ANNA MOWBRAY AND ALI WILLIAMS

HELICOPTER ACTIVITY – UPDATED INFORMATION

38 Rawene Avenue, Westmere

23 April 2024

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF APPENDICES

1. INTRODUCTION

1.1 BACKGROUND

Anna Mowbray and Ali Williams ("**the Applicants**") applied for resource consent in November 2021 to authorise helicopter take-off and landing on a grassed area at their residential property at 38 Rawene Avenue in Westmere, Auckland (Auckland Council consent processing number LUC60389929).

Auckland Council requested further information under section 92 of the Resource Management Act 1991 ("**RMA**") in December 2021 requesting further details of the proposal, defining the existing environment and potential ecological, noise and recreation effects. An initial response to the section 92 request was submitted to Council in April 2022, however, additional requests and comments were made by Council in emails dated 13 April 2022, 4 May 2022, 6 May 2022 and 13 May 2022.

The Applicants have commissioned further independent expert ecology, noise and recreation assessments following these requests and the proposal has been refined as a result.

The response to the section 92 request confirms that:

- Adverse effects on recreational activity will be no more than minor;
- Although Unitary Plan noise standards are exceeded at certain neighbouring properties, written consent has been provided by all affected properties; and
- Effects on ecologically important avifauna will be avoided.

Those conclusions have been reached based on further technical assessments having been undertaken and two key proposed conditions constraining the proposal, namely:

- The restriction of helicopter movements to a specific flight path envelope; and
- Restricting helicopter movements to two hours either side of low tide and immediately adjacent times, when avifauna are absent from the area, and adverse effects avoided.

Additionally, based on a recent Auckland Council decision, the proposal has been reassessed on the basis that it is a **restricted discretionary** activity, while notification matters have also been reassessed.

The purpose of this report is to provide a comprehensive assessment of the application, having regard to the section 92 requests and commissioned reports in response, and an independent assessment of statutory planning and notification matters.

This report does not traverse the initial section 92 requests point by point, but rather steps through the requests "issue by issue". That said, each information request and where it has been addressed in this document, is appended to this report as **Appendix A**.

1.2 ADDITIONAL TECHNICAL ASSESSMENTS UNDERTAKEN

The following reports have been commissioned by the Applicants since receiving the section 92 requests:

- Bioresearches has undertaken a detailed assessment of the effects of the proposed helipad on coastal avifauna, incorporating the results of an approximately 10 month survey. This is appended as **Appendix B**; and
- Rob Greenaway & Associates has provided a memorandum assessing the effects of the proposal on recreation activities and values. This is appended as **Appendix C.**

1.3 THE EXISTING ENVIRONMENT

The 4530 m^2 site, shown in Figure 1 below, is zoned part Residential – Mixed Housing Suburban and part Coastal – General Coastal Marine Zone, and is located on the coastal headland at the western end of Cox's Bay. The northernmost edge of the property is a sandstone platform which is a high tide roost used by several important avifauna species including the Southern Pied Oystercatcher and Variable Oystercatcher. This roost is the subject of many of the ecological section 92 requests to which responses are detailed in this report.

Figure 1: Zoning Map of the Site and Surrounding Area

There are several consents relevant to the site, namely:

- Building Consent LUC6036916 / BUN60373967 to demolish the existing dwelling at 38 Rawene Avenue and to construct a new dwelling on a site and undertake associated site works including earthworks, groundwater take and diversion, and works within the rootzone of a generally protected Pohutukawa tree greater than 3 m in height;

- Sea Wall Consent BUN60383789 / LUC60383791 / CST60383790 for the construction of a rock masonry coastal protection seawall of approximately 135 m within the CMA, earthworks within a riparian yard, demolition of existing stairs, construction of new stairs and landing within a riparian yard and side yard, construction of new deck area on land subject to instability, alteration of protected coastal trees;
- Retaining Wall Consent BCO10329873 for the design of a new concrete palisade retaining wall; and
- The current application (LUC60389929) that seeks to authorise helicopter take-off and landing.

There are two dwellings on site referred to as Unit A and Unit B, shown in Figure 2 below. Resource Consent BUN60373967 authorised the substantial redevelopment of Unit A on the northern part of the site. The proposed helipad is located 20 m from the northern corner of this dwelling at 8 m RL, on an existing grassed area, at approximate coordinates NZTM 1753294E 5920376N.[1] As such, no earthworks are proposed as a part of this application, nor will there be any signage or safety fencing due to the absence of any structures being required. This proposed location is 6 m from, and 6 m above, the proposed planting authorised by coastal consent CST60383790. At both the time of planting and when they reach maturity these plants will be clear of the proposed helipad, thus no trees will be affected by the proposal, including the Pohutukawa and Puriri trees listed in Schedule 10 of the Unitary Plan. The application for the helipad has no reliance on CST60383790 being given effect to.[2] No activity relating to this application occurs within the Coastal Marine Area.

The proposed location is shown in Figures 2 and 3 below.

[1] Initial section 92 request number 9.

[2] Initial section 92 request number 11 and 12.

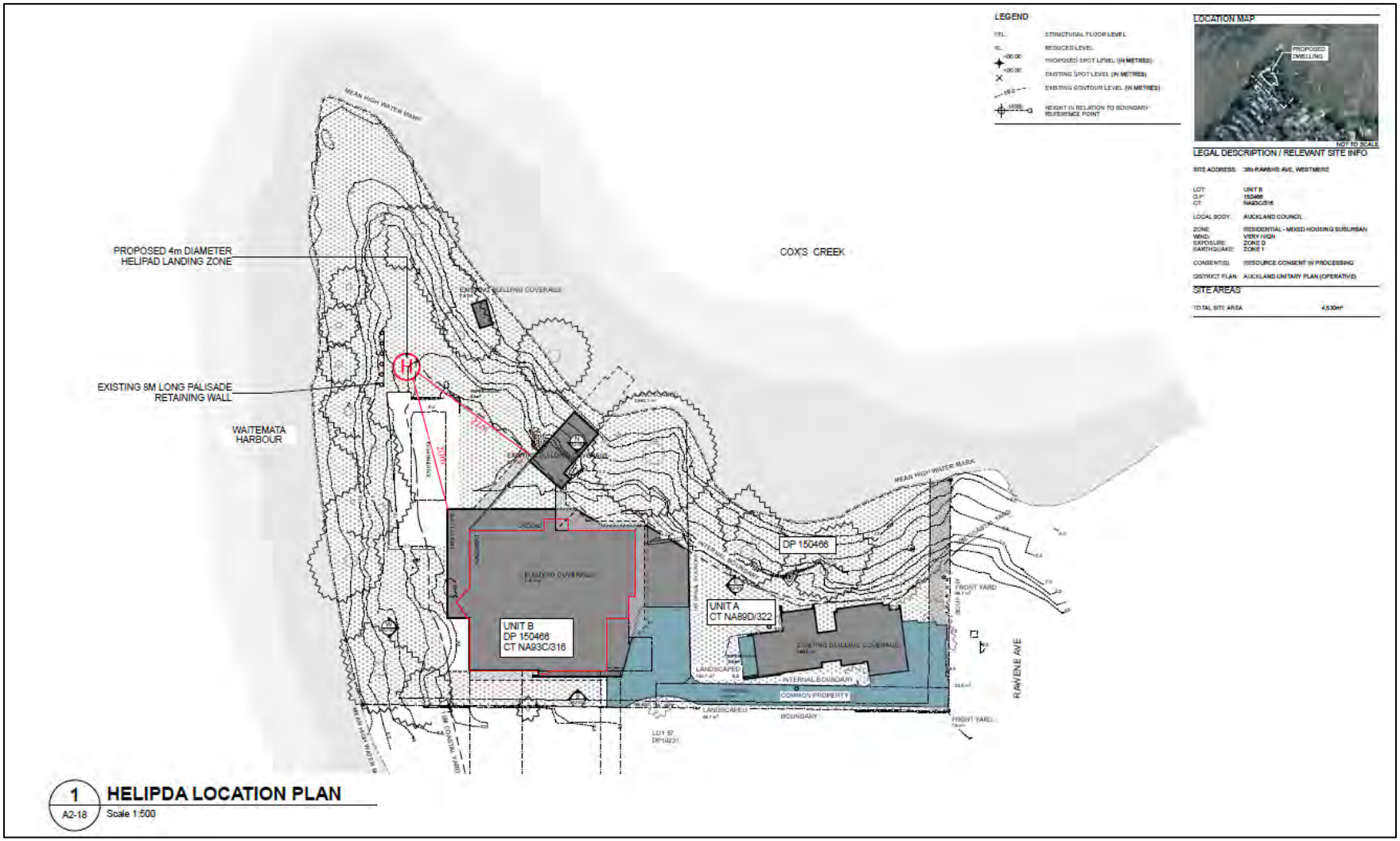

Figure 2: Helicopter Landing Pad Location Plan

Figure 3: Helipad Landing Pad Location Photo

1.4 REVISED PROPOSAL

The proposal is for helicopter movements to be restricted to a window either side of low tide. Also, as shown in Figure 4, the flight arrival and departure pathway would be confined to an arc between nominal 315° to 045°, to minimise adverse effects on neighbouring properties and to avoid passing over Meola Reef.

The helicopter anticipated to be used is an Airbus H130 which has a rate of climb varying between 1,600 feet per minute to 2,000 feet per minute. At the conservative end of this climb rate, the total time elapsed on take-off is approximately 50 seconds; 30 seconds for the engine to start up and 20 seconds to take off and reach a height of 500 ft. The total time elapsed on landing is 90 seconds, 60 seconds being the approach to landing (from a height of 500 ft) and 30 second to shut down the engine.[3] It is noted that newer models of aircraft may be used in the future, however, any aircraft which may be utilised will be quieter than the H130.

[3] Initial section 92 request number 3 and 6.

The aircraft will not be started until all passengers are on board and ready to depart. This negates the likelihood of a passenger needing to go back inside after the aircraft is running.[4]

Figure 4: Proposed Flight Section

2. ECOLOGICAL EFFECTS

A comprehensive assessment of the effects of the proposal on coastal avifauna including an approximately 10-month survey between 4 July 2022 and 20 April 2023 was undertaken by Bioresearches.[5] That report concluded that adverse effects on avifauna can be avoided by restricting helicopter operations to a two hour window either side of low tide when the Rawene Ave high tide roost is vacant.

