td>BS 5228-2* 50% of Table B.2 values</td></tr><tr><td>Free field</td><td>Airblast</td><td>=</td><td>133dB_{L_{zpeak}}</td></tr></table> <p>* For vibration, protected premises and facilities (PPFs) are dwellings, educational facilities, boarding houses, homes for the elderly and retirement villages, marae, hospitals that contain in-house patient facilities and buildings used as temporary accommodation (e.g. motels and hotels).</p> <p>*BS 5228-2:2009 ‘Code of practice for noise and vibration control on construction and open sites—Part 2: Vibration’.</p> <p>** German Standard DIN 4150-3:1999 “Structural Vibration - Part 3: Effects of Vibration on Structures”</p> <p>Table CNV3 Construction Vibration Criteria for buried pipework***</p> <table><tr><th>Pipe material</th><th>Guideline values for velocity measured on the pipe, v_p, in mm/s</th></tr><tr><td>Steel (including welded pipes)</td><td>100</td></tr><tr><td>Clay, concrete, reinforced concrete, metal (with or without flange)</td><td>80</td></tr><tr><td>Masonry, plastic</td><td>50</td></tr></table> <p>*** Based on the German Standard DIN 4150-3:1999 “Structural Vibration - Part 3: Effects of Vibration on Structures”.</p>				BS 5228-2* Table B.2		Vibration—continuous		BS 5228-2* 50% of Table B.2 values	Free field	Airblast	=	133dB _{L_{zpeak}}	Pipe material	Guideline values for velocity measured on the pipe, v _p , in mm/s	Steel (including welded pipes)	100	Clay, concrete, reinforced concrete, metal (with or without flange)	80	Masonry, plastic	50	
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CNV.6	<p>If measured or predicted noise and vibration from a construction activity exceed the criteria in Conditions CNV.4 or CNV.5, a Schedule to the CNVMP for that activity shall be prepared in accordance with the NZ Transport Agency State highway construction and maintenance noise and vibration guide (Version 1.0, 2013). A schedule must establish the best practicable option for noise and vibration mitigation to be implemented for the construction activity.</p> <p>The Schedule shall be provided to the Manager for certification at least five working days, where practicable, in advance of the activity commencing.</p>	AC agree wording as per 8 September version of the conditions																				
CNV.6A	<p>(a) A Site Specific Construction Noise Management Plan (SSCNMP) shall be prepared by a Suitably Qualified Person, <u>in consultation with the owners and occupiers of sites subject to the SSCNMP</u>, when construction noise is either predicted or measured to exceed the criteria in Condition CNV.4, except where the exceedance of the criteria in Condition CNV.4 is no greater than 5 decibels and does not exceed:</p> <p>i) 0700-2200: 1 period of up to 2 consecutive weeks in any 2 months; or</p> <p>ii) 2200-0700: 1 period of up to 2 consecutive nights in any 10 days.</p> <p>(b) The objective of the SSCNMP is to set out the best practicable option for the management of noise effects of the construction activity. The SSCNMP shall as a minimum set out:</p> <p>i) Construction activity location, start and finish dates;</p> <p>ii) The predicted noise level for the construction activity;</p> <p>iii) Noise limits to be applied for the duration of the activity;</p> <p>iv) The mitigation options that have been selected and the options that have been discounted as being impracticable <u>and the reasons why. The mitigation options shall take into account where practicable, the use of the site and/or any operational requirements of the site. Mitigation options may include:</u></p> <p>a. <u>managing times of activities to avoid night works and other sensitive times;</u></p> <p>b. <u>liaising with neighbours so they can work around specific activities;</u></p> <p>c. <u>selecting equipment and methodologies to restrict noise;</u></p> <p>d. <u>using screening, enclosures or barriers;</u></p> <p>e. <u>if appropriate and reasonable, offering neighbours temporary relocation;</u></p> <p>v) The proposed noise monitoring regime;</p>	AC agree wording as per 8 September version of the conditions																				

	<p>vi) Document <u>the consultation undertaken with owners and occupiers of sites subject to the SSCNMP, and how consultation outcomes have and have not been taken into account. The consultation shall be in addition to the requirements set out in Condition CS.2.</u></p> <p>(c) <u>The SSCNMP shall be submitted to the Council Manager for certification at least 5 working days, except in unforeseen circumstances where practicable, in advance of Construction Works which are covered by the scope of the SSCNMP.</u></p>	
CNV.7A	<p>(a) <u>A Site Specific Construction Vibration Management Plan (SSCVMP) shall be prepared by a Suitably Qualified Person, in consultation with the owners and occupiers of sites subject to the SSCVMP, when construction vibration is either predicted or measured to exceed the Category B criteria at the receivers in Condition CNV.5.</u></p> <p>(b) <u>The objective of the SSCVMP is to set out the bBest pPracticable eOption for the management of construction vibration effects. The SSCVMP shall as a minimum set out:</u></p> <p>i) <u>Construction activity location, start and finish dates;</u></p> <p>ii) <u>The predicted vibration level for the construction activity;</u></p> <p>iii) <u>Building-specific vibration criteria <u>An assessment of each building and any pipe work to determine susceptibility to damage from vibration and define acceptable vibration limits that the works must comply with to avoid damage;</u></u></p> <p>iv) <u>The mitigation options that have been selected and the options that have been discounted as being impracticable and the reasons why. The mitigation options shall take into account where practicable, the use of the site and/or any operational requirements of the site. Mitigation options may include:</u></p> <p>a. <u>Phasing of vibration-generating activities;</u></p> <p>b. <u>Avoiding impact pile driving and vibratory rollers where possible in vibration-sensitive areas;</u></p> <p>c. <u>Liaising with neighbours so they can work around specific vibration-generating activities;</u></p> <p>d. <u>Selecting equipment and methodologies to minimise vibration;</u></p> <p>v) <u>The proposed vibration monitoring regime;</u></p> <p>vi) <u>The consultation undertaken with owners and occupiers of sites subject to the SSCVMP, and how consultation outcomes have and have not been taken into account. The consultation shall be in addition to the requirements set out in Condition CS.2; and</u></p> <p>vi). <u>The pre-condition survey of buildings which document their current condition and any existing damage.</u></p> <p>(c) <u>The SSCVMP shall be submitted to the Council for certification at least 5 working days, except in unforeseen circumstances where practicable, in advance of Construction Works which are covered by the scope of the SSCVMP.</u></p>	AC agree wording as per 8 September version of the conditions
CNV.7B	<p>(a) <u>In addition to the matters in CNV.7A, a The SSCVMP shall also address be required in circumstances when construction vibration is predicted to adversely affect commercial activities located within 50m of Construction Works that are verified by a Suitably Qualified Person as being uniquely sensitive to construction vibration due to the nature of specialised equipment and/or the nature of the building materials (e.g. asbestos). This shall include activities at the following sites: At a minimum, a SSCVMP shall be prepared for:</u></p> <p>•(i) <u>Stratex Group Limited site, 19 – 21 Sylvia Park Road; and</u></p> <p>•(ii) <u>Fonterra Tip Top site, 113 Carbine Road. With respect to this site, "activities" in condition CNV7.B(b) includes:</u></p> <ul style="list-style-type: none"> – <u>underground wet services (including stormwater drainage and wastewater);</u> – <u>earthenware pipes;</u> – <u>underground cabling (including 11kV and 400V power cables and associated switchboxes);</u> – <u>ducted services; and</u> – <u>other core underground infrastructure which the landowner has confirmed to the Requiring Authority, in writing, prior to Commencement of Construction.</u> <p>(b) <u>In addition to the requirements of CNV.7A, the SSCVMP shall include, with respect to those vibration sensitive commercial activities:</u></p> <p>i) <u>Informed by consultation with the owners and/or occupiers of sites, identification of the activities processes, machinery or equipment which are uniquely sensitive to construction vibration, and the reasons why;</u></p> <p>ii) <u>An assessment of the sensitivity of the activities processes, machinery or equipment to construction vibration;</u></p>	AC agree wording as per 8 September version of the conditions

	<p>iii) <u>Construction vibration criteria for the vibration sensitive commercial activities; and</u></p> <p>iv) <u>A process for dealing with any disagreement which may arise, particularly in relation to the determination of the vibration limits, and</u></p> <p>v) <u>Procedures and methods for monitoring compliance with the vibration criteria established under (iii) above.</u></p>	
HH.4	Where the Requiring Authority holds an Archaeological Authority for pre-1900 archaeological sites under the Heritage New Zealand Pouhere Taonga Act 2014, the designation conditions set out below shall not apply to the activities authorized by the Archaeological Authority.	AC seeks the edits highlighted to the wording of the 8 September version of the conditions
HH.12	<p>For activities and areas of the Project not covered by an Archaeological Authority, tThe Requiring Authority shall prepare an Accidental Discovery Protocol for any accidental archaeological discoveries which occur during Construction Works.</p> <p>The Accidental Discovery Protocol shall be consistent with Minimum Standard P45 – Accidental Archaeological Discovery Specification contained in the State Highway Professional Services Proforma Manual and the Auckland Unitary Plan Accidental Discovery Rule in Standard E.11. 6.1 and E.12.6.1 and E.17.</p> <p>The Accidental Discovery Protocol shall be prepared in consultation with the Mana Whenua Group and modified to reflect the site specific Project detail.</p> <p>The Accidental Discovery Protocol shall be implemented throughout the Construction Works.</p>	AC seeks the edits highlighted to the wording of the 8 September version of the conditions. For clarity, the Council agrees with the balance of the Historic Heritage conditions (HH.5 to HH.8) contained in the 8 September version of the conditions.
HH.23	<p>(a) Prior to Commencement of Construction, the Requiring Authority shall prepare and implement a Heritage Management Plan (HMP).</p> <p>(b) The purpose of the HMP is to identify procedures and practices to be adopted to protect, as far as reasonably practicable, historic heritage and remedy and mitigate any residual effects.</p> <p>(c) The HMP will be prepared for the management of historic heritage, excluding any matters areas covered by an Archaeological Authority granted by HNZPT.</p> <p>(d) The HMP shall be provided to the Manager prior to Commencement of Construction.</p> <p>The HMP shall be implemented throughout Construction Works, other than where the conditions of an Archaeological Authority obtained under the Heritage New Zealand Pouhere Taonga Act 2014, or the archaeological works plans or site instructions approved under that Authority, require otherwise.</p>	
HH.34	<p>The HMP shall be prepared by a sSuitably eQualified pPerson(s) in consultation with Auckland Council, HNZPT and Mana Whenua, and shall identify:</p> <p>(a) Known historic heritage within the designation boundary;</p> <p>(b) Any pre-1900 areas covered by an Archaeological Authority archaeological sites in accordance with authorities under the Heritage New Zealand Pouhere Taonga Act 2014;</p> <p>(c) Roles, and responsibilities and contact details of personnel and/or relevant agencies (including but not limited to Auckland Council, New Zealand Police, Heritage New Zealand Pouhere Taonga, and mana whenua representatives) involved with historic heritage matters including surveys, and monitoring of conditions;</p> <p>(d) Methods for identifying, avoiding, protecting and/or minimising effects on historic heritage during construction where practicable in line with international best practice (for example the fencing off of archaeologically sensitive areas to protect them from damage during construction, and including construction methods that minimise vibration);</p> <p>(e) Details for recording and salvage prior to removal of the historic concrete railway bridge and tunnel located adjacent to Onehunga Harbour Road. The recording and salvage shall be aligned, as appropriate, with the Salvage and Conservation Heritage Plan for the proposed removal of the Old 1875/1915 Māngere Bridge (being part of a separate works project planned by the NZ Transport Agency).</p> <p>(f) Training requirements for contractors and subcontractors on historic heritage areas/features within the designation boundary and any accidental discovery protocols. The training shall be undertaken under the guidance of a sSuitably eQualified pPerson and representatives of the Mana Whenua Group;</p> <p>(g) Cultural inductions for site/places of importance to Mana Whenua; and</p> <p>(h) Proposed methodology for assessing the condition of historic heritage, condition and the means to mitigate any adverse effects s (if any) on the built heritage features listed in Condition HH.5, including allocation of resources and the timeframe for implementing the proposed methodology in accordance with <i>Heritage New Zealand guideline AGS 1A: Investigation and Recording of Buildings and Standing</i></p>	

	<p>Structures for assessing and recording built heritage dated 4 July 2014 (or any subsequent revision).; and</p> <p>(i) Proposed methodology for documentation of post-1900 historic heritage exposed during construction, and the recording of these sites in the Auckland Council Cultural Heritage Inventory . (www.chi.net/Home.aspx). Site records shall be updated by the Suitably Qualified Person within 20 working days of the completion of on-site earthworks.</p>	
HH.4A	<p>Electronic copies of all historic heritage reports relating to historic heritage investigations (evaluation, excavation and monitoring etc.), including interim reports, shall be submitted by the Suitably Qualified Person to the Manager and to the Auckland Council Cultural Heritage Inventory as soon as they are produced.</p>	
	<p>Advice note:</p> <p>The archaeological requirements of the Project shall be undertaken in compliance with any conditions of an archaeological authority issued by HNZPT under the Heritage New Zealand Pouhere Taonga Act 2014.</p> <p>The Requiring Authority shall seek advice from a sSuitably qQualified pPerson in advance of any Site Investigations or Enabling Works on the potential need for an Archaeological Authority under the Heritage New Zealand Pouhere Taonga Act 2014 for those works. If the sSuitably qQualified pPerson identifies that an Archaeological Authority may be required, the Requiring Authority shall engage with Heritage New Zealand Pouhere Taonga.</p> <p>Heritage New Zealand Pouhere Taonga Act 2014</p> <p>The Heritage New Zealand Pouhere Taonga Act 2014 (hereafter referred to as the Act) provides for the identification, protection, preservation and conservation of the historic and cultural heritage of New Zealand. All archaeological sites are protected by the provisions of the Act (section 42). It is unlawful to modify, damage or destroy an archaeological site without prior authority from Heritage New Zealand Pouhere Taonga. An Authority is required whether or not the land on which an archaeological site may be present is designated, a resource or building consent has been granted, or the activity is permitted under Unitary, District or Regional Plans.</p> <p>According to the Act (section 6) archaeological site means, subject to section 42(3) –</p> <p>a) any place in New Zealand, including any building or structure (or part of a building or structure), that –</p> <p>i. was associated with human activity that occurred before 1900 or is the site of the wreck of any vessel where the wreck occurred before 1900; and</p> <p>ii. provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand; and</p> <p>b) includes a site for which a declaration is made under section 43(1)</p> <p>It is the responsibility of the Requiring Authority to consult with Heritage New Zealand Pouhere Taonga about the requirements of the Act and to obtain the necessary Authorities under the Act should these become necessary, as a result of any activity associated with the consented proposals.</p> <p>For information please contact the Heritage New Zealand Pouhere Taonga Northern Regional Archaeologist – 09 307 0413 / archaeologistMN@historic.org.nz</p>	

Attachment 2 – Miscellaneous Matters

The Ramsar Convention

- (a) During cross-examination of expert witness Dr. Lovegrove, the Board directed counsel to provide the Board with details about the Ramsar Convention 1975 (**Convention**), including its status in New Zealand.⁷⁰ Additionally, counsel was directed to provide the Board with a copy of the Convention. Accordingly, **Attachment 3** to these submissions is a copy of the Ramsar Convention
- (b) The Ramsar Convention is a Convention on Wetlands that came into force in 1975. It is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. There are 169 contracting parties to the convention and 2,280 Ramsar sites (a total surface area of designated sites of 220,453,845 ha).
- (c) New Zealand is a contacting party to the Convention. It came into force in New Zealand on 13 December 1976. New Zealand has 6 Ramsar sites⁷¹ listed as designated Wetlands of International Importance with a surface area of 56,639 hectares. Māngere Inlet is not included as a Ramsar site under the convention.
- (d) While most sections of the Convention apply only to those sites included in the List, there are broad provisions such as article 4 that direct "...Contracting Parties [to] endeavor through management to increase waterfowl populations on appropriate wetlands." The ecological significance of the Māngere Inlet is demonstrated by the fact that it would comply with several of the Ramsar criteria, particularly criterion 6. Criterion 6 provides that a site "Regularly supports 1% of the individuals in a population of one species or subspecies of waterbird." While there is no legal requirement to apply the Convention to the Māngere Inlet, it could be taken into account under ss 104(1)(d) and 171(1)(d) RMA as 'any other matter'.