Key aspects of the Bioresearches report are set out below.

A total of 65 hours of observation were completed in the marine area from Meola Reef to the eastern side of Outer Cox's Bay, refer to Figure 5 below. These areas have been surveyed separately as Meola Reef is identified in the Auckland Unitary Plan as a Significant Ecological Area ("**SEA**"). The area of Cox's Bay, including the Rawene Ave

[4] Additional comment to the initial section 92 request made by the Council's noise specialist by email on 13 April 2022.

[5] Initial section 92 request number 1.

Roost, are not identified as SEAs. The aspects of coastal avifauna recorded were diversity, abundance, habitat use, distribution and general behaviour.

Figure 5: Site Location and Areas Surveyed during the Investigation of Coastal Avifanua by Bioresearches

All species recorded in the survey area at low tide are shown in Figure 6 below.

Species	Scientific name	Threat status	Meola Reef	Outer Cox's Bay
Black Swan	*Cygnus atratus*	Not threatened	✓	✓
Black-backed Gull	*Larus dominicanus dominicanus*	Not threatened	✓	✓
Caspian tern	*Hydroprogne caspia*	Threatened - Nationally vulnerable	✓	✓
Eastern Bar-tailed Godwit	*Limosa lapponica baueri*	At Risk - declining	✓	✓
Kingfisher	*Todiramphus sanctus*	Not threatened	✓	✓
Lesser Knot	*Calidris canutus*	At risk - declining	✓	
Little Black Shag	*Phalacrocorax sulcirostris*	At risk - naturally uncommon		✓
Little Shag	*Microcarbo melanoleucos*	At risk (relict)	✓	✓
New Zealand Dotterel	*Charadrius obscurus aquilonius*	Threatened - Nationallly increasing	✓	
Paradise Shelduck	*Tadorna variegata*	Not threatened	✓	
Pied Shag	*Phalacrocorax varius varius*	At risk - recovering	✓	
Pied Stilt	*Himantopus himantopus*	At risk - recovering	✓	✓
Red-billed Gull	*Larus novaehollandiae scopulinus*	At Risk - declining	✓	✓
Royal Spoonbill	*Platalea regia*	At risk - naturally uncommon	✓	✓
South Island Pied Oystercatcher	*Haematopus finschi*	At Risk - declining	✓	✓
Variable Oystercatcher	*Haematopus unicolor*	At risk - recovering	✓	✓
White-faced Heron	*Egretta novaehollandiae*	Not threatened	✓	✓

Figure 6: Species Recorded Using the Meola Reef and Outer Cox's Bay areas at Low Tide

As Figure 6 shows, there are several species which are listed as Threatened or At Risk in either Meola Reef or Outer Cox's Bay. While they are not located at the roost specifically,

the effects of the proposal must still avoid adverse effects on these species. These are the Southern Pied Oystercatcher, Variable Oystercatcher, Caspian Tern, New Zealand Dotterel, Pied Shag, Eastern Bar-Tailed Godwit, Little Black Shag, Little Shag, Pied Stilt, Red-Billed Gull, Royal Spoonbill and the White-Faced Heron. That said, three At Risk species and one Threatened species were recorded as using the Rawene Ave roost, namely Variable Oystercatcher, South Island Pied Oystercatcher, Pied Shag and Caspian Tern.

The New Zealand Dotterel[6] were recorded at both Meola Reef and Outer Cox's Bay but were sparse. No suitable nesting habitat for the species was identified within or adjacent to the survey area. During low-tide conditions no New Zealand Dotterel were observed.

The Bioresearches report concludes, based on comprehensive bird presence and variability data, that none of the Threatened or At Risk species will be present at the roost in a four-hour period of two hours either side of low tide. Thus, by avoiding flights during the period when the roost is occupied, any effects on birds roosting at the Rawene Ave high tide roost will be avoided and the quality and significance of the roost not compromised.

An example of periods of roost occupancy by Variable Oystercatchers is shown below in Figure 7 (noting that LW indicates low water, HW indicates high water and VO indicates Variable Oystercatcher). Figure 7 shows an absence of Variable Oystercatcher until four hours after low water, and from 3 hours after high water. This is consistent in all periods of roost occupancy observed by Bioresearches except for one observation period when the roost was entirely vacant.

30-Sep-22												
Tidal state :	LW	LW+1	+2	+3	+4	+5	HW	HW+1	+2	+3	+4	+5
Time :				0830	0930	1030	1130	1230	1330	1430		
Survey period :				+	+	+	+	+	+	+		
VO at roost :					V	V	V	V	V			
Note : VO to roost at 0900; roost vacated at 1430												

Figure 7: Example of a Period of Roost Occupancy by Variable Oystercatcher

As a result, and conservatively given the Bioresearches data, the Applicants propose that a restricted flight window is implemented comprising the period two hours either side of low tide and immediately adjacent times when avifauna are absent, thereby avoiding adverse effects on bird life near the site.

[6] Several members of the public have raised concerns regarding the application and the presence of New Zealand Dotterel in Cox's Bay; Alan Webb and Jeanette Budgett of Quiet Sky Waitemata. Council has requested the matters are addressed.

In relation to the effects of noise from the activity in proximity to roosting birds, helicopters are not the only disturbance factor within the vicinity of the roost. There is no impediment to the use of the sandstone platform of the roost by the general public, and pedestrian movements including dogs (especially unleashed) along with watercraft maintenance and manoeuvring may disturb birdlife. A separate helicopter trial observed by the ecologists identified, unexpectedly, no reaction from Wrybill on helicopter approach, and although a 'startle' reaction was observed when the aircraft was restarted the ascent did not cause any fright reactions or movements from the birds in the immediate area of the flight path. Bird numbers were retained immediately following departure.

Overall, the restriction of the flight window, as proposed by the Applicants, is intended to avoid any material adverse effects on coastal avifauna.

3. NOISE EFFECTS

Noise effects have been assessed by Hegley Acoustic Consultants on three separate occasions; on 24 September 2021 as an initial assessment to support the application and on 21 March 2022 and 10 June 2022 in response to requests for further information.

Further modelling of noise generated by the helicopter activity was undertaken by Hegley Acoustic Consultants as a response to the initial request for further information on 10 June 2022. The further modelling includes consideration of the building approved under consent BUN60373967[7] and shows areas in neighbouring properties where the Unitary Plan's 50 dB L_{dn} helicopter noise standard is exceeded - however, these properties have provided written approval to the Applicants and the effects at those properties must not be considered. All other noise effects have been assessed to be minor.

Figures 8 and 9 below show the screening effects of the helicopter when on the ground for both landing and take-off.

[7] Initial section 92 request number 2.

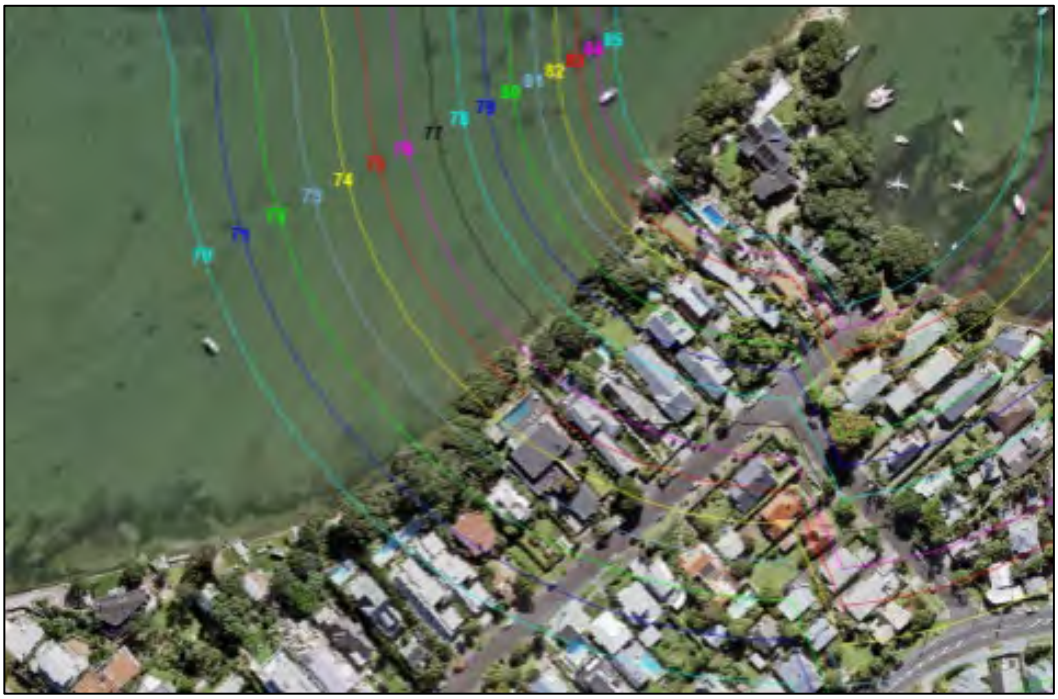

Figure 8: Predicted Helicopter Arrival dB L_{AFMax} noise contours

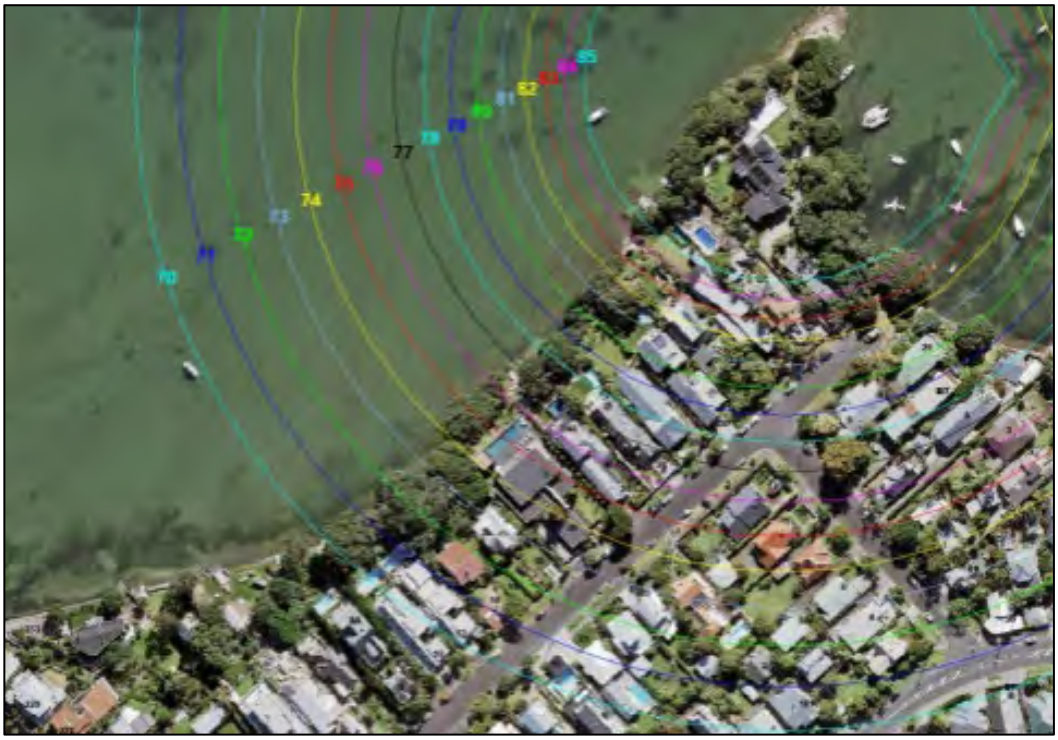

Figure 9: Predicted Helicopter Departure dB L_{AFMax} noise contours

As discussed previously, helicopter movement will be confined within the identified flight sector in Figure 1 above.[8] As such, additional modelling has not been undertaken for scenarios of a helicopter landing from outside the proposed flight sector.

The initial request for further information requested more specificity relating to the trace time of the helicopter at a measurement of 40 m to better assess the noise levels at a specified distance from the proposed helipad. Figure 10 below details the total time of trace is 10 minutes 31 seconds and the total noise level for the activity on this trace is 80.8 dB L_{Aeq}.[9] This trace includes the noise of the helicopter manoeuvring just after take-off and just prior to landing plus an aircraft taxiing past between flights.

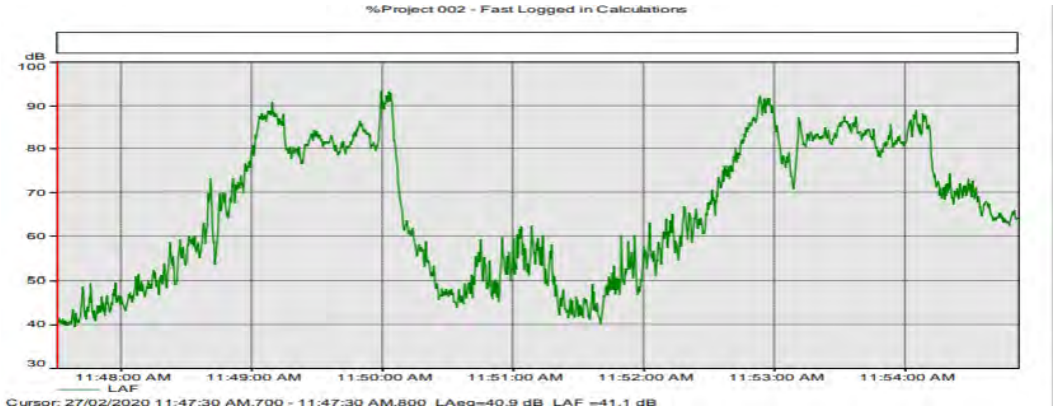

Figure 10: Air Bus H130T2 Measured at 40 m from the Helipad Location

As discussed above, the noise modelling now includes the building consented under BUN60373967. As shown in Figure 11 below, the 50 dB L_{dn} for helicopters take-off or landing under standard E25.6.32 is exceeded at the property boundary of both 29 and 34 Rawene Avenue,[10] however, written approval has been provided from both properties as well as 36 Rawene Avenue and at 9 Kotare Avenue.

[8] Initial section 92 request number 4.

[9] Initial section 92 request number 5.

[10] Additional comment, labelled Item 7, to this request made by the Council planner by email on 13 April 2022.

Figure 11: 50 dB L_{dn} Noise Contour with Property Outlines for 29 and 34 Rawene Avenue

The letter from Hegley Acoustic Consultants, dated 21 March 2022, also states the noise level from the helicopter for the closest neighbours to the northeast (on Marine Parade and Jervois Road) when the helicopter is at or below 500 ft, will be up to 40 dBA L_{dn}.[11] To determine the effects of the helicopter noise on these residents' the noise from West End Road has been assessed with the predicted noise contours shown in Figure 12 below. The traffic noise is of the 24-hour L_{Aeq} which when compared to the helicopter noise (which is in the unit of Ldn), the 24 hour L_{Aeq} is typically 2 dB lower than the L_{dn} level (i.e. 40 L_{dn} is equal to 42 dB $L_{Aeq(24hr)}$).[12] This comparison shows the helicopter noise compared to the existing noise environment to be within a level that would normally be considered reasonable for residents and Hegley Acoustic Consultants has assessed the effects as being less than minor.

[11] Initial section 92 request number 7 and an additional comment made by the Council planner through email on 6 May 2022 and amended on 13 May 2022.

[12] Additional comment made by the Council planner through email on 6 May 2022 and amended on 13 May 2022.

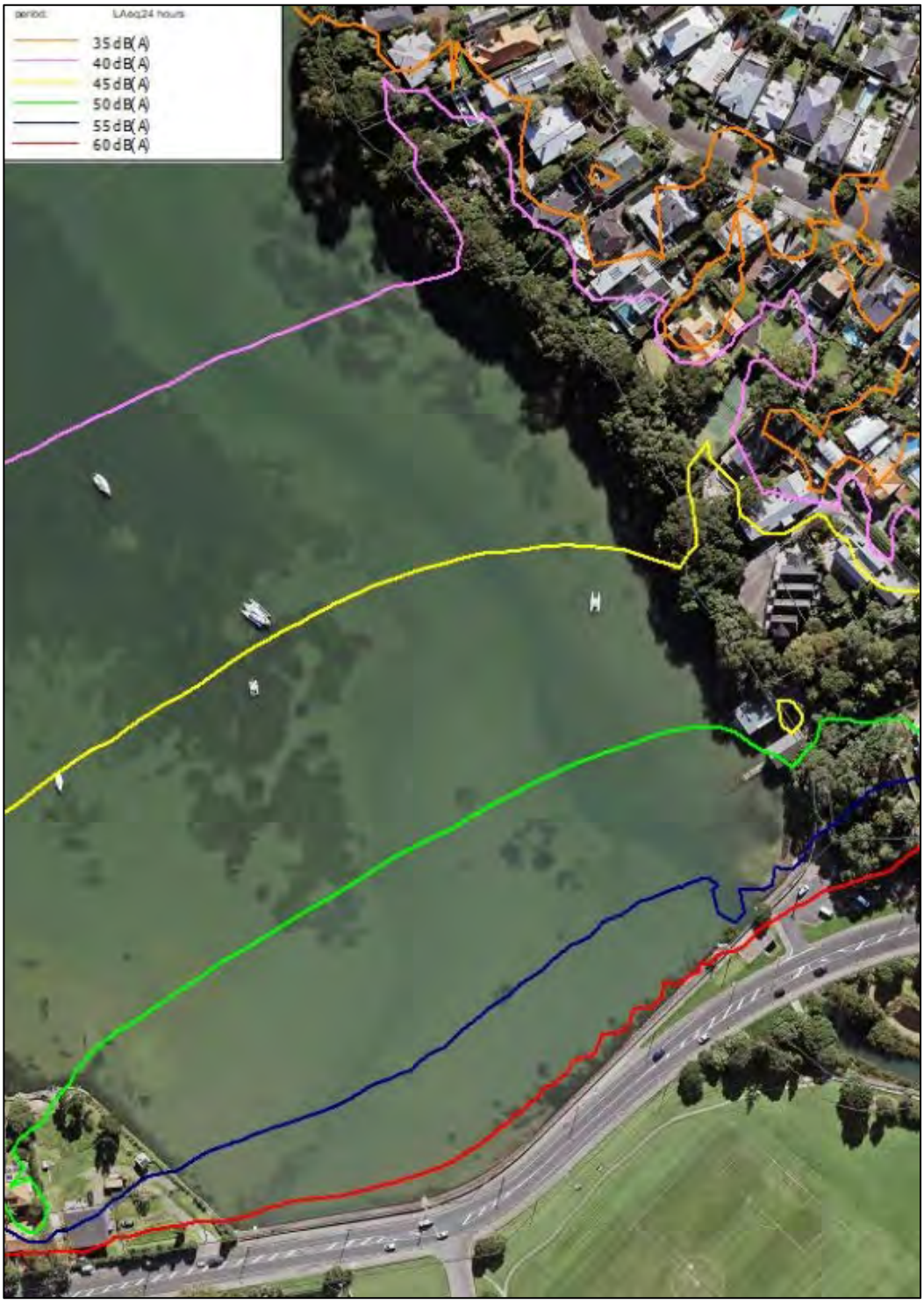

Figure 12 **Existing Traffic Noise to the North-East dB $L_{Aeq(24hr)}$**

4. RECREATIONAL EFFECTS

The recreation assessment completed by Rob Greenaway in October of 2023[13] established the existing environment for recreational uses to comprise the following:

- Kite surfing on the eastern side of Meola Reed, but not at high tide due to a lack of local beaches for launching;
- Walking with and without dogs along the coast between Westmere Park and Cox's Bay, with low levels of activity and not being possible at high tide;
- Paddle boarding and kayaking between Westmere and into Cox's Bay, with most activity in Cox's Bay and east of the proposal site, but passing close to the headland; and
- Boat mooring in Cox's Bay.