70 Transcript of proceedings 1 August 2017, page 2819, lines 11 – 24.

71 Kopuataj Peat Dome (10,201ha); Whangamarino (5,923ha); Farewell Spit (11,388ha); Awarua Wetland (20,000ha); Firth of Thames (8,927ha); and Manawatu River Mouth and Estuary (200ha).

- (e) The Department of Conservation has noted that the main benefits of being on the Ramsar List largely relate to an increased profile, which is likely to lead to inclusion of scheduled sites of significance in planning documents under s 6(c) of the Resource Management Act 1991.⁷²

Paper: "Waders of the Manukau Harbour and Firth of Thames" (Veitch and Habraken 1999)

- (f) During cross-examination, Mr. Lovegrove referred to a public paper from 1999 that showed data concerning shorebird counts at high tide rooks in the Manukau Harbour on and off since the 1940's.⁷³ In response to this, the Board counsel to make this paper available.⁷⁴ Accordingly, **Attachment 4** to these submissions is the relevant paper: "Waders of the Manukau Harbour and Firth of Thames" (Veitch and Habraken 1999).

Vision for Māngere Inlet

- (g) During cross-examination of Mr. Gouge, the Board raised concerns about the "traction and momentum" that the Vision document has, especially as it represents a wide number of Mana Whenua.⁷⁵ When considering urban intensification and the relationship between communities and the coastline, the Board asked Mr. Gouge what relevance the Vision document would have. Mr. Gouge explained that the document "would be considered alongside the other local area plans and would be a very important part of that."⁷⁶ During its assessment of the Proposal, the Council has in principle endorsed what is in the Vision, and intends to put it forward to the governing body to be endorsed formally.⁷⁷

Tamaki Makaurau Collective Deed

- (h) On 18 August 2017, the Board directed Counsel for the Council to provide documentation relating to the Ngā Mana Whenua o Tāmaki Makaurau Collective Redress Deed. On 22 August 2017, we provided

72 Denyer, K., Robertson, H. 2016 National guidelines for the assessment of potential Ramsar wetlands in New Zealand, Department of Conservation, Wellington, 58 p (see page 3).
73 Transcript of proceedings 1 August 2017, page 2822, line 45.
74 Transcript of proceedings 1 August 2017, page 2823, line 5.
75 Transcript of proceedings 14 August 2017, page 3886, line 5.
76 Transcript of proceedings 14 August 2017, page 3885, line 21.
77 Transcript of proceedings 14 August 2017, page 3884, line 35; and page 3885, line 35.

the Board with a memorandum attaching the Ngā Mana Whenua o Tāmaki Makaurau Collective Redress Deed; and the Ngā Mana Whenua o Tāmaki Makaurau Collective Redress Act 2014.

Attachment 3 – Ramsar Convention

Convention on Wetlands of International Importance especially as Waterfowl Habitat

Ramsar, Iran, 2.2.1971
as amended by the Protocol of 3.12.1982
and the Amendments of 28.5.1987

Paris, 13 July 1994
Director, Office of International Standards and Legal Affairs
United Nations Educational, Scientific and Cultural Organization (UNESCO)

The Contracting Parties,

RECOGNIZING the interdependence of Man and his environment;

CONSIDERING the fundamental ecological functions of wetlands as regulators of water regimes and as habitats supporting a characteristic flora and fauna, especially waterfowl;

BEING CONVINCED that wetlands constitute a resource of great economic, cultural, scientific, and recreational value, the loss of which would be irreparable;

DESIRING to stem the progressive encroachment on and loss of wetlands now and in the future;

RECOGNIZING that waterfowl in their seasonal migrations may transcend frontiers and so should be regarded as an international resource;

BEING CONFIDENT that the conservation of wetlands and their flora and fauna can be ensured by combining far-sighted national policies with co-ordinated international action;

Have agreed as follows:

Article 1

1. For the purpose of this Convention wetlands are areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres.

2. For the purpose of this Convention waterfowl are birds ecologically dependent on wetlands.

Article 2

1. Each Contracting Party shall designate suitable wetlands within its territory for inclusion in a List of Wetlands of International Importance, hereinafter referred to as "the List" which is maintained by the bureau established under Article 8. The boundaries of each wetland shall be precisely described and also delimited on a map and they may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six metres at low tide lying within the wetlands, especially where these have importance as waterfowl habitat.
2. Wetlands should be selected for the List on account of their international significance in terms of ecology, botany, zoology, limnology or hydrology. In the first instance wetlands of international importance to waterfowl at any season should be included.
3. The inclusion of a wetland in the List does not prejudice the exclusive sovereign rights of the Contracting Party in whose territory the wetland is situated.
4. Each Contracting Party shall designate at least one wetland to be included in the List when signing this Convention or when depositing its instrument of ratification or accession, as provided in Article 9.
5. Any Contracting Party shall have the right to add to the List further wetlands situated within its territory, to extend the boundaries of those wetlands already included by it in the List, or, because of its urgent national interests, to delete or restrict the boundaries of wetlands already included by it in the List and shall, at the earliest possible time, inform the organization or government responsible for the continuing bureau duties specified in Article 8 of any such changes.
6. Each Contracting Party shall consider its international responsibilities for the conservation, management and wise use of migratory stocks of waterfowl, both when designating entries for the List and when exercising its right to change entries in the List relating to wetlands within its territory.

Article 3

1. The Contracting Parties shall formulate and implement their planning so as to promote the conservation of the wetlands included in the List, and as far as possible the wise use of wetlands in their territory.
2. Each Contracting Party shall arrange to be informed at the earliest possible time if the ecological character of any wetland in its territory and included in the List has changed, is changing or is likely to change as the result of technological developments, pollution or other human interference. Information on such changes shall be passed without delay to the organization or government responsible for the continuing bureau duties specified in Article 8.

Article 4

1. Each Contracting Party shall promote the conservation of wetlands and waterfowl by establishing nature reserves on wetlands, whether they are included in the List or not, and provide adequately for their wardening.

2. Where a Contracting Party in its urgent national interest, deletes or restricts the boundaries of a wetland included in the List, it should as far as possible compensate for any loss of wetland resources, and in particular it should create additional nature reserves for waterfowl and for the protection, either in the same area or elsewhere, of an adequate portion of the original habitat.

3. The Contracting Parties shall encourage research and the exchange of data and publications regarding wetlands and their flora and fauna.

4. The Contracting Parties shall endeavour through management to increase waterfowl populations on appropriate wetlands.

5. The Contracting Parties shall promote the training of personnel competent in the fields of wetland research, management and wardening.

Article 5

The Contracting Parties shall consult with each other about implementing obligations arising from the Convention especially in the case of a wetland extending over the territories of more than one Contracting Party or where a water system is shared by Contracting Parties. They shall at the same time endeavour to coordinate and support present and future policies and regulations concerning the conservation of wetlands and their flora and fauna.

Article 6

1. There shall be established a Conference of the Contracting Parties to review and promote the implementation of this Convention. The Bureau referred to in Article 8, paragraph 1, shall convene ordinary meetings of the Conference of the Contracting Parties at intervals of not more than three years, unless the Conference decides otherwise, and extraordinary meetings at the written requests of at least one third of the Contracting Parties. Each ordinary meeting of the Conference of the Contracting Parties shall determine the time and venue of the next ordinary meeting.

2. The Conference of the Contracting Parties shall be competent:

- a) to discuss the implementation of this Convention;
- b) to discuss additions to and changes in the List;
- c) to consider information regarding changes in the ecological character of wetlands included in the List provided in accordance with paragraph 2 of Article 3;
- d) to make general or specific recommendations to the Contracting Parties regarding the conservation, management and wise use of wetlands and their flora and fauna;
- e) to request relevant international bodies to prepare reports and statistics on matters which are essentially international in character affecting wetlands;
- f) to adopt other recommendations, or resolutions, to promote the functioning of this Convention.

3. The Contracting Parties shall ensure that those responsible at all levels for wetlands management shall be informed of, and take into consideration,

recommendations of such Conferences concerning the conservation, management and wise use of wetlands and their flora and fauna.

4. The Conference of the Contracting Parties shall adopt rules of procedure for each of its meetings.

5. The Conference of the Contracting Parties shall establish and keep under review the financial regulations of this Convention. At each of its ordinary meetings, it shall adopt the budget for the next financial period by a two-third majority of Contracting Parties present and voting.

6. Each Contracting Party shall contribute to the budget according to a scale of contributions adopted by unanimity of the Contracting Parties present and voting at a meeting of the ordinary Conference of the Contracting Parties.

Article 7

1. The representatives of the Contracting Parties at such Conferences should include persons who are experts on wetlands or waterfowl by reason of knowledge and experience gained in scientific, administrative or other appropriate capacities.

2. Each of the Contracting Parties represented at a Conference shall have one vote, recommendations, resolutions and decisions being adopted by a simple majority of the Contracting Parties present and voting, unless otherwise provided for in this Convention.

Article 8

1. The International Union for Conservation of Nature and Natural Resources shall perform the continuing bureau duties under this Convention until such time as another organization or government is appointed by a majority of two-thirds of all Contracting Parties.

2. The continuing bureau duties shall be, *inter alia*:

- a) to assist in the convening and organizing of Conferences specified in Article 6;
- b) to maintain the List of Wetlands of International Importance and to be informed by the Contracting Parties of any additions, extensions, deletions or restrictions concerning wetlands included in the List provided in accordance with paragraph 5 of Article 2;
- c) to be informed by the Contracting Parties of any changes in the ecological character of wetlands included in the List provided in accordance with paragraph 2 of Article 3;
- d) to forward notification of any alterations to the List, or changes in character of wetlands included therein, to all Contracting Parties and to arrange for these matters to be discussed at the next Conference;
- e) to make known to the Contracting Party concerned, the recommendations of the Conferences in respect of such alterations to the List or of changes in the character of wetlands included therein.

Article 9

1. This Convention shall remain open for signature indefinitely.
2. Any member of the United Nations or of one of the Specialized Agencies or of the International Atomic Energy Agency or Party to the Statute of the International Court of Justice may become a Party to this Convention by:
 - a) signature without reservation as to ratification;
 - b) signature subject to ratification followed by ratification;
 - c) accession.
3. Ratification or accession shall be effected by the deposit of an instrument of ratification or accession with the Director-General of the United Nations Educational, Scientific and Cultural Organization (hereinafter referred to as "the Depositary").

Article 10

1. This Convention shall enter into force four months after seven States have become Parties to this Convention in accordance with paragraph 2 of Article 9.
2. Thereafter this Convention shall enter into force for each Contracting Party four months after the day of its signature without reservation as to ratification, or its deposit of an instrument of ratification or accession.

Article 10 bis

1. This Convention may be amended at a meeting of the Contracting Parties convened for that purpose in accordance with this article.
2. Proposals for amendment may be made by any Contracting Party.
3. The text of any proposed amendment and the reasons for it shall be communicated to the organization or government performing the continuing bureau duties under the Convention (hereinafter referred to as "the Bureau") and shall promptly be communicated by the Bureau to all Contracting Parties. Any comments on the text by the Contracting Parties shall be communicated to the Bureau within three months of the date on which the amendments were communicated to the Contracting Parties by the Bureau. The Bureau shall, immediately after the last day for submission of comments, communicate to the Contracting Parties all comments submitted by that day.
4. A meeting of Contracting Parties to consider an amendment communicated in accordance with paragraph 3 shall be convened by the Bureau upon the written request of one third of the Contracting Parties. The Bureau shall consult the Parties concerning the time and venue of the meeting.
5. Amendments shall be adopted by a two-thirds majority of the Contracting Parties present and voting.
6. An amendment adopted shall enter into force for the Contracting Parties which have accepted it on the first day of the fourth month following the date on which two thirds of the Contracting Parties have deposited an instrument of acceptance with

the Depositary. For each Contracting Party which deposits an instrument of acceptance after the date on which two thirds of the Contracting Parties have deposited an instrument of acceptance, the amendment shall enter into force on the first day of the fourth month following the date of the deposit of its instrument of acceptance.

Article 11

1. This Convention shall continue in force for an indefinite period.
2. Any Contracting Party may denounce this Convention after a period of five years from the date on which it entered into force for that party by giving written notice thereof to the Depositary. Denunciation shall take effect four months after the day on which notice thereof is received by the Depositary.

Article 12

1. The Depositary shall inform all States that have signed and acceded to this Convention as soon as possible of:
 - a) signatures to the Convention;
 - b) deposits of instruments of ratification of this Convention;
 - c) deposits of instruments of accession to this Convention;
 - d) the date of entry into force of this Convention;
 - e) notifications of denunciation of this Convention.
2. When this Convention has entered into force, the Depositary shall have it registered with the Secretariat of the United Nations in accordance with Article 102 of the Charter.

IN WITNESS WHEREOF, the undersigned, being duly authorized to that effect, have signed this Convention.

DONE at Ramsar this 2nd day of February 1971, in a single original in the English, French, German and Russian languages, all texts being equally authentic* which shall be deposited with the Depositary which shall send true copies thereof to all Contracting Parties.

* Pursuant to the Final Act of the Conference to conclude the Protocol, the Depositary provided the second Conference of the Contracting Parties with official versions of the Convention in the Arabic, Chinese and Spanish languages, prepared in consultation with interested Governments and with the assistance of the Bureau.

**Attachment 4 - Waders of the Manukau Harbour and Firth of Thames (Veitch and
Habraken 1999)**

Waders of the Manukau Harbour and Firth of Thames

C.R. (DICK) VEITCH¹ & A.M. (TONY) HABRAKEN²

¹48 Manse Road, Papakura, New Zealand;

²Jericho Road, R.D. 2, Pukekohe, New Zealand

ABSTRACT

Thirty-one species of wader have been counted on the Manukau Harbour and Firth of Thames in summer and winter censuses since the winter of 1960. Data are presented on total numbers of waders, the numbers of selected wader species and the numbers of observers involved in the counts. The numbers of many native waders have increased during the last 39 years, especially Pied Oystercatchers (*Haematopus ostralegus*), which have increased 8-fold from the 1960s to 1990s; however, Pied Stilts have been stable and Wrybills (*Anarhynchus frontalis*) may be declining. Numbers of many Arctic wader species have increased on one or both harbours, but of the two main species, Bar-tailed Godwits (*Limosa lapponica*) have remained constant over both harbours and Lesser Knots (*Calidris canutus*) have declined slightly on the Firth of Thames but increased greatly on the Manukau Harbour.

Notable changes of habitat are noted and possible reasons for changes in abundance of some species are discussed. Likely seasonal maxima of wader numbers are considered and the implications of these are discussed.

KEYWORDS: Waders, Charadrii, Manukau Harbour, Firth of Thames, population, census.

INTRODUCTION

New Zealand harbours and estuaries support more than 250 000 waders (birds of the Order Charadriiformes, suborder Charadrii) (Sagar *et al.* 1999). Twenty-four species are regularly counted (Sagar 1993). The Manukau Harbour and Firth of Thames are among the richest areas for waders, and due to the enthusiasm in the 1950s and 1960s of a few dedicated ornithologists, they have had the longest period of documentation of wader numbers.