The assessment specifically considered the potential effect of rotor downwash and noise.

Rotor downwash is an isolated effect while directly underneath, or close to (within approximately 200 feet) the helicopter. Any effects of rotor downwash can be effectively managed by Pilot in Command ("**PIC**") procedures complying with Civil Aviation Rules (Part 91(b)(4) which requires the heliport, or water channel, must be clear of vehicles, vessels, persons and animals). To ensure compliance, the PIC will deviate the flight path to another portion (but remaining within) the flight section to avoid overflying or otherwise affecting persons, or the PIC can delay the approach or departure for what may amount to a minute or so, whilst recreational or other water users travel away from beneath the flight path. Because the helicopter will fly in and out to pick up / drop off passengers, monitoring of the recreational space will be undertaken by the PIC visually on approach and reassessed from the helipad on departure.

Noise sensitive recreation activities are primarily walking with or without dogs between Westmere Park and Cox's Bay on the foreshore at low tide. Swimming near the landing site at low tide, both now and in the future, is unlikely to be affected due to the distance of the site from beach access and nature of the mudflats in the area. Additionally, boating activities will be limited due to the tidal nature of the setting and the exposure of moorings and low tide. Boat users may, however, access their vehicles at low tide for, for example, maintenance activities. Activities such as sea-kayaking and paddle boarding would also be carried out with some separation of the landing site during the low tide window. The potential noise effects to users of Cox's Bay are limited to less than two minutes in a period either side of low tide during helicopter take-off and landing.

The assessment acknowledges that recreational use between Meola Reef and Herne Bay is likely to increase as a result of water quality improvements once Watercare's Central

[13] Initial section 92 request number 8.

Interceptor is completed, which is planned for 2028. The completion of this project may see an increase in water-based recreation in the area, specifically swimming, paddleboarding and kayaking. However, the proposal is limiting helicopter activity to a flight window either side of low tide and any increase in recreational water-based activity is likely to occur at or near high tide, which is not within this window. This, coupled with the extremely short duration of helicopter landing and take-off, mean that recreational effects are unlikely to change, and do not change Mr Greenaway's assessment that the potential effects of the proposal on recreation will be minor.

5. FLIGHT COMPLIANCE

The Applicants employ the Auckland based company Heletranz for their helicopter transportation activities. Heletranz exclusively manages the aircraft used by the Applicants and included in their service is the provision of pilots to fly the aircraft. Heletranz is a CAA certified organisation. As a certified operator Heletranz are upheld to rigorous compliance with the CAA standards. These measures of compliance are assessed through internal and external audits and SMS certification. Additionally, all pilots are required to hold a Commercial Pilots License (CPL), under which the pilots are required to have demonstrated key objectives around Confined Area Operations.

Whilst undergoing training relating to Confined Area Operations, the pilots are trained in risk mitigation such as go-around point, obstacle clearance, and knowledge of hazards of recirculation. Heletranz pilots are required to complete annual competency checks and route assessments which review the ability of a pilot to identify and respond to hazards during helicopter operation.

It is the discretion of the PIC to determine if the site is unsuitable or compromised for landing, however, the Applicants are not proposing to use the helipad where approach or departure within the proposed quadrant would not be achievable. This discretion also includes the delay of departure or landing due to the presence of recreational users of Cox's Bay, regardless of the length of time taken for the recreational user to vacate the flight sector. John Fogden of Total Aviation Quality has discussed that deviation from the flight path in 'undesirable' conditions would not be justified, but that any decision by the PIC would be recorded in the Flight Log and the reason for that decision and any resultant effect on safety or noise could be reviewed. In the event there are concerns about the safety of landing on the helipad, the helicopter will be diverted to an alternative existing helipad. Mr Fogden then discusses the deviation from the flight path outside the sector in the case of emergency, while highly unlikely, would be a justified action to protect life or property.

To clarify, the Applicant is only seeking for approach and departure to occur on a routine basis within the nominated flight sector, and the inclusion of a deviation clause in was only included in condition 3 to cater for emergency scenarios. Any such deviation would be at

the discretion of a skilled pilot who trained in Confined Area Operations, holds their CPL and who operate within CAA Guidelines.

6. RESOURCE CONSENT REQUIREMENTS

The proposal is for the use of a residential site for the purpose of helicopter take-off and landing within the Residential – Mixed Housing Suburban Zone.

A recent decision was made by Auckland Council in which helicopter take offs and landings were considered "residential activities" associated with the "use" of a residential dwelling[14]. As such, helicopter take offs and landings would be a permitted activity if they comply with all applicable standards in the Unitary Plan. This proposal does not comply with Standard E25.6.32 Noise levels for helicopters take-off or landing at two adjacent properties (34 and 36 Rawene Avenue).

Standard E25.6.32 states:

> *"The take-off or landing of a helicopter on any site except for emergency services must not exceed Ldn 50dB or 85dB LAFmax measured within the boundary or the notional boundary of any adjacent site containing activities sensitive to noise and Ldn 60dBA within the boundary of any other site."*

Under Rule E25.4.1(A2) the proposal therefore requires consent as a **Restricted Discretionary** activity and the matters over which Council must restrict its discretion are limited to:

(1) For noise and vibration:

- *a. The effects on adjacent land uses particularly activities sensitive to noise; and*
- *b. Measures to avoid, remedy or mitigate the adverse effects of noise.*

7. STATUTORY ASSESSMENT

7.1 SECTION 104 ASSESSMENT

Section 104 of the RMA lists the matters that a consent authority must, subject to Part 2, have regard to in determining whether a resource consent application should be granted. It states:

[14] Refer to decision LUC60134603-A, dated 9 March 2022.

(1) When considering an application for a resource consent and any submissions received, the consent authority must, subject to Part 2 and 77M, have regard to–

(a) any actual and potential effects on the environment of allowing the activity; and

(ab) any measure proposed or agreed to by the applicant for the purpose of ensuring positive effects on the environment to offset or compensate for any adverse effects on the environment that will or may result from allowing the activity; and

(b) any relevant provisions of—

(i) a national environmental standard:

(ii) other regulations:

(iii) a national policy statement:

(iv) a New Zealand coastal policy statement:

(v) a regional policy statement or proposed regional policy statement:

(vi) a plan or proposed plan; and

(c) any other matter the consent authority considers relevant and reasonably necessary to determine the application.

(2) When forming an opinion for the purposes of subsection (1)(a), a consent authority may disregard an adverse effect of the activity on the environment if a national environmental standard or the plan permits an activity with that effect.

(2A) When considering an application affected by section 124 of 165ZH(1)(c), the consent authority must have regard to the value of the investment of the existing consent holder.

Section 104 of the RMA does not give primacy to any of the matters that a consent authority is required to have over any other matter. All relevant matters are to be given such weight as the consent authority sees fit in the circumstance, and all provisions are subject to Part 2 of the RMA (although it is now well-understood that a consent authority is not generally required to consider Part 2 of the RMA beyond its expression in the relevant statutory planning documents).

7.1.1 Actual and Potential Effects

Details of the actual and potential environmental effects associated with the proposed helicopter take-offs and landings are provided above, including based on the additional technical assessments that have been commissioned by the Applicants in response to the section 92 requests. The following conclusions can be drawn from these assessments:

- The proposal is being undertaken adjacent to a coastal marine area which is home to indigenous avifauna some of which are listed as Threatened or At Risk;
- The space is used by the public as a recreational area, and adjacent land uses are predominantly residential;
- The proposal limits the direction and timing of flights to avoid adverse effects on Threatened or At Risk avifauna, and to minimise adverse effects on the public;
- Noise effects can be properly managed for recreation users, and the proposal is compliant with relevant noise standards at properties where no written approval has been provided; and
- Operation of the helicopter will be managed in accordance with both Heletranz and CAA requirements to ensure safety of people and property.

Given the key conclusions of the independent technical assessments the proposal for helicopter flights at the property will not generate adverse effects on the environment that are more than minor.

7.1.2 Relevant Statutory Planning Documents

In terms of section 104(1)(b) of the RMA, the following sub-sections provide an assessment of the application against the:

- New Zealand Coastal Policy Statement 2010 ("**NZCPS**"); and
- Auckland Unitary Plan, Operative in Part ("**AUP**"), including the Regional Policy Statement ("**RPS**").

7.1.2.1 New Zealand Coastal Policy Statement

The NZCPS includes policies of relevance to the proposed activity adjacent to Cox's Bay.

The key objectives and policies of the NZCPS that are relevant to the proposal seek to:

- Protect significant natural ecosystems and sites of biological importance;[15]

[15] NZCPS – Objective 1.

- Maintain and enhance the public open space qualities and recreation opportunities of the coastal environment and to provide public walking access to and along the coastal marine environment;[16]
- Preserve the natural character of the coastal environment;[17] and
- Avoid adverse effects on Threatened and At Risk species.[18]

The importance of maintaining the quality and recreation opportunities in Cox's Bay has been recognised and provided for in both the flight path restriction, and the restriction of flight times. Together, these conditions will limit effects on users of the coastal environment. There will be no impediment to the use of Cox's Bay as a recreational area by the public, and all adverse effects on coastal avifauna species listed as Threatened or At Risk will be avoided entirely.

There are other objectives and policies of the NZCPS relating to the preservation of the natural character of the coastal environment to protect it from inappropriate development.[19] There is no development proposed as part of the application and the objective and policy relating to this are therefore not relevant.

Overall, the proposal will be consistent with the above objectives and policies of the NZCPS.

7.1.2.2 Regional Policy Statement

The RPS section of the AUP contains provisions relating to infrastructure, transport and energy, natural resources, and the coastal environment. The relevant objectives and policies seek to:

- Support the movement of people, goods and services;[20]
- Protect areas of significant indigenous biodiversity in coastal marine areas from adverse effects of land use;[21] and
- Preserve the characteristics and qualities that contribute to the natural character of the coastal environment.[22]

The restriction of the flight window and flight sector provide for the protection of the coastal marine area and natural character of the coastal environment while still supporting

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16 NZCPS – Objective 6.