Annually large numbers of three species of wader breeding in New Zealand (Pied Oystercatcher (*Haematopus ostralegus*), Wrybill (*Anarhynchus frontalis*) and Banded Dotterel (*Charadrius bicinctus*)) migrate northward, mainly from the South Island, to winter on northern harbours, although many Banded Dotterel also migrate to Australia (Pierce 1999). Native Pied Stilts (*Himantopus himantopus*) also migrate northwards to northern harbours, but many also come from nearby inland areas. Small numbers of these four species remain behind in summer and are joined by thousands of Arctic-breeding waders, "wintering" here during our summer. Some non-breeding Arctic birds remain here during our winter (over-winter). Small numbers of resident waders (Variable Oystercatcher (*Haematopus unicolor*) and New Zealand Dotterel (*Charadrius obscurus*)) are present throughout the year.

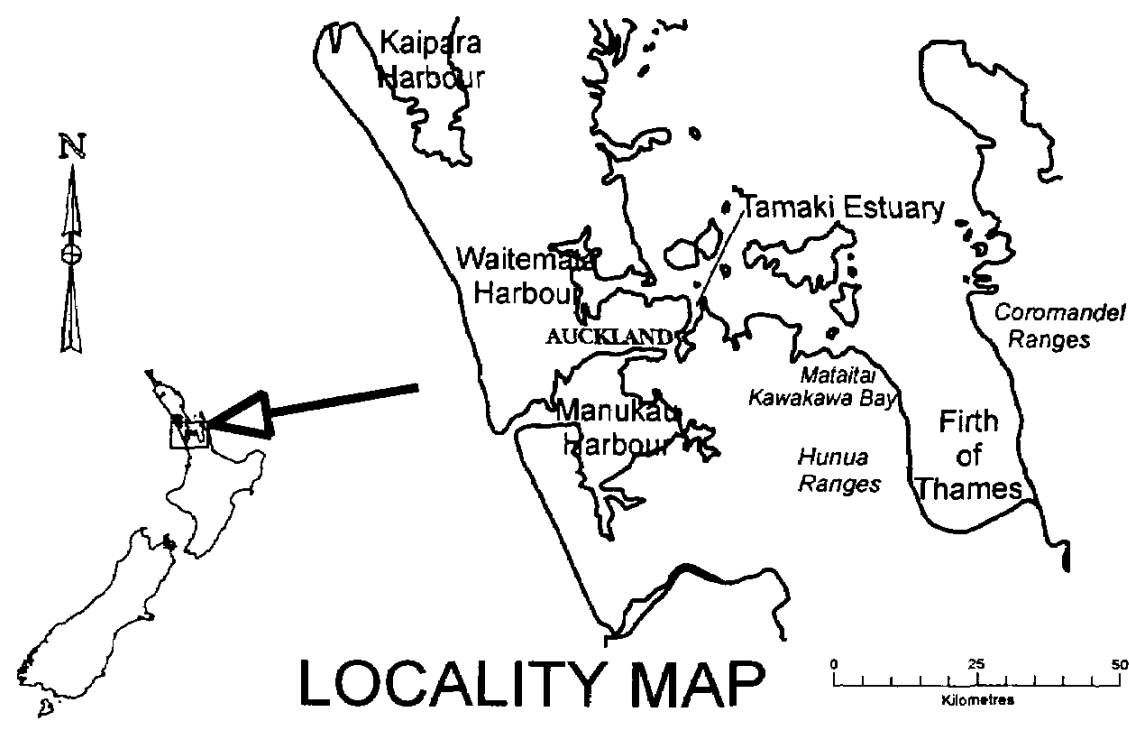


FIGURE 1 - Locality of the Manukau Harbour and Firth of Thames and other locations mentioned in the text.

This paper summarises the results of summer and winter censuses undertaken by members of the Ornithological Society of New Zealand since 1960. Some information from earlier publications (Veitch 1978) is repeated in the interest of providing complete information in this paper. Nomenclature follows Turbott (1990).

HABITAT DESCRIPTION

Manukau Harbour

Low water spring tide exposes approximately 18 000 ha of inter-tidal area in the Manukau Harbour, on the west coast of the Auckland isthmus (Fig. 1 & 2). This is presumed to be suitable for waders to forage on except for a relatively small portion that seems too sandy, a small portion that is rocky and the upper reaches of most of the tidal arms, where there are mangroves (*Avicennia marina* var. *australasica*). Pollok Spit, Seagrove, Karaka, Wiroa Island (Airport), Puketutu and Onehunga (Fig. 2) are the principal high tide roosts. Other areas included in the censuses, also shown in Fig. 2, may sometimes have high numbers of birds. Land use around the harbour includes urban housing and forest in the north, city and industrial in the north-east, urban housing in the south-east, and mainly mixed farming in the south and west.

Major modifications to the Manukau Harbour and its environs, with emphasis on the period covered by this paper, have been:

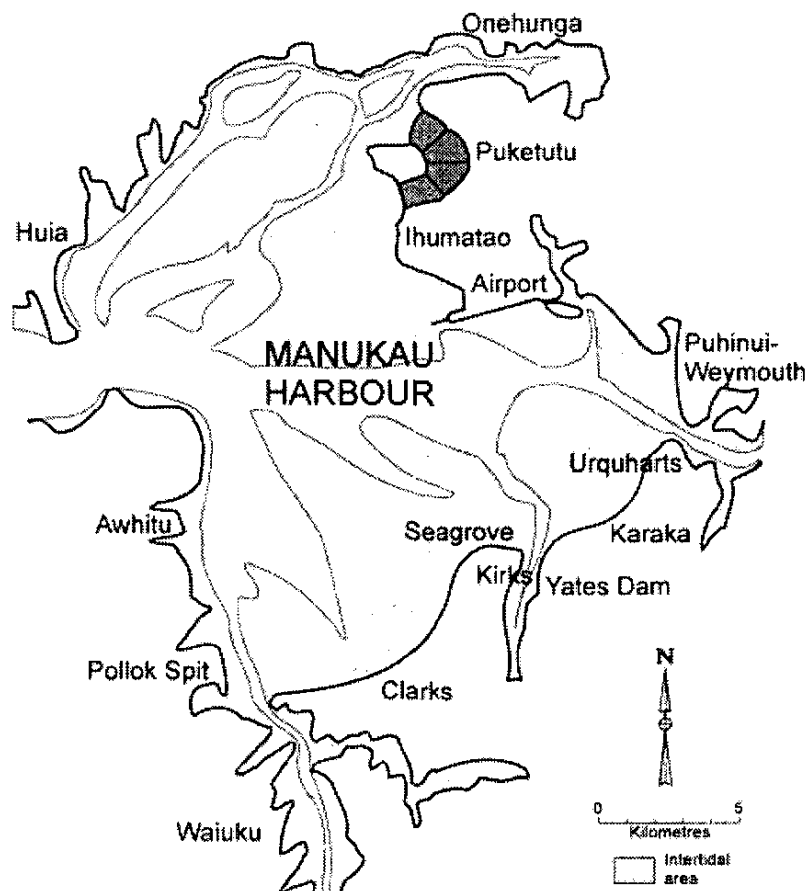


FIGURE 2 - Inter-tidal area and major census counting areas of the Manukau Harbour.

1. Conversion of nearby forest and scrub to farmland during the latter part of the 19th century. Between 1943 and 1978 there was an average annual increase of 10% in the rate of fertiliser application (Agricultural Statistics) with an assumed increase in nutrient runoff.
2. An increase in farm stocking rates, particularly up to 1978, is presumed to have resulted in an increase of effluent from stock, stock sheds and silage pits.
3. Since about 1980, large areas have been changed from pastoral farming to horticulture, with a presumed increase in use of pesticides and herbicides.
4. Increasing urban development and associated runoff of pollutants into the harbour.
5. Direct discharge of sewage and industrial effluent from the greater Auckland area. Since 1960 this has been treated in the sewage ponds (Fig. 2), which cover some 400 ha of former mudflat. From here some 300 million litres of treated effluent are discharged per day into the Manukau Harbour.
6. In the course of constructing Auckland International Airport some 100 ha of mudflat were covered in solid fill. This reclamation protrudes from the former shore in a way that has changed the inter-tidal area immediately to the south from soft mud to firm sand.

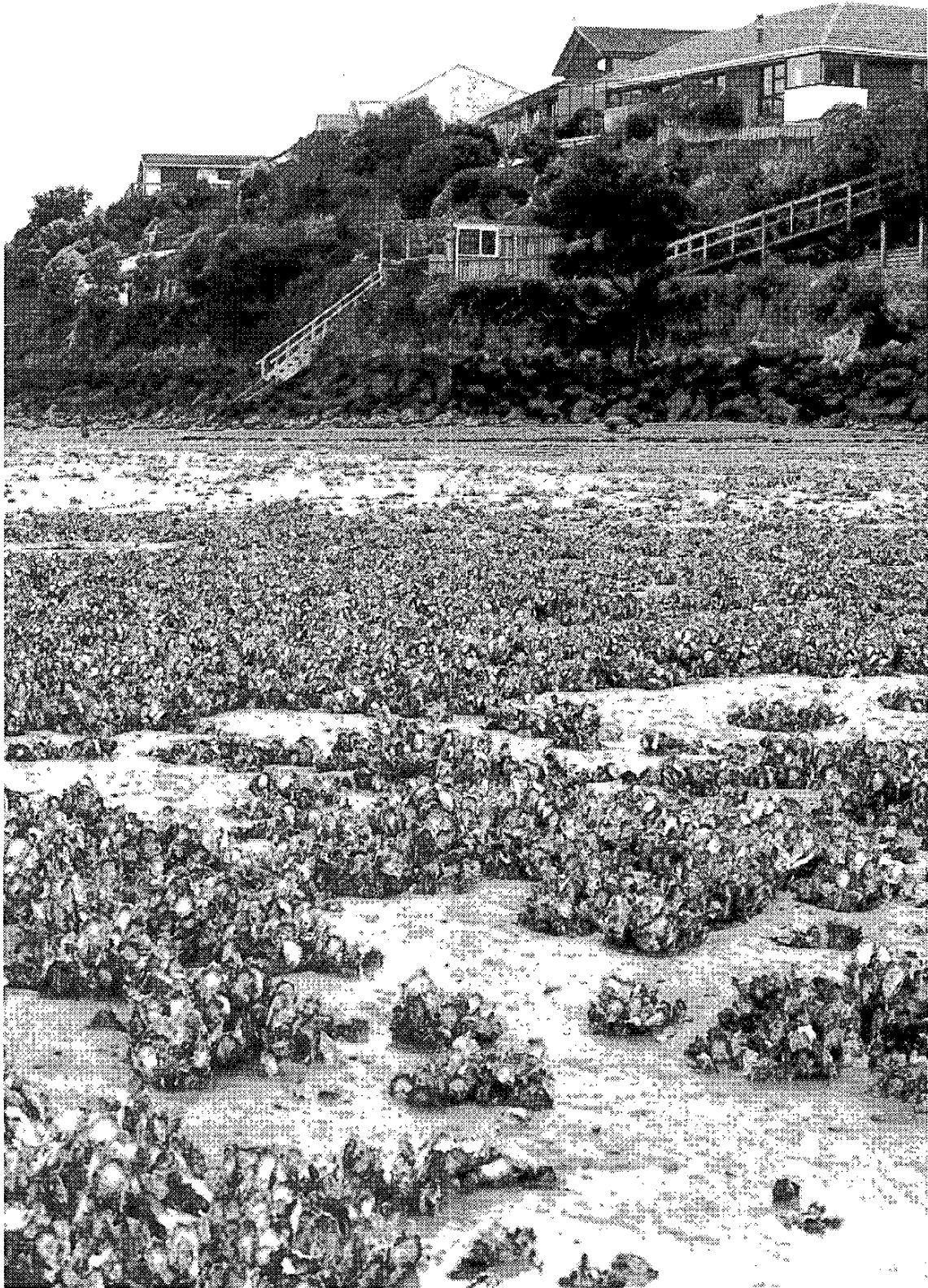


FIGURE 3 – Pacific oysters, shoreline modification and human occupation on the Manukau Harbour.

7. Large beds of the marine grasses *Zostera muelleri* and *Z. capricorni* have disappeared. This is presumed to be due to a fungal disease (M. Larcombe, pers. comm.).
8. The grasses *Spartina alterniflora* and *S. townsendii*, which grow in the inter-tidal zone, were introduced to the Manukau Harbour between 1965 and 1978. In 1984 they were estimated to cover about 13 ha of mudflat and were spreading. A 1994 survey recorded the area covered as just under 12 ha (Jamieson 1994).
9. The pacific oyster (*Crassostrea gigas*) arrived in New Zealand in about 1964 and was common in the Manukau Harbour in the late 1970s (Bioresarches 1992). This shellfish now covers large, but unmeasured, areas of the inter-tidal zone (Fig. 3). At present, distribution appears to be limited to sheltered arms and bays and slopes of channel sides that are sheltered from wave action.
10. There is a continually increasing level of human activity in the harbour. Speed boats, small hovercraft, people shellfishing, people setting fish nets, and other activities are becoming more frequent.
11. Stopbanks, particularly along the southern shoreline, reclamations in the north-eastern area and causeways for bridge approaches, have changed water flows and reduced water and bird access to areas that were saltmarsh. Mangrove areas diminished by c. 130 ha between 1955 and 1981 due to reclamation or destruction (Crisp *et al.* 1990).
12. Removal of shell, particularly at Clarks Bay, may have altered mid-tide roosts during the early years of this study.

Firth of Thames

The Firth of Thames is east of Auckland and lies between the Hunua and Coromandel Ranges (Fig. 1). Mudflat areas extend along all of the southern and south-western sides. At low water spring tides there are approximately 8500 ha of exposed inter-tidal area, most of which appears suitable for waders to forage on, although more than 800 ha are covered by mangroves. There are no tidal arms but two major rivers, other streams and man-made canals, draining an area of approximately 360 000 ha, flow into the Firth. The main high tide roosts are shown in Fig. 4. The counts given in this paper include observations at Matakaitai and Kawakawa Bay, which lie further north on the western side of the Firth of Thames. Use of individual roosts has not been consistent over the study period, due mainly to environmental changes, but this is not considered to impact on the data in this paper. The land surrounding the mudflat area is all farmed.

Major modifications to the Firth of Thames and its environs have been:

1. The clearing of forest and drainage of swamps within the Hauraki Catchment, which began in the early 19th century, is continuing today. An assumed consequence is a change of river flows and silt loads being carried into the Firth. The advance of the mangrove fringe by c. 200 m near the Piako River mouth

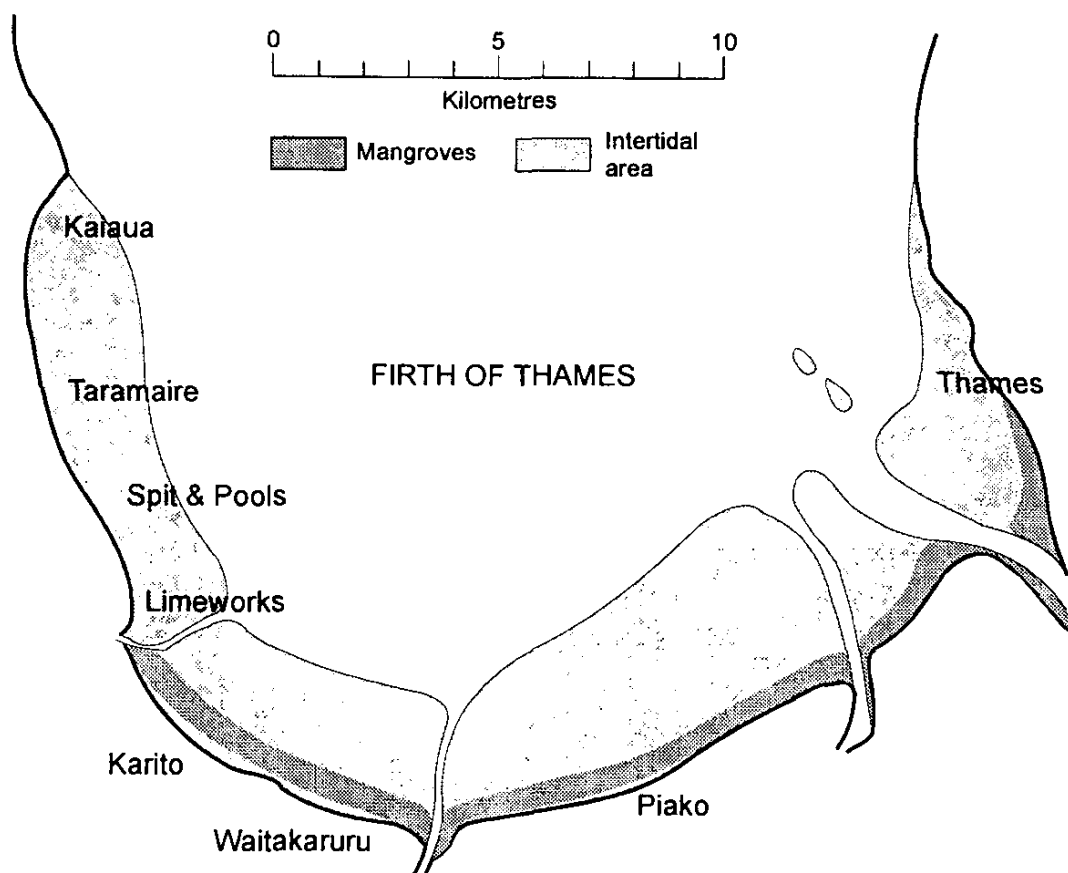


FIGURE 4 – Inter-tidal area and major census counting areas of the Firth of Thames.

between 1944 and 1993, is attributed to the vertical accretion of the mudflats adjacent to the mangroves (Young & Harvey 1996).

2. Since 1940-1945 there has been an increased rate of fertiliser application and a presumed increase in nutrient runoff from the land.
3. A continual increase in farm stocking rates. This has resulted in an increase of effluent from stock, stock sheds and silage pits.
4. Some treated and untreated sewage is discharged into the Firth of Thames and its catchment.
5. The area of mangroves has increased from less than 50 ha in 1952 to more than 800 ha in 1973 (Fig. 5).
6. The grasses *Spartina alterniflora* and *S. townsendii*, which grow in the intertidal zone, were introduced to the Firth of Thames during the 1960s. In 1978 these two grasses occupied less than 2 ha of mudflat.
7. The pacific oyster (*Crassostrea gigas*) arrived in New Zealand in about 1964 and is now present in the Firth of Thames.
8. In selected locations, particularly the coastline between Miranda and Kaiaua, human activity has increased significantly in recent years. Elsewhere human activity has increased slowly and remains less than on the Manukau Harbour.

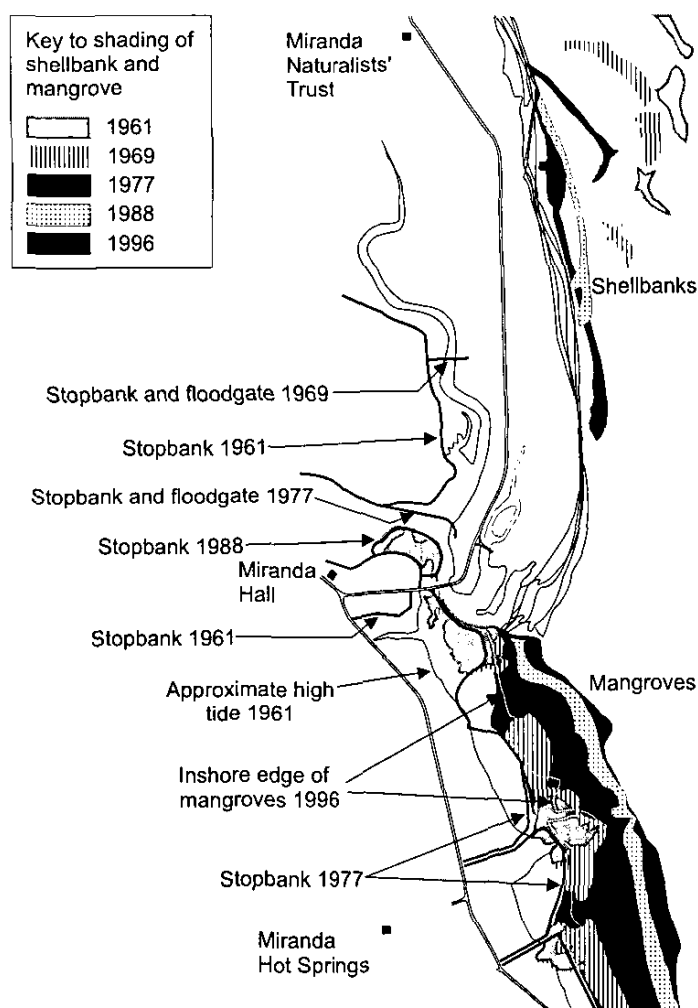


FIGURE 5 – Changes to the shoreline of part of the Firth of Thames. Traced from air photos (Aerial Mapping Ltd.).

9. Stopbanks have been constructed around most of the shoreline. The location of many of these in relation to high water spring tide is now difficult to determine due to changes on the seaward side of the bank since construction. In some areas (Fig. 5) the stopbanks have altered the normal ebb and flow of the tide.

METHODS

Census

The Manukau Harbour and Firth of Thames wader censuses have been done twice yearly, usually on a Sunday with a suitable spring tide. Summer censuses have been between 18 October and 22 December and winter censuses between 17 May and 1 August. Observers watched each known high tide roost and patrolled other areas where birds roost occasionally. The birds were counted at the predicted time of high tide. As some census areas are long shallow stretches of water or beach, which take a long time for an observer to cover and count, it was necessary for all observers to note arrival and departure of birds at the roosts for a period before and after census time so that, if necessary, corrections could be made.

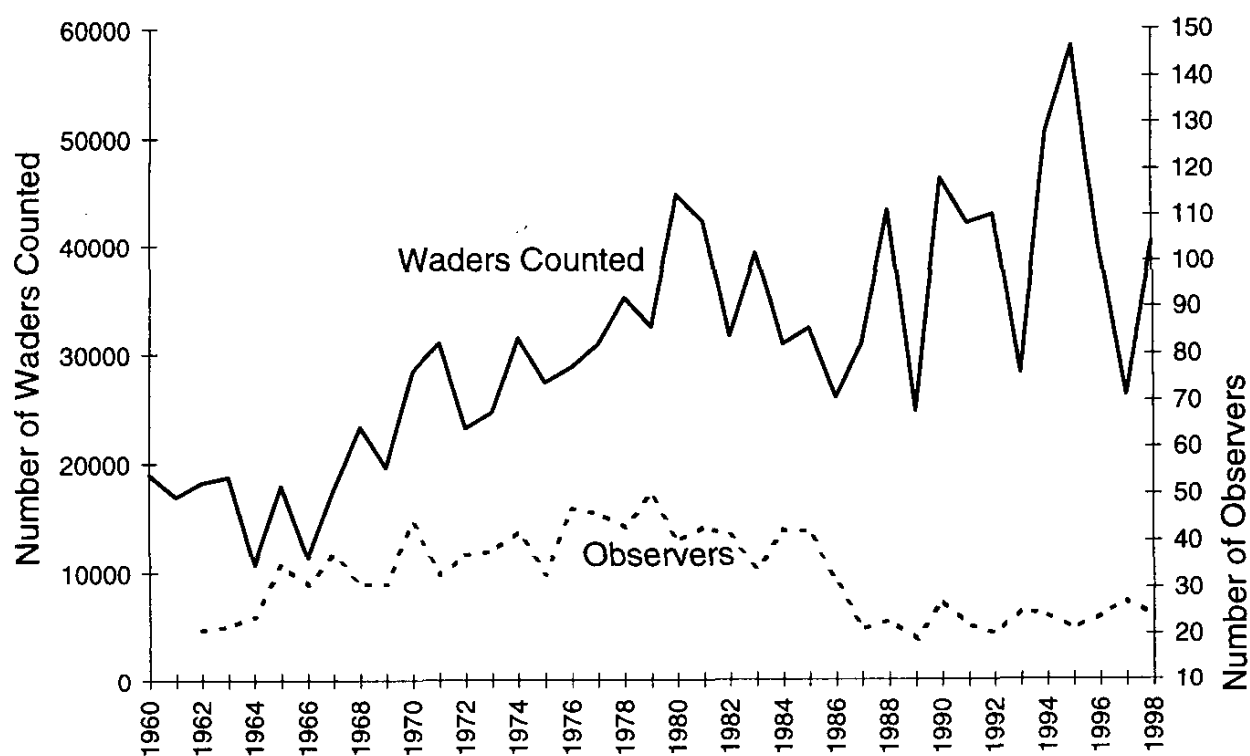


FIGURE 6 – Total numbers of waders counted, and observers present, on the Manukau Harbour during summer censuses.

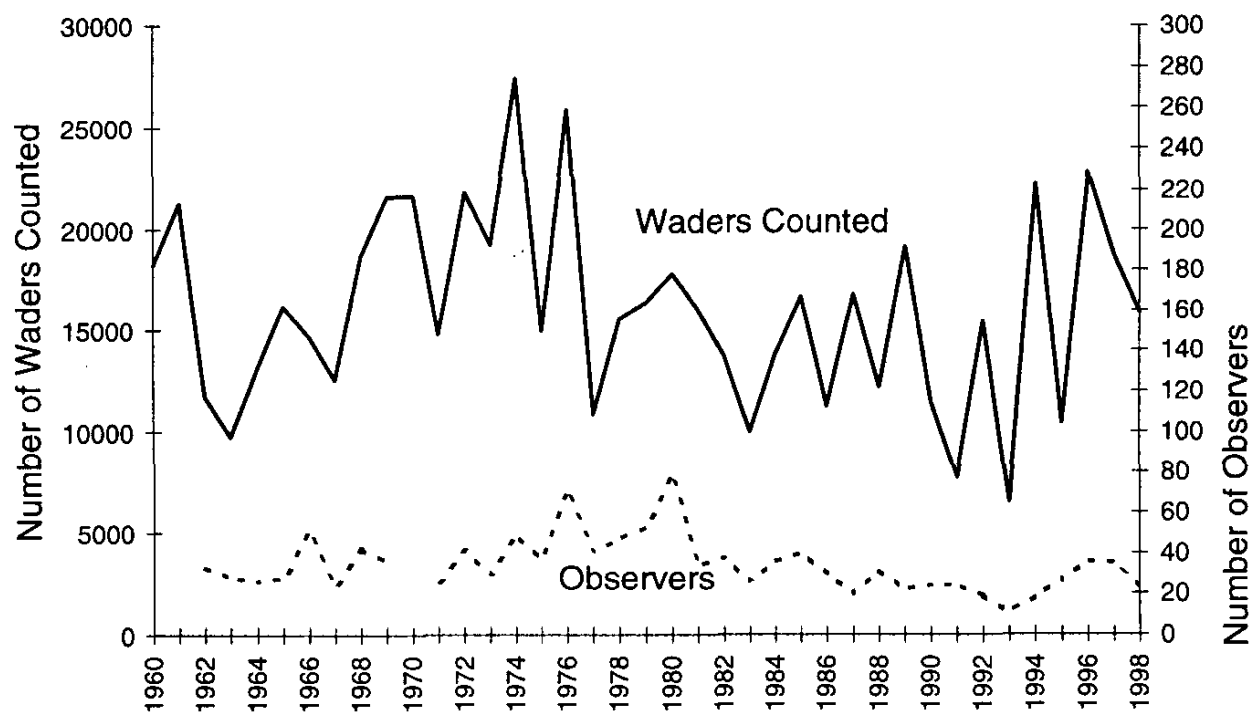


FIGURE 7 – Total numbers of waders counted, and observers present, on the Firth of Thames during summer censuses.

Censuses, principally as described, have been made on the Manukau Harbour and Firth of Thames since 1951. In the period between 1951 and 1959, counts were irregular and on some occasions not all species were counted or not all areas were covered. Data from winter 1960 on the Manukau Harbour and summer 1960 on the Firth of Thames to summer 1998 have been regular and are believed to be complete. They form the basis of this paper.

Analysis

Long-term trends in wader numbers over the 39 years of summer counts and winter counts for the Manukau Harbour (38 years for winter counts of the Firth of Thames or combined estuaries) have been analysed with Spearman Rank Order Correlation tests. Where particular periods (usually decades) have been compared, we used either the Mann-Whitney U test or Kruskal-Wallis one-way analysis of variance test, followed, where appropriate, by Dunn's method of multiple comparison between decades. We present data as the mean \pm standard deviation.

RESULTS

The annual totals for summer and winter censuses in each harbour and the number of observers participating are shown in Fig. 6 to 9.

Pied Oystercatcher (*Haematopus ostralegus*)

Over the 38 years of complete winter counts, the number of Pied Oystercatchers present in winter has increased remarkably ($r = 0.96$, $P < 0.001$) on both estuaries (Table 1, Fig. 10). When the winter counts are calculated on a per hectare basis (Fig. 11) the Manukau Harbour appears to have been favoured in the early years but now the Firth of Thames appears to be favoured. Pied Oystercatchers using the Manukau Harbour and Firth of Thames in winter comprised approximately 47% of the New Zealand population between 1984 and 1993 (Table 2).

The proportion of the population that remains on the Firth of Thames in summer has been steady at $17.3 \pm 7.2\%$ each year, but the proportion remaining on the Manukau Harbour in summer has declined ($U = 271$, $P = 0.02$) from $22.7 \pm 10.1\%$ in 1960-79 to $16.4 \pm 6.0\%$ in 1980-88.

Variable Oystercatcher (*Haematopus unicolor*)

This non-migratory species was not known to nest within the census area until recently, but a few may have done so. They are now known to nest nearby on the Awhitu Peninsula and northern Firth of Thames. Small numbers of birds are present on both harbours during winter and summer censuses (Table 1) and they have increased over the census period ($r = 0.71$, $P < 0.001$), especially in the last six years (Fig. 12). Average counts on the Manukau Harbour in winter have increased ($U = 37.0$, $P = 0.01$) from 2.79 ± 2.67 in 1960-92, to 8.0 ± 5.51 in 1993-98; the increase in the Firth of Thames is even greater, from 2.44 ± 3.52 to 33.67 ± 22.55 ($U = 3.5$, $P < 0.001$) over the comparable periods.