17 NZCPS – Policy 13.

18 NZCPS – Policy 11.

19 NZCPS – Objective 2 and Policy 13.

20 RPS – Objective B3.3.1(1).

21 RPS – Objective B7.2.1(1).

22 RPS- Objective B8.2.1(2).

the transport choice for the Applicants. Additionally, the conditions of consent proffered with the application, and flight management measures proposed, will avoid, remedy or mitigate potential adverse effects on the environment while safeguarding the health and safety of residents and the public.

Overall, the proposal is consistent with the relevant objectives and policies of the RPS.

7.1.2.3 Auckland Unitary Plan (Land use matters)

As noted, the site is located within the Residential – Mixed Housing Suburban and Coastal – General Coastal Zone. The objectives of the AUP which are relevant to the proposal seek to:

- Protect people[23] and amenity values of residential zones[24] from unreasonable levels of noise;
- Integrate land use for all modes of transport and enable the management of any adverse effects of traffic generation;[25]

The noise levels generated by the helicopter take-off and landing within the wider residential neighbourhood do not detract from the amenity and character of the area.[26]

There are a number of objectives and policies in the AUP enabling or encouraging development in residential zones[27], specifically that development is in keeping with the neighbourhood's planned built character[28] and amenity[29]. The application is, however, not seeking any form of development. As such, these objectives and policies are not relevant to the proposal.

Overall, the proposal will be consistent with the above objectives of the AUP.

7.2 SECTION 104D

Out of an abundance of caution, the following section evaluates the proposal against Section 104D of the RMA, in the event that Council determined not to adopt its' own precedent (as discussed at section 6 above) and the application were to be assessed as a non-complying activity.

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23 AUP – Objective E25.2(1).

24 AUP – Objective E25.2(2).

25 AUP – Objective E27.2(1).

26 Noting that noise levels exceeding the standards are anticipated in adjacent properties which have provided their written approval and are therefore regard must not be had to those effects.

27 AUP – Objective H4.2(1) and Policy H4.3(1).

28 AUP – Objective H4.2(1).

29 AUP – Objective H4.2(3).

In accordance with Section 104D, an application for a non-complying activity must first satisfy at least one of the so-called gateway tests, before it is able to be considered under section 104.

Section 104D states:

> *(1) Despite any decision made for the purpose of notification in relation to adverse effects, a consent authority may grant a resource consent for a non-complying activity only if it is satisfied that either –*
>
> *a. The adverse effects of the activity on the environment (other than any effect to which section 104(3)(a)(ii) applies will be minor; or*
>
> *b. The application is for an activity that will not be contrary to the objectives and policies or –*
>
> *i. The relevant plan, if there is a plan but no proposed plan in respect of the activity; or*
>
> *ii. The relevant proposed plan, if there is a proposed plan but relevant no plan in respect of the activity; or*
>
> *iii. Both the relevant and the relevant proposed plan, if there is both a plan and proposed plan in respect of the activity.*
>
> *(2) To avoid doubt, section 104(2) applies to the determination of an application for a non-complying activity.*

In terms of the "minor effects" gateway, the appended technical assessments have determined that the effects of the proposal will be no more than minor. Therefore, the first limb of the gateway is satisfied.

Additionally, the proposal is consistent with, and certainly not contrary to, the relevant objectives and policies of the AUP.

Thus, both limbs of the gateway test under section 104D of the RMA can be satisfied and classification of the proposal as a non-complying activity (which, to avoid doubt, we do not consider is appropriate given the earlier Council determination) poses no impediment to the granting of consent.

8. NOTIFICATION ASSESSMENT

The Applicant initially requested for the consent application to be publicly notified[30]. Now that further assessments have now been completed, an assessment of the RMA's notification requirements has been undertaken, as set out below.

8.1 SECTION 95A

Section 95A sets out four steps which a consent authority must work through, in the given order, to determine whether to publicly notify an application for a resource consent.

That process for the current proposal is as follows.

Step 1 – Mandatory Public Notification:

- The Applicants do not request public notification of the application (s95A(3)(a));
- Public notification is not required under section 95C; and
- The application does not include an exchange of recreation reserve land (s95A(3)(c)).

Step 2 – Public Notification Precluded:

- Public notification is not precluded by any rule of the AUP or national environmental standard (s95A(5)(a)); and
- The proposal is a restricted discretionary activity. Public notification is not precluded as s95A(5)(b)(ii) does not apply.

Step 3 – Public notification in certain circumstances:

- Public notification is not required by any rule in the AUP or National Environmental Standard that require public notification in accordance with s95A(8)(a); and
- For the reasons set out above, the activity will not have adverse effects on the environment that are more than minor in accordance with section 95A(8)(b).

Step 4 – Public Notification in Special Circumstances:

In considering whether special circumstances apply to warrant notification of an application, it is noted that special circumstances:

- Are unusual or exceptional but may be less than extraordinary or unique; and

[30] This request was made on 30 June 2022 on behalf of the Applicants by email which read "The applicant has also considered the correspondence and information from interested parties and has decided that providing the public an opportunity to highlight any issues of concerns with the concern with the proposal would be beneficial. Accordingly, the applicant hereby formally requests that, pursuant to s95A(3)(a), this consent application be publicly notified".

- Unlikely to be justified where there is no evidence of adverse effects likely to arise from an activity.

This application is not unusual nor exceptional. The proposal for helicopter take-off and landing on private land will allow for the Applicants to commute by helicopter, for which a number of resource consents have been granted within the Auckland Region.

Given the above, there are no special circumstance that warrant public notification of the proposal and resource consent application.

8.2 SECTION 95B LIMITED NOTIFICATION

Section 95B(1) requires a consent authority to determine whether to give limited notification of a resource consent application if an application is not publicly notified under Section 95A. The evaluation of this proposal in accordance with the step by step process required by Section 95B is as follows:

Step 1 – Certain affected groups and affected persons must be notified:

- Limited notification is not required under Step 1 as the proposal does not affect customary rights groups or customary marine title groups or a statutory acknowledgement.

Step 2 – If not required by Step 1, limited notification precluded in certain circumstances:

- Limited notification is not precluded under Step 2 as the proposal is not subject to a rule in the Unitary Plan or a National Environmental Standard that precludes notification; and
- Limited notification is not precluded under Step 2 as the proposal is not a controlled activity and is not a prescribed activity.

Step 3 – If not precluded by Step 2, certain other affected persons must be notified:

- The proposal is not a boundary activity and is not a prescribed activity.

The proposal therefore falls into the 'any other activity' category and the effects of the proposal on any persons are assessed in accordance with section 95E below to determine if limited notification is required.

8.3 ASSESSMENT OF EFFECTS ON PERSONS (S95E)

According to section 95E of the RMA, a person is an affected person if the activity's adverse effects on the person are minor or more than minor (but are not less than minor).

No person is considered to be adversely affected to the extent that the effects on that person are minor or more than minor.

The basis for this conclusion above is summarised as follows:

- The Applicants have received written approval from the owners / occupiers at 34 and 36 Rawene Avenue which are provided as **Appendix D**. As such these owners / occupiers are not affected persons in relation to the resource consent application for the proposed helicopter flights;
- The proposal is for helicopter take-off and landing at a private helipad. The timing of flights and direction in which approach and departure can be achieved have been designed to avoid adverse effects on ecology and minimise adverse effects on recreation and noise which have been independently assessed as being minor and less than minor, respectively. It is noted that although the recreation assessment concludes that effects on recreation are minor, that is a matter to addressed under section 95A. Any effect on individual recreational users (i.e. persons), will be minimal and it is impossible, in terms of section 95B, to identify individuals; and
- The PIC at the time will use their expertise to comply with all safety requirements for safety of recreational users, such as delaying the movement until the path is clear.

8.4 NOTIFICATION CONCLUSION

It is concluded that the resource consent application for the proposal can be processed on a non-notified notified basis to the properties identified above in accordance with sections 95A – 95E of the RMA.

9. CONCLUSION

Anna Mowbray and Ali Williams have applied for resource consent for the use of their private property for helicopter take-off and landing at 38 Rawene Avenue, Westmere.

The actual and potential effects associated with the proposal have been considered in accordance with section 104 of the RMA. It is concluded that any potential adverse effects will be appropriately avoided, remedied, or mitigated such that they are limited in scale and extent to the extent that they are no more than minor.

The application has also been assessed to be consistent with the relevant objectives and policies of the NZCPS and AUP.

Overall, it is considered that this application is consistent with the purpose and principles of the RMA and there are no impediments to the grant of the resource consent sought by the Applicants on a non-notified basis.

APPENDIX A

Section 92 Requests

This appendix details the requests for further information and where they have been addressed.

1. *Please provide an ecological assessment prepared by a suitably qualified professional that identifies potential and actual effects on the ecological values of the area resulting from helicopter movements to and from the site.*

   Of note is the rock shelf on the point north of the proposed helipad location, which is a known significant local roost for both variable and pied oystercatchers; however, all relevant ecological impacts should be identified and assessed.

   An ecological assessment is appended to this report and addressed in Section 2.

2. *Please confirm why the building approved under BUN60373967 has not been included in the noise modelling as screening, as this is considered to form part of the receiving environment.*

   This request is addressed in Section 3 of the report.

3. *Please confirm how long it would generally take for the helicopter to travel between the ground and the 500ft mark, and visa versa.*

   This request is addressed in Section 1 of the report.

4. *Please provide noise modelling (both L_{Amax} and L_{dn}) for scenarios where flights are required to be made outside the proposed flight sector for safety reasons.*

   This request is addressed in Section 3 of the report.

5. *Please provide the L_{Aeq} and the time duration for the measurement at 40m, as shown in Figure 4.*

   This request is addressed in Section 3 of the report.

6. *Please confirm the assumed duration of a helicopter arrival and departure sequence, as forms the basis of the calculation and assessment in Section 4 of the Hegley report.*

   This request is addressed in Section 1 of the report.

   Note: An additional comment to the initial s92 request was made by the noise specialist relating to this item on 13 April 2022: *"We note that an allowance of 30 seconds has been*

made from the start-up time before departure. Is there a chance that this could be extended due to an unforeseen event delaying the departure (eg a passenger going into the house to collect some forgotten luggage or to go to the toilet)? If so, how would this extra time idling affect the noise levels predicted in the report.