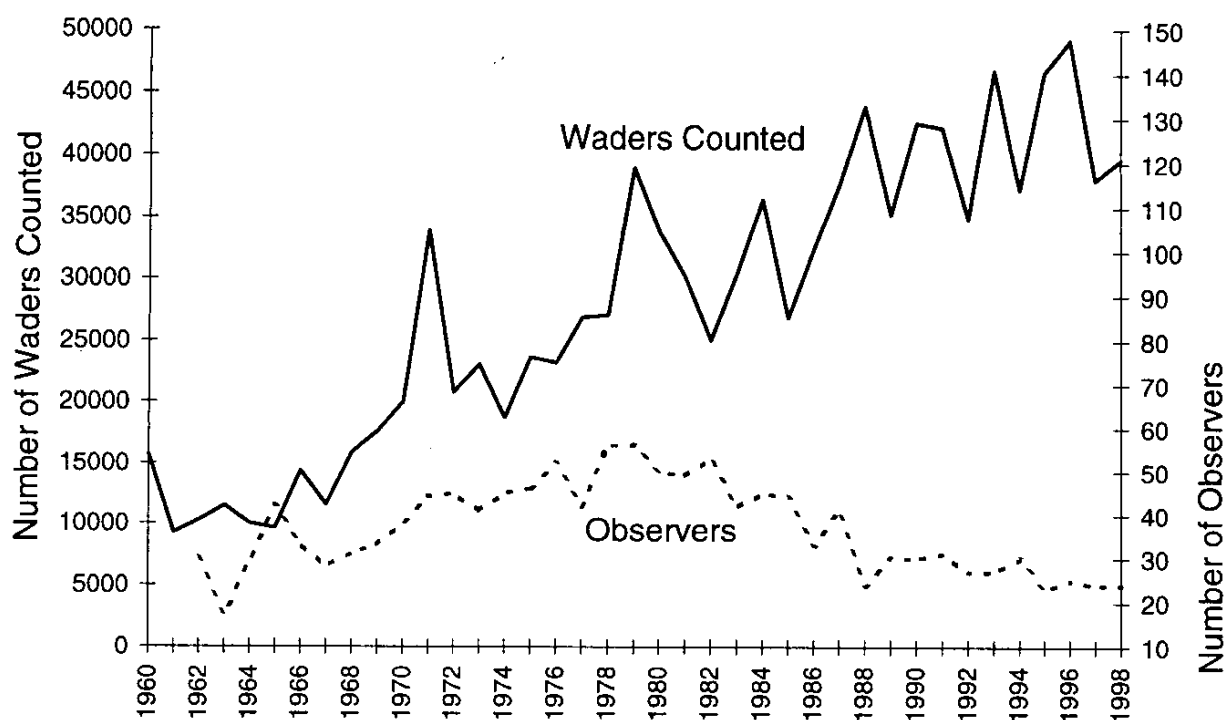


FIGURE 8 – Total numbers of waders counted, and observers present, on the Manukau Harbour during winter censuses.

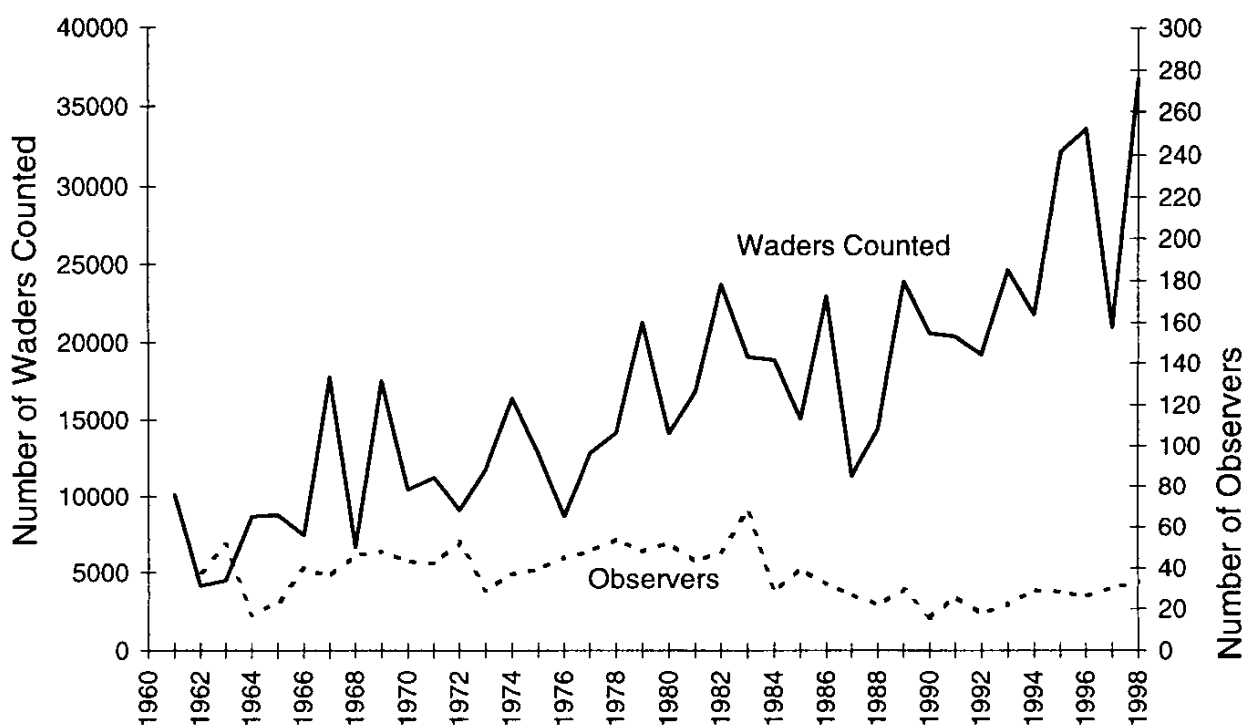


FIGURE 9 – Total numbers of waders counted, and observers present, on the Firth of Thames during winter censuses.

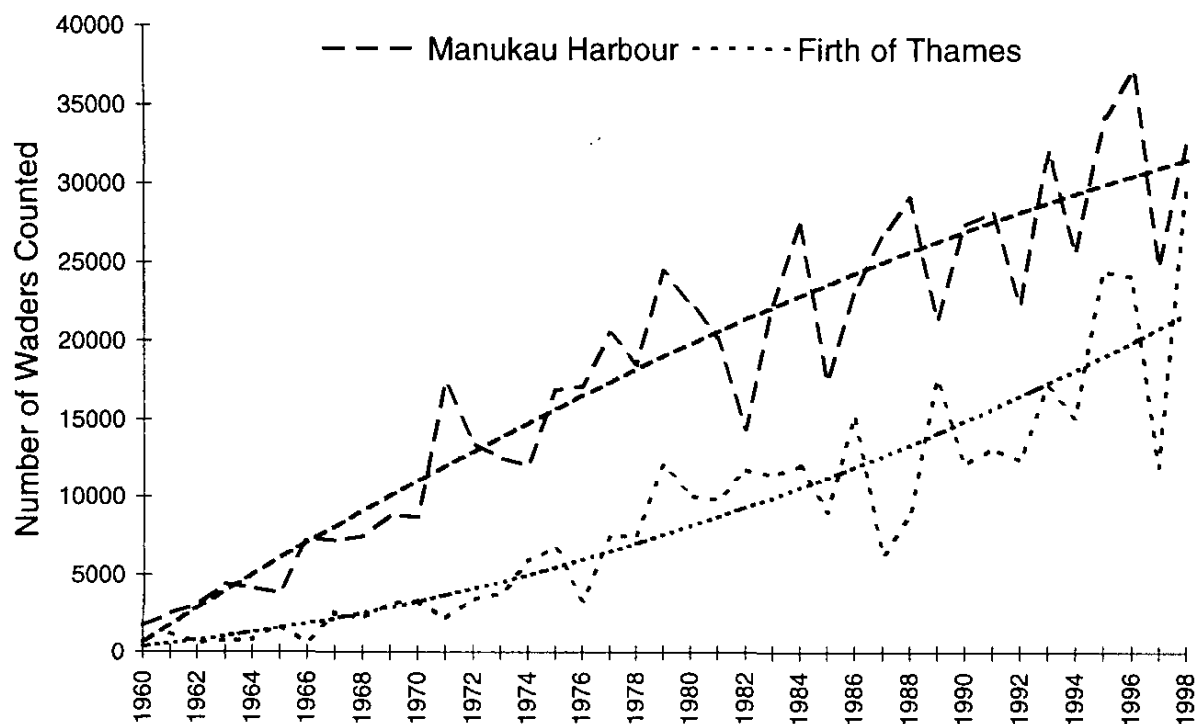


FIGURE 10 – Total numbers of Pied Oystercatchers counted on the Firth of Thames ($r = 0.936$, $P < 0.001$) and Manukau Harbour ($r = 0.933$, $P < 0.001$) during winter censuses. The trend lines are binomial lines fitted automatically by MS Excel.

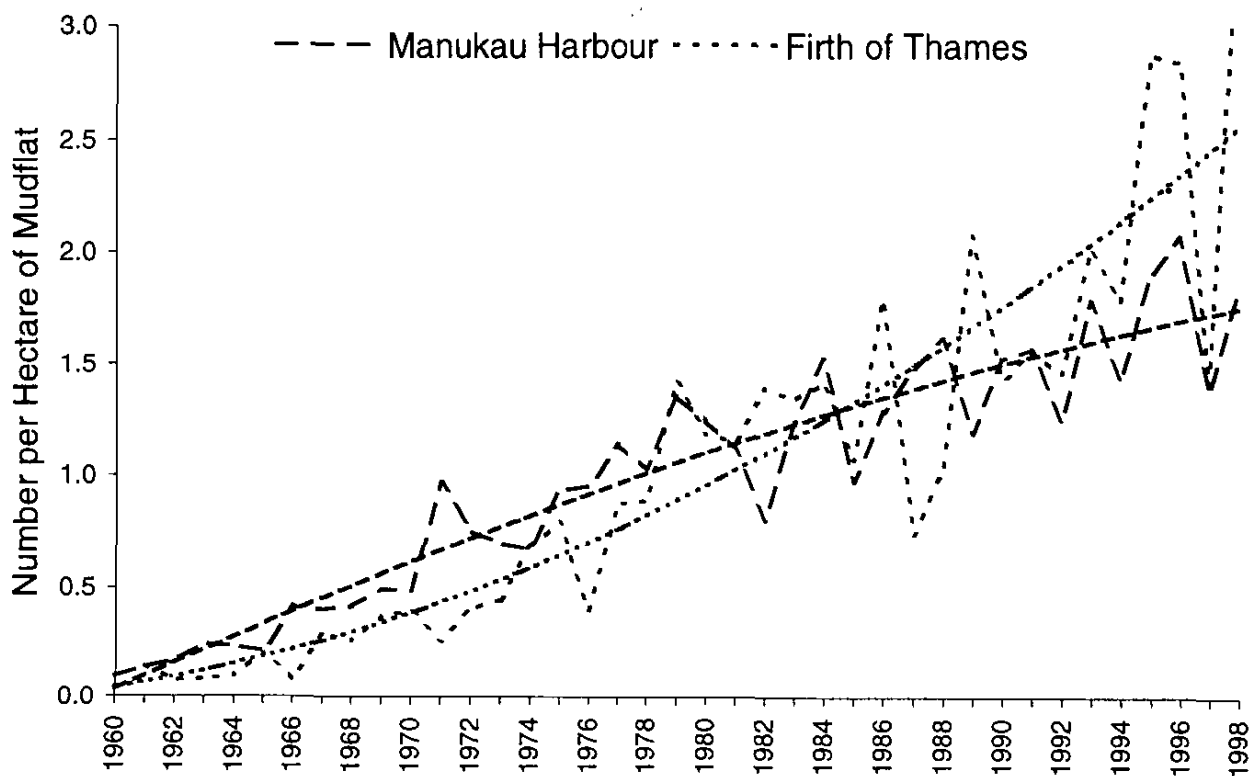


FIGURE 11 – Numbers of Pied Oystercatchers per hectare of mudflat on the Manukau Harbour ($r = 0.94$, $P < 0.001$) and Firth of Thames ($r = 0.94$, $P < 0.001$) in winter. The trend lines are binomial lines fitted automatically by MS Excel.

TABLE 1 - Mean numbers (with standard deviations) of the more common native waders on the Manukau Harbour and Firth of Thames (FOT).

		1960-69	1970-79	1980-89	1990-98
Pied Oystercatcher	Manukau summer	1091 ± 543	3544 ± 1543	3542 ± 1083	4617 ± 1267
	FOT summer	244 ± 147	916 ± 537	1688 ± 295	3027 ± 1309
	Manukau winter	5045 ± 2472	16160 ± 4571	22475 ± 4510	29447 ± 4943
	FOT winter	1523 ± 927	5573 ± 2985	11229 ± 3276	17834 ± 6610
Variable					
Oystercatcher	Manukau summer	1 ± 1.5	2 ± 1.8	2 ± 1.8	8 ± 6.4
	FOT summer	2 ± 2.4	2 ± 1.7	4 ± 4.8	21 ± 14
	Manukau winter	2 ± 2.0	3 ± 1.8	4 ± 3.7	6 ± 5.2
	FOT winter	1 ± 1.5	1 ± 0.9	3 ± 4.3	26 ± 22
Pied Stilt	Manukau summer	1088 ± 462	1017 ± 389	903 ± 391	801 ± 304
	FOT summer	888 ± 688	1126 ± 777	891 ± 301	629 ± 453
	Manukau winter	3261 ± 783	3879 ± 974	3654 ± 650	3772 ± 889
	FOT winter	3605 ± 2824	2837 ± 1242	2939 ± 1168	4134 ± 1326
Black Stilt	Manukau summer	0.1 ± 0.3	0.1 ± 0.3	0.4 ± 0.7	0.4 ± 0.7
	FOT summer	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.3	0.3 ± 0.7
	Manukau winter	1.7 ± 2.4	1.8 ± 1.5	0.3 ± 0.7	5.0 ± 2.8
	FOT winter	0.3 ± 0.7	0.8 ± 1.0	0.9 ± 1.4	1.3 ± 1.2
New Zealand					
Dotterel	Manukau summer	8 ± 5.8	19 ± 4.5	16 ± 5.6	18 ± 8.3
	FOT summer	8 ± 5.1	9 ± 4.1	9 ± 5.5	10 ± 6.6
	Manukau winter	13 ± 5.6	25 ± 8.7	25 ± 7.8	25 ± 10
	FOT winter	9 ± 5.5	11 ± 5.4	13 ± 4.3	21 ± 12
Banded Dotterel	Manukau summer	14 ± 10.7	7 ± 13	3 ± 2.7	5 ± 6.9
	FOT summer	9 ± 7.3	7 ± 6.9	6 ± 11.0	2 ± 2.1
	Manukau winter	337 ± 223	435 ± 233	733 ± 207	633 ± 267
	FOT winter	44 ± 32	43 ± 43	111 ± 94	89 ± 66
Wrybill	Manukau summer	13 ± 18	34 ± 37	18 ± 14	30 ± 40
	FOT summer	97 ± 68	142 ± 69	82 ± 91	48 ± 26
	Manukau winter	1108 ± 782	860 ± 420	1102 ± 296	1301 ± 231
	FOT winter	3342 ± 1705	2749 ± 791	2475 ± 675	2230 ± 519

TABLE 2 - Average numbers of the common New Zealand migrants during the period from winter census 1984 to summer census 1993, with the percentage of the New Zealand population that is at each location in winter (Rest of North Island, South Island and New Zealand data from Sagar *et al.* 1999).