This is addressed in Section 1 of the report.

7. *Please can noise contours be provided to show the potential impact on other neighbours (e.g., north east)?*

Note: An additional comment to the initial s92 request was made, via the Council planner through email, by the noise specialist relating to this item, labelled Item 7, on 13 April 2022*: "Based on the noise contours in Attachment A of the Hegley letter, it appears that 50 dB Ldn is possible exceeded in the north-west corner of the 34 Rawene Avenue property and the northern corner of the 29 Rawene Avenue property. Could the consultant please clarify this?*

These requests are addressed in Section 3 of the report.

8. Please provide additional assessment of effects on recreational users of Cox's Bay and the coasts surrounding the site, including those engaging in activities such as kite surfing and sailing.

A technical assessment of recreation effects is appended to this report and is addressed in Section 4.

9. *Please provide further detail of the proposed helipad location, including:*

    a. *A plan identifying the helipad location (pictures with the helipad location outlined would also be helpful);*

    b. *The RL of the helipad;*

    c. *The distance from an identifiable point of the dwelling approved under BUN60373967 and from the nearest coastal planting proposed under coastal consent CST60383790 (BUN60383789).*

This information is required in order to ensure that the noise modelling provided is accurate and that any future flights are in accordance with the predicted noise levels.

It is recommended that the proposed helicopter coordinates are checked to confirm these are accurate and in accordance with the above.

NB: I note that building consent BCO10329873 grants the construction of a retaining wall near the coastal boundary and the apparent helipad location. If earthworks (cut or fill) are undertaken as part of this construction, this could result in non-compliance to Standard E12.6.2(1)(b).

This request is addressed in Section 1 of the report.

10. *The application makes provision for flights to and from the helipad to deviate from the flight section shown in Figure 1 of the acoustic assessment prepared by HAC, in order to comply with CAA NZ requirements. I note this could result in noise levels that differ / increase from those modelled by HAC.*

    Please provide comment on the likelihood of flights being restricted to within the proposed flight sector, taking into account the requirements of CAA NZ, and subsequently the ability to comply with the noise modelling provided.

    I draw your attention to section 1.2.1 of the CAA NZ Advisory Circular (attached), which establishes that downwind operations should be avoided.

    NB: I have requested CAA NZ review the application, with regard to the adequacy of the flight sector in meeting their requirements. I will forward their comments once received.

    This is addressed in Section 5 of the report.

11. *Please confirm is the proposed helipad is reliant on coastal consent CST60383790 being approved and given effect to.*

    This is addressed in Section 1 of the report.

12. *Please confirm if the planting proposed under CST60383790 will interfere with helicopter movements, both at the time of planting and when mature, that would necessitate vegetation alteration and/or removal.*

    This is addressed in Section 1 of the report.

The additional comments made through email channels are as follows:

a. *Please comment on the predicted L_{dn} levels when compared to the existing ambient L_{dn} levels at receivers (in all directions, not just those located along Marine Parade) that are closer to the helipad than the horizontal distance travelled by the helicopter as it reaches 500 feet.*

   This is addressed in Section 3 of the report.

b. *Please provide separate maps of predicted $L_{Aeq,24h}$ and L_{AFmax} contours within the aforementioned area.*

   Note: The intention is to understand the scale and intensity of effects on adjacent properties and public spaces during a helicopter take-off and landing when noise would be clearly audible and noticeable in that moment relative to the existing noise environment.

   This is addressed in Section 3 of the report.

B

APPENDIX B

Assessment of Effects on Coastal Avifauna - Bioresearches

Bioresearches
A Babbage Company

Assessment of the Effects of a Proposed Helipad at 38 Rawene Avenue, Westmere, on the Coastal Avifauna. November 2023

Consulting Biologists – Established 1972
P.O. Box 2027, Auckland 1140. New Zealand
www.Bioresearches.co.nz

Assessment of the Effects of a Proposed Helipad at 38 Rawene Avenue, Westmere, on the Coastal Avifauna. **November 2023**

DOCUMENT APPROVAL

Document title:	Assessment of the Effects of a Proposed Helipad at 38 Rawene Avenue, Westmere, on the Coastal Avifauna.
Prepared for:	Anna Mowbray & Ali Williams
Version:	Draft 1
Date:	1 November 2023
Document name:	65441_Assessment of Effects on Coastal Birds Proposed Helipad_38 Rawene Ave

Authors:	Graham Don, M.Sc. (Hons) Senior Ecology Consultant
Reviewer:	Taneal Gulliver, M.Sc. (Hons) Ecologist
Approved for Release:	Graham Don, M.Sc. (Hons) Senior Ecology Consultant

REVISION HISTORY

Rev. No.	Date	Description	Author(s)	Reviewer	Approved
1	11 August 2023	Version 1	G.L. Don	T.Gulliver	
2	29 September 2023	Version 2	G.L. Don		

Reference: Bioresearches (2023). Assessment of the Effects of a Proposed Helipad at 38 Rawene Avenue, Westmere, on the Coastal Avifauna.. Report for Anna Mowbray & Ali Williams.

Cover Illustration: High tide roost at 38 Rawene Ave, Westmere, at a high spring tide, facing NNE, G.Don (Jan 2023). Also refer Plate 1.

CONTENTS

1. EXECUTIVE SUMMARY

A comprehensive survey of coastal avifauna was undertaken to assess the potential effects of the use of a helipad situated at 38 Rawene Avenue, Westmere. A total of 65 hours of field observation were completed during quarterly surveys over a twelve-month period, both over the high tide period and at low tide, in the marine area from Meola Reef to the eastern side of Outer Cox's Bay. Aspects of the coastal avifauna recorded were diversity, abundance, habitat use, distribution and general behaviour.

A high tide coastal bird roost is situated on a rock platform that is below but contiguous with the promontory on which the proposed helipad would be situated. The roost is considered to be a 'traditional' roost under standard ornithological definition. The two dominant species using the roost were Variable Oystercatcher and South Island Pied Oystercatcher with incidental Caspian Tern, Pied Shag and White-faced Heron. A total of three At Risk species and one Threatened species were recorded using the Rawene Ave roost.

The Rawene Ave high tide roost is not recorded as a Significant Ecological Area (SEA) under the Auckland Unitary Plan. In the wider environment, a marine area to the west that includes Meola Reef is identified as a SEA (SEA-M1) under the Auckland Unitary Plan. Low tide surveys of this wider marine area were undertaken, with two areas differentiated – "Meola Reef' and "Outer Cox's Bay". Coastal bird diversity was similar in both areas at low tide with 16 and 13 species respectively. Two threatened species were recorded – New Zealand Dotterel was sparse in each area while Caspian Tern was sparse in Outer Cox's Bay but common at Meola Reef. No suitable nesting habitat for either species was present within the survey area.

The average number of birds at low tide in Outer Cox's Bay was higher than that at Meola Reef but the dominant species (above 10% of the records) were different. The dominant species at Meola Reef were Red-billed Gull, Black Swan, eastern Bar-Tailed Godwit, Variable Oystercatcher and Black-backed Gull, while the dominant species at Outer Cox's Bay were Red-billed Gull and Black Swan only. The latter two species in Outer Cox's Bay comprised 68.5% of the total records compared with a significantly lower 43.0% at Meola Reef. An analysis of bird groups indicated that the average number of waders was higher at Meola Reef than at Outer Cox's Bay whereas the average number of Gulls and "other birds" was higher at Outer Cox's Bay than at Meola Reef.

In contrast to the situation at high tide, Variable Oystercatcher was sparse in Outer Cox's Bay at low tide with an average of 1.1 individuals; at Meola Reef the average number of Variable Oystercatcher was 17.1 individuals. A second species of note at low tide was eastern Bar-Tailed Godwit that was present in Outer Cox's Bay in 2 of 8 surveys at an average of 18.6 individuals, but present at Meola Reef in 7 of 8 surveys at an average of 31.4 individuals. Meola Reef was the more attractive habitat to eastern Bar-Tailed Godwit.

At low tide, feeding and resting were the most frequent habitat use activities as expected but with the latter significantly more prominent at Meola Reef, probably reflecting its elevated topography, more diverse habitats and shelter. Overall, the dominant habitat use activities were feeding and resting at Meola Reef and high tide roosting at Outer Cox's Bay.

The survey indicates that although relatively high numbers of the dominant Red-billed Gull and Black Swan were recorded at low tide at Outer Cox's Bay, the numbers of more notable species, Variable Oystercatcher and eastern Bar-Tailed Godwit, were not significant relative to their national populations.

Against the results of this comprehensive survey, an assessment of effects is presented. This assessment includes a summary of effects of helicopter operations (take offs and landings) on bird species based on available literature, reports contained in the application and AEE, and field observations. The assessment indicates that the potential effects, including of bird collision and disruption of feeding birds are not material.

The Rawene Ave high tide roost and surrounding area is frequented by, and provides roosting habitat for, a range of Threatened and At Risk species, including migratory species. The proposal is therefore subject to the 'effects avoidance' policy framework, including Policy 11 of the NZCPS and within the Auckland Unitary Plan. Effects associated with helicopter movements have been carefully considered, and the recommendations below will ensure that relevant effects will be avoided as required, and otherwise remedied or mitigated.

There will be displacement of feeding and resting birds at times with the reactions of birds diminishing with increasing distance from the flight path of the helicopter. Birds using the Meola Reef habitats would be about 300-400 metres from a north-northeast flight path. Similarly, there are likely to be startle reactions at times by birds feeding in Outer Cox's Bay especially at helicopter start up. Typically, feeding birds will fly a short distance (e.g. 50-100 metres), land and resume feeding; that is normal behaviour in intertidal habitats regardless of disturbance. The transitory, intermittent and short- term effects at low tide at both Meola Reef and Outer Cox's Bay are considered to be less than minor and would not decrease the diversity of coastal birds using the intertidal areas or diminish their values as coastal bird habitats. The significance of the SEA-M1 zone to coastal birds would not be compromised.

Two recommendations are made to ensure that effects of helicopter operations will be appropriately managed:

- That helicopter operations (take offs and landings) occur only during the four-hour window, being two hours either side of low tide. This is because the surveys undertaken indicate that the Rawene Ave roost is vacant for this four-hour period: including allowing for various factors influencing behavioural variability.
- The recommended flight path two hours either side of low tide is in a north-northeast direction to avoid flying over Meola Reef.

In summary, provided helicopter operations occur in the period two hours either side of low tide and the flight path avoids traversing Meola Reef and the SEA-M1 zone, then effects on birds at the Rawene Ave high tide roost would be avoided, effects on feeding and resting birds at low tide would at most be minor and transitory; material harm to those bird species would be avoided; the use of those areas would not be noticeably reduced; and the coastal bird biodiversity and abundance and the significance of the Meola Reef – Outer Cox's Bay habitats would not be diminished.

2. INTRODUCTION AND CONTEXT

The following report presents the results of a twelve-month survey of the avifauna using the coastal marine habitats adjacent to a proposed private helipad and associated flight paths at 38 Rawene Avenue, Westmere, Auckland, together with an informed assessment of likely effects on avifauna associated with that proposed activity, and measures recommended to mitigate its effects.

Surveys were undertaken quarterly over one year to provide a scientifically robust basis on which to assess the significance of the area as habitat for local avifauna; the types of avifauna frequenting the area and the nature of their use of the area. This information was used to inform an assessment of the effects associated with the proposed use of a helipad, with specific reference to the avifaunal values of the potentially affected area, and any practical measures to avoid or mitigate those effects.

This report comprehensively assesses the avifauna values in the area. Its findings are based on robust and current data, and it effectively replaces the earlier Bioresearches memorandum dated 1 April 2022.1 That initial once-off report provided useful basic information in the context of a Section 92 response. It identified the general ecological characteristics of the site including the presence of a preferred high tide roost for variable oystercatcher. It also concluded that helicopter arrivals and departures would be highly likely to cause disturbance to roosting birds and the subsequent vacation of the roost. The presence of alternative roosting sites in the vicinity was also noted. The assessment presented in the following report below expands upon that initial report in order that a more comprehensive and robust assessment of effects of the local coastal bird population and appropriate management recommendations, including specifically seasonal and tidal behavioural differences, could be undertaken.

2.1 Site description

The proposed helipad would be situated on a coastal promontory on the western side of Cox's Bay (Figure 1) near the edge of the coastal cliff. The promontory terminates at sea level as a raised sandstone platform that is exposed to varying degrees during high tides and is utilised on a regular basis by coastal birds as a high tide roost (see PLATE I, APPENDIX 7.5). The outer part of Cox's Bay is a broad, open sand-mud flat with sea grass. Meola Reef, that has diverse habitats, is nearby to the west. There are a number of constructed boat ramps on the eastern side of outer Cox's Bay that are also used for roosting by coastal birds during high tides.

The results of extensive surveys, discussed below, have enabled a detailed analysis of the types and numbers of coastal birds utilising the site and surrounding area to be presented.

[1] The 1 April 2022 memorandum was provided as part of the earlier Section 92 response.

Figure 1: Site location at 38 Rawene Ave showing the Observation Point (red circle – note this is on the property at 38 Rawene Ave), Outer Cox's Bay (blue dash), Meola Reef (green dash) and eastern Cox's Bay boat ramps (hatched): boundaries are approximate.

2.2 Statutory context

While a more comprehensive discussion of the resource consent application against the relevant plan and policy framework is provided by the consultant planners advising the applicant,[2] the relevant statutory ecological context which frames this assessment is presented below.

2.2.1 Part 2 of the RMA

Relevant matters of national importance include section 6(c) "the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna". Other matters directly relevant to this assessment include sections 7(d) "intrinsic values of ecosystems" and (f) "maintenance and enhancement of the quality of the environment".

2.2.2 New Zealand Coastal Policy Statement (NZCPS)

The NZCPS establishes a series of objectives, including (broadly) to safeguard the integrity, form, functioning and resilience of the coastal environment and sustain its ecosystems, including marine and intertidal areas and estuaries; whilst recognising that the protection of the values of the coastal environment does not preclude use and development in appropriate places and forms, and within appropriate limits.[3]

These broad objectives are implemented via a series of policies, including directive avoidance policies, including Policy 11 which (broadly) requires:

- avoidance of effects on certain receptors, including species that are listed as threatened or at risk in the New Zealand Threat Classification System lists; and
- avoidance of significant adverse effects and avoidance, remediation, or mitigation of other adverse effects, including habitats, including areas and routes, important to migratory species.

These avoidance requirements have been discussed in the assessment below.

The NZCPS is to be given effect to through the lower-order policy statements and plans, and in particular here the Auckland Unitary Plan, which is briefly outlined below.

2.2.3 Resource Management (National Environmental Standards for Freshwater) Regulations 2020 (NES-FW)

Following amendment in December 2022, it is understood that the National Environmental Standards have been clarified in that the wetland provisions of the NES-FW do not apply to the coastal marine area (CMA). Accordingly, the NES-FW is not considered further.

[2] Refer the AEE prepared by Mt Hobson Group, dated 2 November 2021.
[3] Refer Objectives 1 and 6, noting that this is a very high level summary of the broad intent of the NZCPS.

2.2.4 National Policy Statement on Indigenous Biodiversity (NPS-IB)

The NPS-IB recently came into effect. As such, an assessment of the application against the NPS-IB with respect to coastal avifauna is provided below, noting that its application is restricted to the terrestrial environment only.

2.2.5 Auckland Unitary Plan (AUP)

The coastal promontory and its adjoining marine habitats immediately adjacent to the proposed helipad are not Significant Ecological Areas (SEA) under the Auckland Unitary Plan (the Plan). The wider habitat to the west encompassing Meola Reef is scheduled as a Significant Ecological Area. The Plan defines the Meola Reef habitats as described below, but does not reference or schedule the 'Rawene Ave roost' that is the primary subject of this report.

> ***52 Te Tokoroa Reef and 52a Te Tokoroa Reef saline vegetation : SEA-M1***
> *Te Tokoroa Reef (Meola) Reef is a basaltic lava flow which extends into the Waitemata Harbour and provides a range of habitats and flora and fauna which is unique both within the Waitemata Harbour and throughout New Zealand and a nationally recognised originally rare ecosystem type. The hard surface presented by the lava is unusual within the Waitemata Harbour and the diverse marine biota it supports, particularly sponges and bryozoans, is correspondingly unusual. The reef is a significant area for wading birds. There are extensive salt marshes and mangrove communities associated with the reef.*
>
> ***52w1 Wading bird habitat : SEA-M1***
> *Te Tokoroa Reef provides key roosting and nesting site for shorebirds and there are extensive areas of feeding habitat for waders along this coastline.*

Therefore, while the wider marine habitats further to the west of the Rawene Ave site are scheduled as Significant Ecological Areas under the Plan, neither the Rawene Ave high tide roost or its immediately adjacent intertidal habitats warrant the same status. The distance between the eastern extent of the 52w1 wading bird habitat of Meola Reef and the eastern point of Cox's Bay is about 700 metres, while the distance between the Reef itself and the Cox's Bay eastern point is about 800 metres. Although the Plan references roosting and nesting on Meola Reef, all the Reef's potential nesting habitats were inundated during spring tides (pers. obs.) and the probability of successful nesting in that area would be low; neither is the Reef a particularly notable high tide roosting area.

2.2.6 Ramsar Convention on Wetlands (1971)[4]

For completeness, and to include additional ecological context, New Zealand is a signatory to the Ramsar Convention on wetlands that is an intergovernmental treaty for the conservation and wise use of wetlands and their resources (Auckland Council, 2012; Denyer and Robertson, 2016).

The Rawene Ave roost is not currently classified against the relevant Ramsar criteria. i.e. neither it nor the adjacent habitats are listed as a Ramsar site, however, this assessment indicates that it meets a single

[4] https://www.ramsar.org/sites/default/files/documents/library/ramsarsites_criteria_eng.pdf

criterion (Criterion 6) of international significance because it regularly supports 1% of the individuals in a population.

3. SURVEY METHOD

Surveys of the potentially affected parts of the CMA were undertaken from the top of the promontory above the intertidal habitats in the four quarters between 4 July 2022 and 20 April 2023 (precise survey dates are listed below). In each quarter the behaviour and numbers of birds were recorded hourly from approximately 3 hours after low water (c. 3 hours before high water) to about 3 hours after high water or when birds vacated the high tide roost. Continuous records were kept of all species of birds arriving and departing the roost. The surveys were undertaken during both 'neap' and 'spring' tides as defined by relative tidal height but constrained by tide times and weather conditions.

In each quarter, one-off counts were completed at both low neap tide and low spring tide of the area from and including Meola Reef to the eastern point of Outer Cox's Bay, separated into (refer Figure 1):

- 'Meola Reef' (that includes Motions Creek mouth), and
- 'Outer Cox's Bay',

on the basis that the most likely, regular proposed helicopter flight path would be over the latter rather than over Meola Reef or inner Cox's Bay.[5]

In total 65 counts were completed over the four quarters and a total of 16 surveys were undertaken. Approximately 65 hours of field observation were completed. Raw data of the counts are shown in the APPENDIX. Records were also kept of birds using the eastern ramps at Outer Cox's Bay for roosting.

The schedule of surveys is shown below with the seasons defined as follows –

Winter : June, July, August;
Spring : September, October, November;
Summer : December, January, February;
Autumn : March, April, May.

Note : high tide counts are multiple counts (about half tide rising to about half tide falling) whereas the low tide counts are one-off counts at low tide only.

WINTER –
4 July 2022 neap high tide counts
18 July 2022 spring high tide counts
5 July 2022 spring low tide count
12 August 2022 neap low tide count

SPRING –
30 September 2022 neap high tide counts
28 October 2022 spring high tide counts
7 October 2022 neap low tide count
27 October 2022 spring low tide count

SUMMER –
13 January 2023 neap high tide counts
23 February 2023 spring high tide counts
18 January 2023 neap low tide count
21 February 2023 spring low tide count

[5] See discussion in section 5.4.3 below.