	Manukau		Firth of Thames		Rest of North Island		South Island	
	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter
Pied Oystercatcher Average	3673	25 562	1880	12 660	3132	9147	6362	23251
% of N.Z. in winter		31.7		15.7		23.8		28.8
Wrybill Average	28	1171	54	2140	28	483	49	23
% of N.Z. in winter		32.0		58.5		8.9		0.6

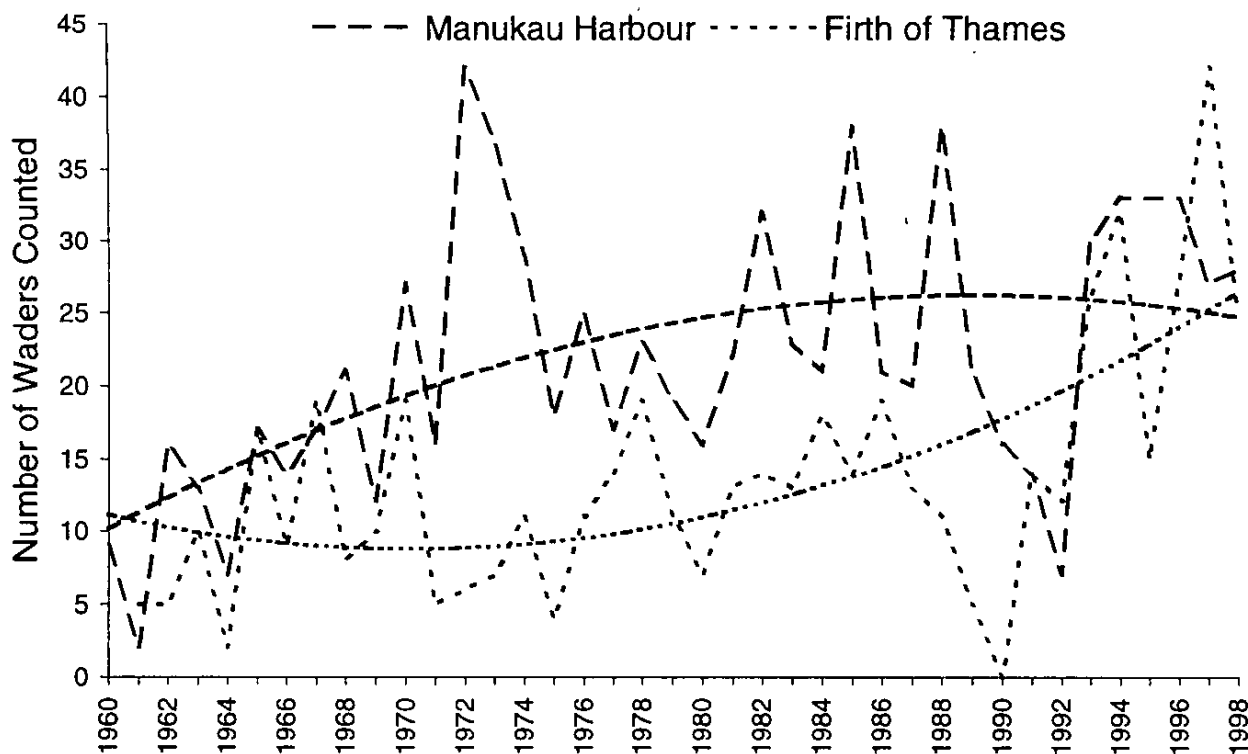


FIGURE 12 – Total numbers of Variable Oystercatchers counted on the Firth of Thames and Manukau Harbour during winter censuses.

Pied Stilt (*Himantopus himantopus*)

The numbers of Pied Stilts present on high tide roosts in winter has changed little ($r = 0.25$, $P=0.132$) during the period of study (Table 1, Fig. 13). As this species is not dependent on the estuarine habitat for feeding or roosting, the count data may not show any trends that are occurring.

Black Stilt (*Himantopus novaezealandiae*)

Few Black or “smudgy” stilts have been recorded during Firth of Thames censuses but there are usually some on the Manukau Harbour (Table 1); however, their numbers have increased significantly on both estuaries during the census period ($r = 0.34$, $P=0.040$, and $r = 0.32$, $P=0.049$ respectively).

New Zealand Dotterel (*Charadrius obscurus*)

New Zealand Dotterels nest along the shores of both harbours, so the summer census figures are likely to be an accurate assessment of the local breeding population. Numbers present in summer have increased over the study period ($r = 0.39$, $P=0.015$), especially on the Manukau Harbour ($r = 0.44$, $P=0.006$) (Table 1), mainly due to an increase there during the 1960s and a sudden increase in the last two years of the study when a record 42 birds were noted on the two harbours each year (Table 1). The winter population on the Manukau Harbour has also increased over the study period ($r = 0.50$, $P=0.001$), but has remained reasonably stable ($r = 0.08$, $P=0.685$) at an average of 25.0 ± 8.4 since 1970 (Table 1).

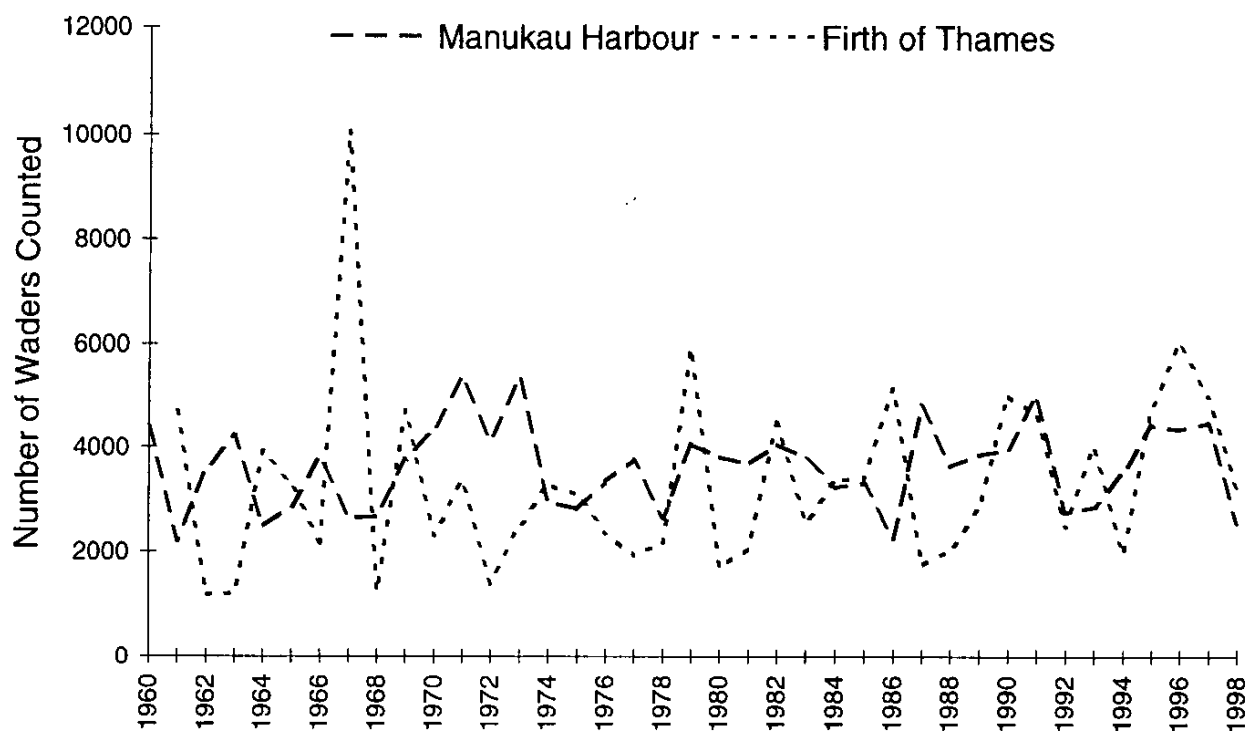


FIGURE 13 – Total numbers of Pied Stilts counted on the Firth of Thames and Manukau Harbour during winter censuses.

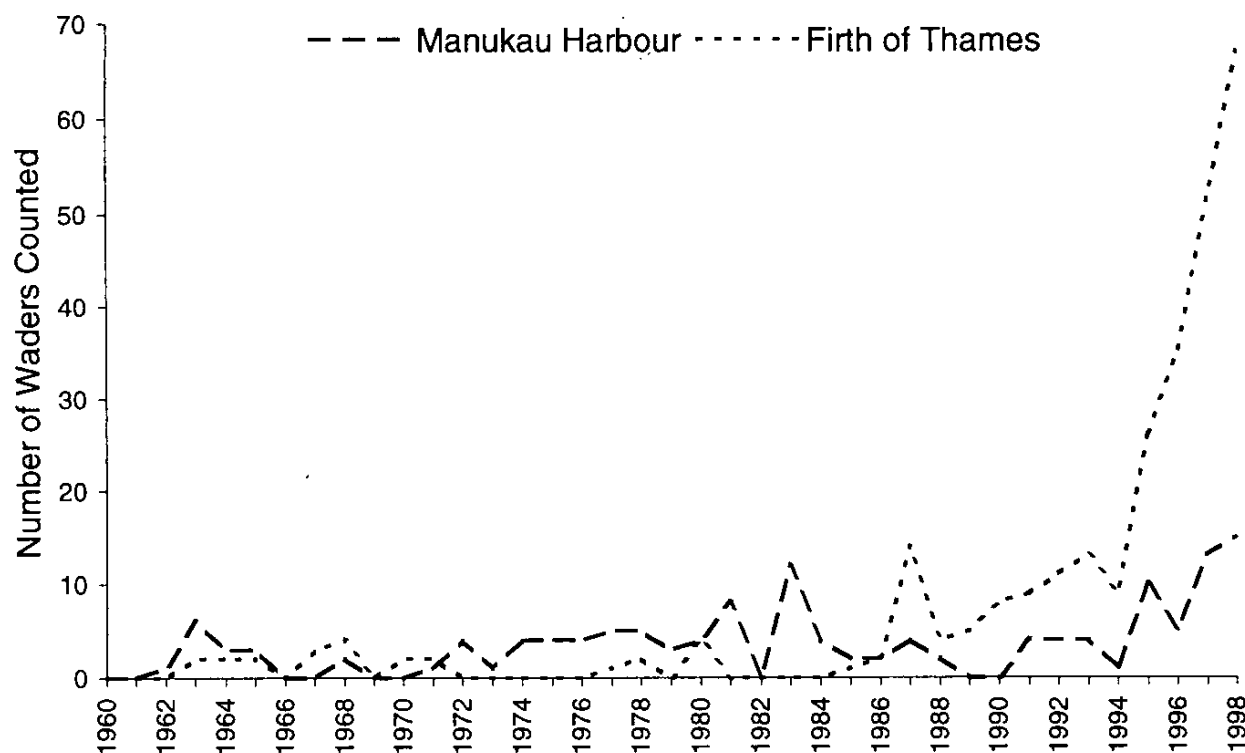


FIGURE 14 – Total numbers of New Zealand Dotterels counted on the Firth of Thames ($r = 0.53$, $P < 0.001$) and Manukau Harbour ($r = 0.50$, $P = 0.001$) during winter censuses. The trend lines are binomial lines fitted automatically by MS Excel.

On the Firth of Thames, however, New Zealand Dotterel numbers in winter have increased ($r = 0.53$, $P < 0.001$) throughout the study period (Table 1, Fig. 14) with the most noticeable increase being during the last six years. From 1960-92 the winter count was 10.8 ± 5.3 , but this increased to 27.8 ± 8.9 in 1993-98 ($U = 6.0$, $P < 0.001$).

Banded Dotterel (*Charadrius bicinctus*)

Although their numbers were highly variable, the census results indicate that this species has increased greatly in winter ($r = 0.59$, $P < 0.001$). They have a marked preference for the Manukau Harbour, where they have increased greatly ($r = 0.53$, $P < 0.001$), but on the Firth of Thames there has not been a parallel increase ($r = 0.27$, $P = 0.102$) (Table 1). This species is, however, not entirely dependent on the estuarine ecosystem and the changing numbers counted at high tide roosts in winter may not reflect a true change in the population.

Black-fronted Dotterel (*Charadrius melanops*)

A single bird was seen on the Manukau Harbour during the 1970 winter census and there are two other records of single birds there during the winters of 1971 (Sibson 1972) and 1972 (Ross McKenzie, pers. comm.). Two birds were present during the winter of 1996 but were not seen at census time.

Wrybill (*Anarhynchus frontalis*)

During the 38 years of winter counts covered by this paper the combined number of Wrybill on the Manukau Harbour and Firth of Thames in winter has declined from nearly 4500 to about 3500 individuals (Table 1, Fig. 15), but this was not statistically significant ($r = -0.15$, $P = 0.36$). On the Firth of Thames, numbers have apparently declined ($r = -0.31$, $P = 0.058$) over the study period, while on the Manukau Harbour their numbers have been more stable and may have even increased in recent years ($r = 0.27$, $P = 0.101$; Table 1). Although neither trend, individually, is significantly different from a stable population, the trends of the populations on the two harbours are significantly different from one another ($z = 2.40$, $P < 0.02$). Between 1984 and 1993 the Manukau Harbour and Firth of Thames winter population comprised approximately 90% of the New Zealand population (Table 2).

Few Wrybill (average 3.3 ± 2.6 % of the winter population) remain on these harbours over summer. Between 1960 and 1979, 4.03 ± 2.84 % of the winter population remained in summer, but this declined to 2.49 ± 2.11 % in 1980-98 ($U = 299.0$, $P = 0.038$).

Pacific Golden Plover (*Pluvialis fulva*)

Numbers of this species in summer are highly variable (Table 3). Although there has been no consistent trend in overall numbers ($r = -0.27$, $P = 0.092$), there were substantial differences in the numbers recorded between decades ($H = 8.9$,

$P = 0.031$), especially between the 1970s and 1990s ($Q = 2.76$, $P < 0.05$), when overall numbers dropped from 113.0 ± 80.6 to 33.0 ± 24.6 . In the four year period, 1995-98, the annual summer total has not exceeded 25 birds over the two harbours combined. This species is rarely present (total of eight birds recorded) during winter censuses and these were always on the Manukau Harbour.

Turnstone (*Arenaria interpres*)

Moderate numbers of Turnstone are present on both harbours at the time of summer censuses and they have increased over the study period ($r = 0.38$, $P = 0.017$) (Table 3). In the early years of this study, numbers increased on the Firth of Thames from 41 ± 22 in the 1960s to 131 ± 85 in the 1980s ($Q = 3.13$, $P < 0.05$), but they have since returned towards earlier levels. On the Manukau Harbour over the same period average numbers have doubled from about 200 to 400 ($r = 0.34$, $P = 0.036$), but there are indications of fewer birds since 1994. The winter population there shows a similar, but non-significant, pattern ($r = 0.22$, $P = 0.184$). The Firth of Thames winter population was about 9% of the summer population and the Manukau winter population was about 27% of the summer population during the 1983-1993 period (Table 4).

Lesser Knot (*Calidris canutus*)

Average numbers have changed greatly during summer census on both harbours during the study period (Table 3, Fig. 16). Numbers present on the Firth of Thames have declined ($r = -0.40$, $P = 0.013$) throughout the study period, from 5748 ± 2355 in 1960-69 to 3737 ± 1818 in 1990-98 ($U = 71.0$, $P = 0.03$). However, on the Manukau Harbour there has been a significant increase ($r = 0.82$, $P < 0.001$), with the numbers building from 1724 ± 1644 in 1960-69 to $18\,703 \pm 7185$ in 1990-98 ($U = 135.0$, $P < 0.001$).

The average proportion of the summer population over-wintering at the Firth of Thames ($17.9 \pm 31.7\%$) was less than that in the Manukau Harbour ($21.3 \pm 13.6\%$) during the period 1980-98 ($U = 91.0$, $P = 0.009$).

Curlew Sandpiper (*Calidris ferruginea*)

Although few in number, Curlew Sandpipers are a regular component of the Firth of Thames summer census (Table 3) and their numbers have remained moderately stable there ($r = 0.14$, $P = 0.383$). In contrast, they have increased on the Manukau Harbour ($r = 0.56$, $P < 0.001$), but this is mainly because they were rarely seen until 1992, but have since become a regular, but small, component of the summer census (Table 3).

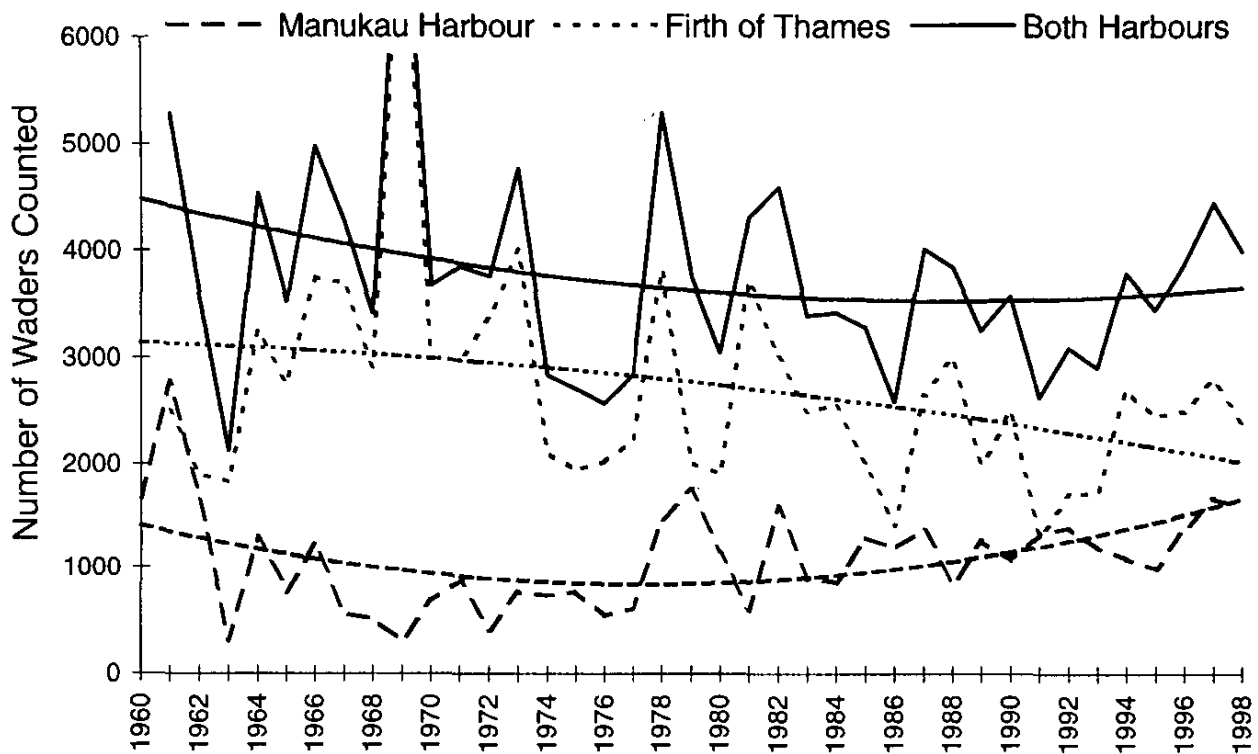


FIGURE 15 – Total Wrybills counted ($r = -0.15$, $P=0.360$) and numbers on the Firth of Thames ($r = -0.31$, $P=0.058$) and Manukau Harbour ($r = 0.27$, $P=0.101$) during winter censuses. The trend lines are binomial lines fitted automatically by MS Excel.

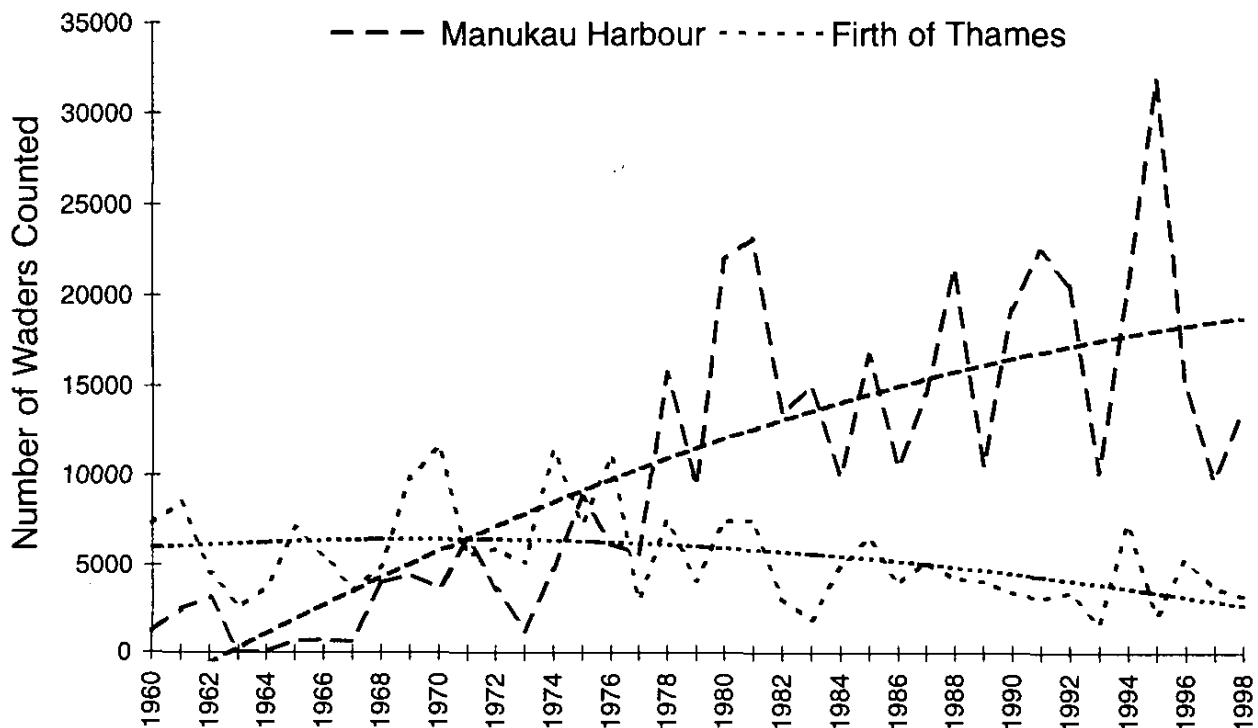


FIGURE 16 - Total numbers of Lesser Knots counted on the Firth of Thames ($r = -0.40$, $P=0.013$) and Manukau Harbour ($r = 0.82$, $P<0.001$) during summer censuses. The trend lines are binomial lines fitted automatically by MS Excel.

TABLE 3 - Mean numbers (with standard deviations) of the more common Arctic waders on the Manukau Harbour and Firth of Thames (FOT).

		1960-69	1970-79	1980-89	1990-98
Pacific					
Golden Plover	Manukau summer	28 ± 31	44 ± 33	42 ± 28	30 ± 26
	FOT summer	46 ± 45	69 ± 82	49 ± 58	3 ± 4.7
	Manukau winter	0.2 ± 0.4	0.3 ± 0.9	0.3 ± 0.5	0.0 ± 0.0
	FOT winter	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
Turnstone	Manukau summer	176 ± 94	355 ± 145	409 ± 197	342 ± 180
	FOT summer	41 ± 22	107 ± 70	131 ± 85	64 ± 45
	Manukau winter	30 ± 34	100 ± 100	106 ± 34	54 ± 59
	FOT winter	12 ± 13	39 ± 35	27 ± 22	3 ± 4.8
Lesser Knot	Manukau summer	1724 ± 1644	6540 ± 4045	15755 ± 4989	18131 ± 6937
	FOT summer	5758 ± 2355	7244 ± 3138	4862 ± 1828	3672 ± 1712
	Manukau winter	1037 ± 1257	1944 ± 2298	3037 ± 1311	3365 ± 1260
	FOT winter	314 ± 307	854 ± 1254	681 ± 1159	447 ± 592
Curlew Sandpiper	Manukau summer	1 ± 2.5	2 ± 2.8	2 ± 2.1	8 ± 5.2
	FOT summer	6 ± 5.6	15 ± 10	16 ± 10	12 ± 13
	Manukau winter	0 ± 0.0	0 ± 0.3	1 ± 1.4	4 ± 8.2
	FOT winter	1 ± 3.0	3 ± 6.0	3 ± 10	2 ± 5.0
Red-necked Stint	Manukau summer	9 ± 5.8	8 ± 5.6	18 ± 9.9	11 ± 7.3
	FOT summer	9 ± 5.9	7 ± 3.1	6 ± 5.5	3 ± 2.0
	Manukau winter	0 ± 0.7	3 ± 4.5	8 ± 7.1	3 ± 2.6
	FOT winter	2 ± 3.8	1 ± 1.2	2 ± 4.0	1 ± 1.0
Eastern Curlew	Manukau summer	0 ± 0.0	2 ± 1.9	6 ± 3.5	8 ± 5.6
	FOT summer	15 ± 8.8	10 ± 5.4	5 ± 2.3	4 ± 4.0
	Manukau winter	0 ± 0.3	1 ± 1.3	2 ± 2.3	2 ± 3.7
	FOT winter	4 ± 3.2	1 ± 2	2 ± 1.9	1 ± 2.0
Whimbrel	Manukau summer	1 ± 1.0	1 ± 1.7	5 ± 3.6	9 ± 9.2
	FOT summer	1 ± 1.7	7 ± 10.3	17 ± 15.7	14 ± 10.2
	Manukau winter	0 ± 0.3	0 ± 0.5	3 ± 4.5	2 ± 2.4
	FOT winter	0 ± 0.3	2 ± 2.0	4 ± 5.8	1 ± 1.3
Bar-tailed Godwit	Manukau summer	13199 ± 2838	17778 ± 3553	13860 ± 2828	17639 ± 5212
	FOT summer	8657 ± 2094	9201 ± 3408	6950 ± 2351	7078 ± 3415
	Manukau winter	1722 ± 956	2208 ± 969	2044 ± 1275	3247 ± 1619
	FOT winter	636 ± 375	761 ± 419	559 ± 326	797 ± 248

Red-necked Stint (*Calidris ruficollis*)

This species has been a regular, but infrequent part of the summer census on both harbours (Table 3). Numbers present on the Manukau Harbour increased between 1975 and 1985 but have since declined. On the Firth of Thames there has been a continual decline ($r = -0.43$, $P = 0.007$) throughout the study period with few or none being present in recent years (Table 3).

Eastern Curlew (*Numenius madagascariensis*)

Although total numbers counted during summer censuses have always been low, they have been present in most years (Table 3). The total population on these harbours has not changed ($r = -0.16$, $P = 0.343$), but their distribution has. Initially

TABLE 4 - Average numbers of the three more common Palearctic migrants during the period from summer census 1983 to winter census 1993 with the average percentage of the summer population that is present in winter (Rest of North Island and South Island data after Higgins & Davies 1996).

		Manukau		Firth of Thames		Rest of North Island		South Island	
		Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter
Turnstone	Average	410	89	124	18	1658	194	2200	294
	Average % in winter		27		9		14		15
Lesser Knot	Average	15572	3186	3822	437	15875	931	16953	518
	Average % in winter		22		9		6		4
Bar-tailed Godwit	Average	14594	3168	6130	735	36009	3722	26992	4167
	Ave % in winter		24		13		10		15

they were more common in the Firth of Thames, but during the study (especially in the last ten years) numbers have increased in the Manukau Harbour ($r = 0.81$, $P < 0.001$) and decreased in the Firth of Thames ($r = -0.51$, $P < 0.001$). The few that remain in winter have shown a similar change in location in recent years.

Whimbrel (*Numenius phaeopus*)

They are an uncommon and irregular component of census counts; for a number of years none may be present then the next year there may be more than 20. The Firth of Thames appears to be the preferred estuary. Numbers have increased in both the Firth of Thames ($r = 0.54$, $P < 0.001$) and the Manukau Harbour ($r = 0.50$, $P = 0.001$) (Table 3). Of all the birds recorded, 42% have been identified to sub-specific level and of these 90% were Asiatic Whimbrel (*N. p. variegatus*) and 10% American Whimbrel (*N. p. hudsonicus*).

Bar-tailed Godwit (*Limosa lapponica*)

This is by far the most abundant Palearctic wader to visit New Zealand. At the time of the summer census, the Firth of Thames and Manukau Harbour support an average of $23\,562 \pm 5325$ Bar-tailed Godwit, or about 23% of the national total of 102 000 birds (Sagar 1999). There was no clear long-term trend in numbers (Fig. 17) on either the Firth of Thames ($r = -0.19$, $P = 0.241$) or Manukau Harbour ($r = 0.17$, $P = 0.310$); however, they were more common in the Manukau Harbour in the 1970s and 1990s than in the 1960s ($Q = 3.92$, $P < 0.05$ and $Q = 3.71$, $P < 0.05$ respectively). Numbers present in winter have remained similar in the Firth of Thames at about 700 (Table 3), but on the Manukau Harbour, winter numbers have apparently increased from less than 2000 to more than 3000 (Table 3), but this was not statistically significant ($r = 0.28$, $P = 0.086$).

Over the study period, a smaller proportion of the previous summer total over-wintered at the Firth of Thames ($10.58 \pm 9.93\%$) than in the Manukau Harbour ($15.09 \pm 8.31\%$) ($U = 396.0$, $P < 0.001$).

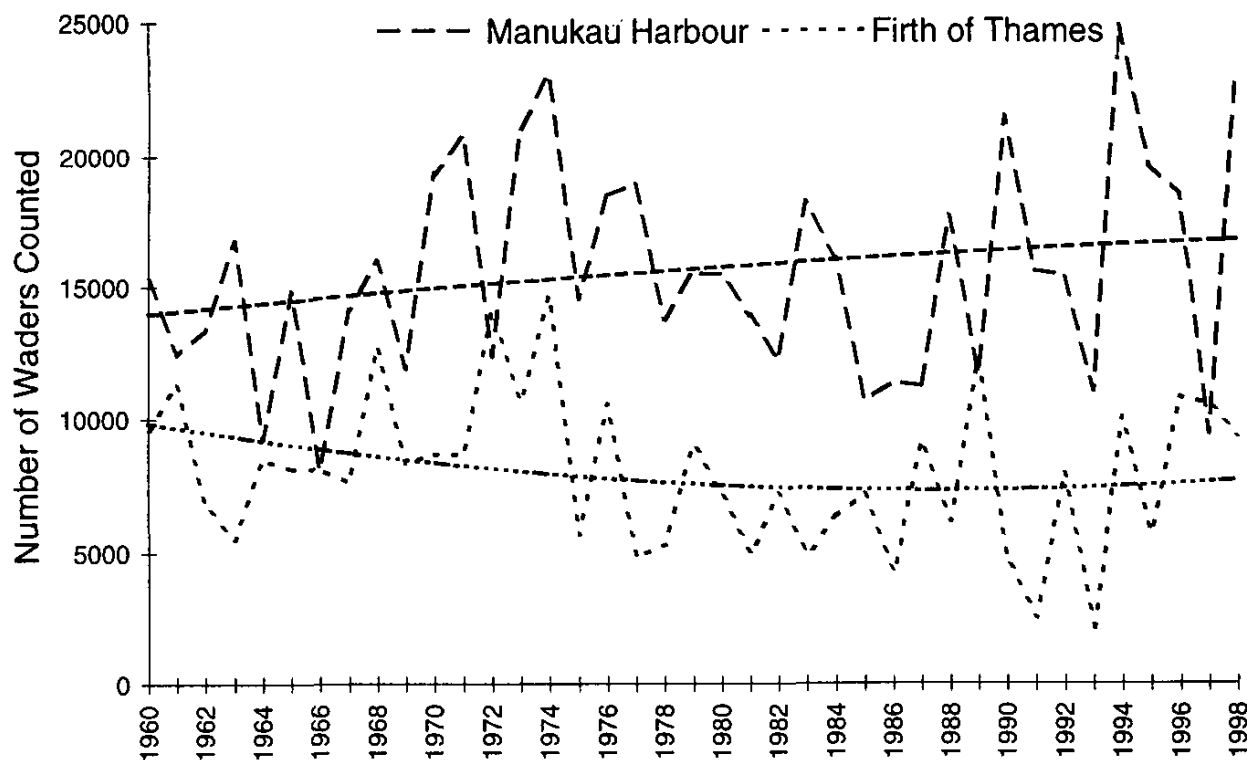


FIGURE 17 – Total numbers of Bar-tailed Godwits counted on the Firth of Thames ($r = -0.19$, $P=0.241$) and Manukau Harbour ($r = 0.17$, $P=0.310$) during summer censuses. The trend lines are binomial lines fitted automatically by MS Excel.

Other Migrants

There are 23 species of migratory waders which reach New Zealand irregularly and have been seen during the 155 census counts on the Manukau Harbour and Firth of Thames (Table 5).

A further eight species of migratory wader have been recorded on the Manukau Harbour and Firth of Thames but have not been seen during censuses: Oriental Dotterel (*Charadrius veredus*) (McKenzie 1956), Japanese Snipe (*Gallinago bardwickii*) (Baker *et al.* 1986), White-rumped Sandpiper (*Calidris fuscicollis*) (McKenzie 1970), Ruff (*Philomachus pugnax*) – probable sighting only (McKenzie & McKenzie 1965), Asiatic Dowitcher (*Limnodromus semipalmatus*) (Keeley 1988), Upland Sandpiper (*Bartramia longicauda*) (McKenzie 1968), Wandering Tattler (*Tringa incana*) (McKenzie 1949), Red-necked Phalarope (*Phalaropus lobatus*) (Jenkins *et al.* 1986). These birds account for 0.06% of the total waders using the Firth of Thames and Manukau Harbour, but they attract a disproportionate amount of attention.

To complete the list of migratory waders, the following species have been recorded in the New Zealand region but not yet on the Firth of Thames or Manukau Harbour: Australian Red-necked Avocet (*Recurvirostra novaehollandiae*) (Buller 1888, Kaigler 1968), Oriental Pratincole (*Glareola maldivarum*) (Falla 1959), Red-kneed Dotterel (*Erythrogonys cinctus*) (Robertson & Dennison 1977), Little Stint (*C. minutus*) (O'Donnell & West 1995), Bristle-thighed Curlew (*Numenius tabitiensis*)

TABLE 5 - Frequency of presence and highest counts of the less abundant Palearctic migrants on the Manukau Harbour (Man) and Firth of Thames (FOT) during 155 census counts.

	Number of counts				Highest count			
	Man	FOT	Man	FOT	Man	FOT	Man	FOT
	Summer		Winter		Summer		Winter	
Red-capped Dotterel (<i>Charadrius ruficapillus</i>)	1	0	1	0	1	0	1	0
Ringed Plover (<i>C. hiaticula</i>)	0	1	0	1	0	1	0	1
Large Sand Dotterel (<i>C. leschenaultii</i>)	15	10	3	1	4	3	1	1
Mongolian Dotterel (<i>C. mongolus</i>)	3	1	0	0	1	1	0	0
Grey Plover (<i>Pluvialis squatarola</i>)	3	1	0	0	1	1	0	0
Great Knot (<i>Calidris tenuirostris</i>)	0	0	1	0	0	0	1	0
Sanderling (<i>C. alba</i>)	0	0	1	0	0	0	1	0
Dunlin (<i>C. alpina</i>)	0	1	1	0	0	1	1	0
Sharp-tailed Sandpiper (<i>C. acuminata</i>)	29	33	4	2	18	40	7	12
Pectoral Sandpiper (<i>C. melanotos</i>)	4	5	0	0	5	1	0	0
Baird's Sandpiper (<i>C. bairdii</i>)	0	1	0	0	0	1	0	0
Western Sandpiper (<i>C. mauri</i>)	0	1	0	0	0	1	0	0
Broad-billed Sandpiper (<i>Limicola falcinellus</i>)	0	3	0	2	0	1	0	1
Little Whimbrel (<i>Numenius minutus</i>)	1	0	0	0	1	0	0	0
Asiatic Black-tailed Godwit (<i>Limosa limosa</i>)	7	6	6	2	3	11	1	2
Hudsonian Godwit (<i>L. haemastica</i>)	0	0	1	1	0	0	1	1
Siberian Tattler (<i>Tringa brevipes</i>)	2	4	1	2	1	1	1	1
Common Sandpiper (<i>T. hypoleucos</i>)	1	0	0	0	1	0	0	0
Greenshank (<i>T. nebularia</i>)	1	0	2	0	1	0	1	0
Marsh Sandpiper (<i>T. stagnatilis</i>)	1	5	2	6	2	3	2	4
Lesser Yellowlegs (<i>T. flavipes</i>)	2	0	0	0	1	0	0	0
Terek Sandpiper (<i>T. terek</i>)	9	25	3	6	2	3	3	2
Grey Phalarope (<i>Phalaropus fulicarius</i>)	0	0	1	0	0	0	1	0

(Veitch 1974), Wilson's Phalarope (*Phalaropus tricolor*) (Moore & Moore 1984, Sagar & Harrison 1984).

DISCUSSION

The data presented for many species indicate that either the populations, or their use of these two harbours, has changed during the period of this study.

The changing number of observers and factors that effect their ability to count need to be considered as a cause in the changing number of birds counted. Observer numbers have changed during the censuses, with a peak of observer numbers in the late 1970s and consistently fewer for the last ten years (Fig. 6 to 9). Weather patterns and tidal cycles, which might limit or enhance counter ability, will have been random events affecting both censuses and both harbours. Over the study period, counts of some species have increased and others have decreased, indicating that there is no consistent change in relationship between observer numbers or counting ability and the number of birds counted.

Wader flocks moving from the Manukau Harbour to the Tamaki Estuary or Waitemata Harbour (Fig. 1) when the tide is high on the Manukau in February and March, are now a recognised regular occurrence. When on the Tamaki Estuary

they do not feed but instead loaf for the duration of the Manukau Harbour high tide period and then return to the Manukau Harbour (T.G. Lovegrove, pers. comm., C.R. Veitch, pers. obs.); however, birds which fly to the Waitemata Harbour have been observed to feed there (A.C. Riegen, pers. comm.).

In recent years a similar pattern of flights, but of fewer birds, has been observed during the winter census (T.G. Lovegrove, pers. comm.). The total number of birds involved, whether this is a significant portion of the birds which might normally roost at a Manukau location, and whether this is a new or previously unobserved activity is not known.

Native waders

Numbers of Pied Oystercatchers have increased significantly. Soon after this species was protected by law in 1940, Sibson (1966) noted total winter numbers on the Manukau Harbour and Firth of Thames to be less than 300. He then recorded a steady increase in numbers on both harbours between 1941 and 1965. Examination of his data suggests that before about 1960, he may have been recording only half the birds that were present on the Manukau Harbour, but was recording all the birds on the Firth of Thames. His early counts, at least, were of maximum numbers seen, generally in April (Sibson 1945). Since 1960 counts have been later in the year (17 May to 1 August), when total numbers of Pied Oystercatchers on the Firth of Thames are known to be below the peak (Veitch 1999). Baker (1973) estimated that the total New Zealand population of Pied Oystercatchers was 59 000 in 1972. During winter of that year the Manukau and Firth of Thames total was 16 900 or 29% of the total. Twenty years later, during the National Wader Count of June 1992, 80 911 individuals were recorded (Sagar 1993), of which 34 765 (43%) were at the Manukau or Firth of Thames. If the data relating to the annual cycle of waders in the Firth of Thames (Veitch 1999) is applicable to the waders of the Manukau Harbour, then we can calculate the likely maximum numbers of Pied Oystercatchers on both harbours. The numbers in May, at the peak, can be 40% greater than in June and July, although 30% higher appears to be a more likely average. Hence, during the last five years, when the average combined winter census has been 49 416 Pied Oystercatchers, the maximum number present during May would have been more than 64 000 birds.

Sibson (1963) counted Wrybills on the Manukau Harbour and Firth of Thames from as early as 1940, and recorded a marked increase in numbers between the first counts of about 1000 birds to more than 4000 on these two harbours in 1960. It is clear that early counts on the Manukau Harbour did not include all Wrybill roosts, but counts on the Firth of Thames may have done so. In winter census counts since 1960, the numbers of Wrybill increased on the Firth of Thames and decreased on the Manukau Harbour until about 1970 (Fig. 15), then the trends reversed and numbers declined on the Firth of Thames while increasing on the Manukau Harbour. The combined Manukau Harbour and Firth of Thames population has remained approximately stable since 1960. There are no comparable data from other northern estuaries to indicate how the remainder of the Wrybill popu

lation has fared. Data from the Firth of Thames (Veitch 1999) suggest that the maximum Wrybill population supported by these two harbours, in April, is about 20% higher than the average census count. This worked out to be about 4200 birds between 1988 and 1997, and is supported by a count of 4261 birds on 29 May 1994 during a special National Wrybill Census (Riegen 1994). We have no exact knowledge of the food items taken or roosting spaces desired by Wrybill. The fact that numbers are declining on the Firth of Thames while increasing on the Manukau Harbour suggests that one or both of these habitats are changing.

Winter counts of both Variable Oystercatchers and New Zealand Dotterels have increased sharply during the past six years. It is possible that this change results from increased protection of breeding locations in Northland and the Coromandel Peninsula. Colour-banded birds from locations in Auckland, Northland and on the Coromandel Peninsula have been seen on the Manukau Harbour and Firth of Thames.

The greater number of sightings of Black Stilts in recent years may be because the "smudgy" stilts are now recognised as immatures or hybrids of Black Stilt and Pied Stilt (Pierce 1984). Management of the breeding population may have also contributed to the greater number of sightings.

Arctic migrants

We know of no evidence from elsewhere in the world that indicates overall long-term changes in numbers of the more abundant Palearctic migrant waders which visit New Zealand. There is no indication in our counts of Bar-tailed Godwit and Lesser Knot of any cyclical change of abundance similar to that observed for waders breeding further to the west in Siberia, and attributed to a three-year lemming cycle and associated prey switching by foxes (Underhill 1987). Our waders breed in far-eastern Siberia and Alaska (Higgins & Davies 1996) and it is not known whether the lemming populations there follow the three-year cycle observed on the Taimyr Peninsula (P. Tomkovich, pers. comm.). Additionally, a cycle may not be visible from counts alone, as even wintering flocks contain birds from a number of year classes. To determine the percentage of juveniles present each winter, samples would have to be caught and aged in the hand.

Total numbers of Bar-tailed Godwits have remained more-or-less constant throughout the study period, but the possible drift from the Firth of Thames to the Manukau Harbour may suggest changes in habitat quality. Total numbers of Lesser Knot have increased during the study period. There is no comparable census data from other harbours, and so it is not possible to determine whether this change in total numbers is a result of an overall increase in the Lesser Knot population in New Zealand or a reduction in numbers of Lesser Knot wintering at other locations. There is, however, a clear indication that the Firth of Thames has become a less favoured habitat and the Manukau Harbour more favoured during our study.

A greater percentage of the three most common Palearctic migrants (Bar-tailed Godwit, Lesser Knot and Turnstone) over-winter on the Manukau Harbour than on the Firth of Thames, or elsewhere in New Zealand (Table 4).

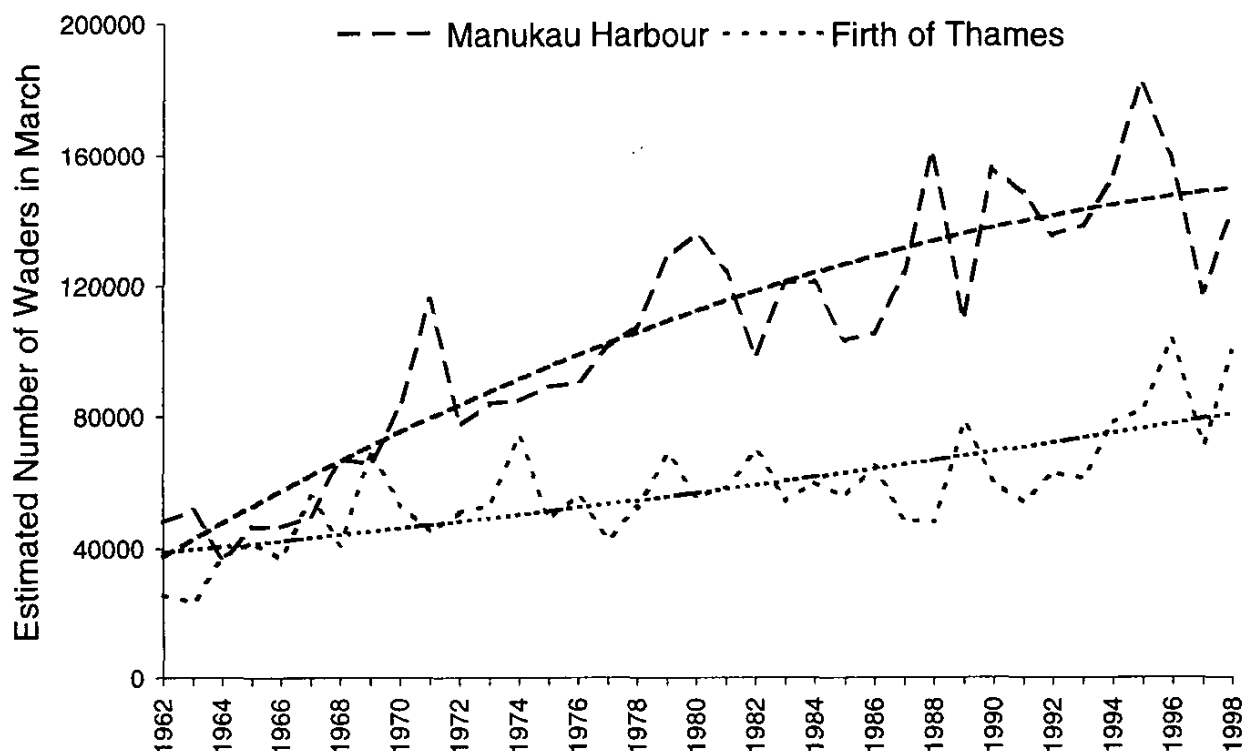


FIGURE 18 – Possible maximum numbers of waders present on the Manukau Harbour and Firth of Thames in March (after Veitch 1999).

Over the last 40 years, there has been an increase in the total number of waders using both the Manukau Harbour and Firth of Thames. This is evident in winter censuses on both harbours and summer censuses on the Manukau Harbour. If the annual cycle of wader numbers observed on the Firth of Thames (Veitch 1999) is equally true for the Manukau Harbour, the estimated maximum numbers of waders present in March can be calculated (Fig. 18). On the Manukau Harbour the recent average has been about 140 000 birds and the Firth of Thames about 65 000. The trend lines in Fig. 18 indicate that further increases in waders can be expected.

It is not known how, or by how much, the habitat changes noted in this paper have affected the food or roost sites for waders. It is also not known how much competition there is between different wader species. We are therefore unable to predict whether these changes to the habitat will cause further changes in bird numbers, or whether the species that are increasing in number will eventually have a detrimental impact on other species. Monitoring of these important, and relatively easily counted, wader populations should continue.

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