AUTUMN –
27 April 2023 neap high tide counts
3 March 2023 spring high tide counts
3 April 2023 neap low tide count
20 April 2023 spring low tide count

Counts were undertaken variously in January, February, March, April, July, August, September and October. The procedure for the counts was as follows – counts were aided by Nikon Monarch 5 10x42 binoculars and a Kowa TSN-883 Promina tripod-mounted spotting scope with a 25-60 times zoom eyepiece. Before each count, the air temperature was measured using a digi-quartz thermometer; wind speed and barometric pressure were measured with a Silva Alba ADC Summit Windwatch and general weather conditions recorded Appendix 7.3. All data were recorded on pre-prepared, waterproof recording sheets.

For each count, all birds utilising the habitats variously between and including Meola Reef to the ramps on the eastern side of Outer Cox's Bay were identified and counted. In addition, the habitat use (behaviour) of each species was recorded to provide an overall assessment of the significance of the habitats regarding feeding, resting and roosting. Table 1 shows the codes used for behavioural observations.

Table 1: Codes for Habitat Use Activities (Behaviour) were recorded as follows

Code	Behaviour
FI	**Feeding** in the intertidal habitat
FW	**Feeding** in (e.g. shags) or over (e.g. terns) the water
REG	**Resting** on grass (end Garnet Road)
REI	**Resting** in the intertidal habitat
REW	**Resting** on the water
ROG	**Roosting** on grass (end Garnet Road)
ROI	**Roosting** in the intertidal area
ROP	**Resting/Roosting** on Plants (mangroves, dead trees, structures and debris)

A total of 8 surveys were undertaken to document bird numbers and their behaviour during the high tide period, 4 at nominal neap tides and 4 at nominal spring tides. Because of the Rawene Ave roost's proximity to the top of the end of the promontory, to minimise the risk of birds vacating the area as a result of an observer regularly appearing at the cliff edge the numbers of birds using the roost were generally assessed by counting individuals as they arrived at the roost (and subtracting any that departed) rather than risking a mass exodus every hour.

4. SURVEY RESULTS AND DISCUSSION OF EXISTING ENVIRONMENT

4.1 High Tide Roost

The Rawene Ave roost is a sandstone rock platform that is used for roosting at high tide (High Tide Roost) situated immediately below and adjacent to the area that would be used for the proposed helipad. See Figure 2. It is located in the CMA and ecologically is part of the marine habitat. Parts of the cliff base, however, that are used by coastal birds for roosting, are possibly above the level of Mean High Water Spring and that would trigger an assessment against the NPS-IB. The NPS-IB is discussed further below.

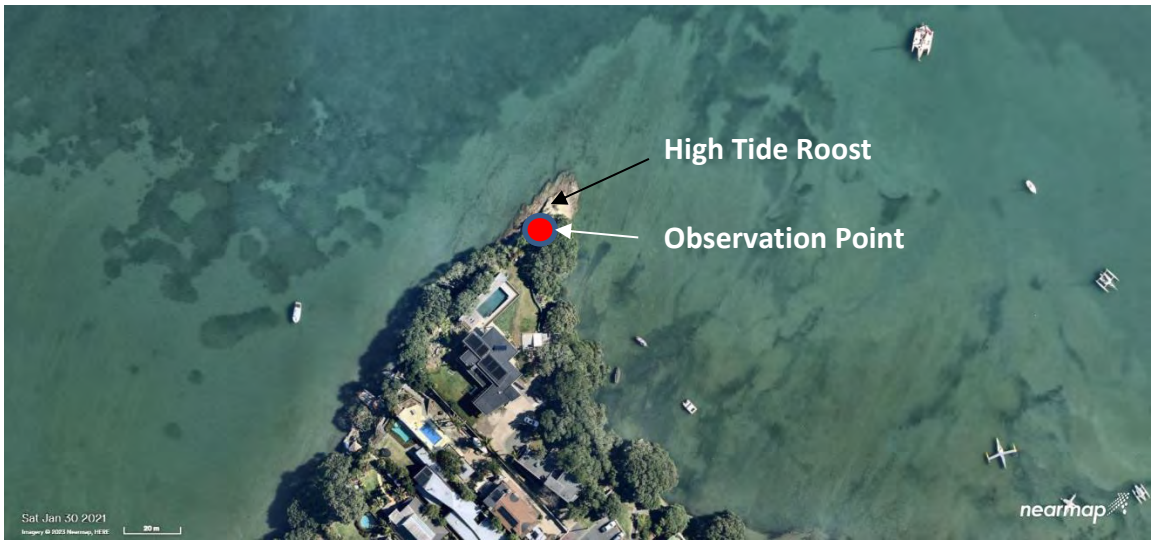


Figure 2: Nearmap sourced map of 38 Rawene Avenue showing location of High Tide Roost.

Besides the Rawene Ave roost, generally undisturbed, suitable areas for high tide roosting adjacent to Cox's Bay are sparse and are limited to the constructed ramps at the eastern end of the Outer Bay. These ramps on the eastern side of Outer Cox's Bay provide suitable roosting conditions for a variety of birds that, at times, reach high numbers on an intermittent basis, to the extent that the ramps represent significant, local high tide roosts. Other proximate areas are occasionally used for roosting but are more exposed to sources of disturbance. These include the:

- Rock platform and adjacent rocky areas on the western point of Meola Creek mouth: this has suitable characteristics for a high tide roost but is readily accessible to the public from Coyle Park and is a very popular fishing location. No roosting birds were observed to use that area during the surveys.
- Beach and adjacent mown grass at the end of Garnet Road: this area would provide suitable roosting but is subject to regular disturbance from vehicles, dogs and pedestrians.
- The mown grass of Cox's Bay Park and Reserve provides a large area for potential roosting, however, is well used by the public, including sports teams, and dogs are frequent. No significant roosting was observed in the Park and Reserve area during the surveys.

Within this local part of the Waitemata Harbour, the Rawene Ave roost therefore plays an important local roost role.

4.2 Species using the Rawene Ave roost

The two most common species numerically using the high tide roost were Variable Oystercatcher (*Haematopus unicolor*; tōrea pango; At Risk - recovering) and South Island Pied Oystercatcher (*Haematopus finschi*; tōrea; At Risk - declining). Incidental species, usually as single individuals, were Caspian Tern (*Hydroprogne caspia*; taranui; Threatened - nationally vulnerable), Pied Shag (*Phalacrocorax varius varius*; kāruhiruhi; At Risk - recovering) and White-faced Heron (*Egretta novaehollandiae*; matuku moana; Not Threatened). Therefore the roost was utilised by three At Risk species and one Threatened species.

With respect to the populations of birds using the roost, the numbers of variable and South Island pied oystercatcher were clearly dominant numerically and the ecological significance of that situation is discussed further below.

The numbers of Variable Oystercatcher and South Island Pied Oystercatcher that were recorded at high tide itself, and the maxima recorded at the roost over the wider high water period, are shown in Table 2.

Table 2: Numbers of Variable Oystercatcher (VO) and South Island Pied Oystercatcher (SIPO) recorded at the High Tide roost adjacent to 38 Rawene Avenue.

	Variable Oystercatcher		South Island Pied Oystercatcher	
	High water	Maximum at roost	Highwater	Maximum at roost
4/07/2022	76	76	8	8
18/07/2022	52	52	95	95
30/09/2022	62	82	31	31
28/10/2022	59	68	31	46
13/01/2023	47	49	57	57
23/02/2023	92	106	6	46
23/03/2023	7*	45	17	26
27/04/2023	62	62	95	95
n	7*	8	8	8
Average	64.3	67.5	42.5	50.5
SD	15.3	20.3	36.2	31.2
SE	5.8	7.3	12.8	11

(* 23.3.23 survey excluded; VO at ramps on the eastern side of Outer Cox's Bay; maximum of 92 at the ramps at high tide; SD = standard deviation; SE = standard error)

The average number of Variable Oystercatcher at the roost at the specific time of high tide was 64.3 with the result for 23.3.23 discounted from the dataset, but reported below, because the majority of the local population of Variable Oystercatcher was roosting on the Cox's Bay ramps. The main aim of the high tide roost surveys was to document the number and behaviour of birds specifically at the Rawene Ave roost, a known roosting habitat, so that effects on that roost could be evaluated. It is acknowledged that birds may desert the roost at times for a variety of reasons as discussed further below. With the 23.3.23 result included (i.e when most of the variable oystercatcher were using the Cox's Bay ramps), however, the average number of Variable Oystercatcher at the roost was 57.1 (SD=24.7; SE=8.7; n=8). Both results are anyway significant, both in terms of the ecological significance of the local area and Harbour, and with respect to Criterion 6 of the Ramsar Convention. The maximum number of Variable Oystercatcher recorded at the roost at high tide itself was 92; the maximum number recorded using the roost around the time of high water was 106, both of which are considered to be significant numbers of that species in the context of the Waitemata Harbour and Auckland Region.

The behavioural significance of high tide roosts generally is that coastal birds, especially wading species, tend to roost as close to their feeding habitats as practicable because commuting between the two is the

most energy efficient strategy. That behaviour is particularly relevant prior to birds commencing migratory flights and/or breeding activities.

It is acknowledged that the Rawene Avenue roost would be subject to disturbance at times arising from activities of the residents (e.g. fishing) and that a dog is also present on the adjoining property, however, there is no public access from the land at high tide and access from the property is via a steep cliff and rope. Disturbance of the Rawene Avenue roost could increase by the presence of pets and/or children at the site. As noted previously, care was taken during the surveys to avoid disturbance as the result of the ecologist suddenly appearing above roosting birds at the cliff edge. In that instance the birds' perception is probably that a potential predator is present. Such avoidance mechanisms are not likely to occur during day-to-day residential activities. Roosting birds are especially susceptible to disturbance when either spring tides are especially high, and roosting space is limited, and/or when the numbers of roosting birds are high e.g. during summer when the numbers of both species of oystercatcher are relatively high. The effects of roost disturbance are highly variable - all of the disturbed birds may return immediately, or only a proportion may return, or the roost may be deserted for the remaining high tide period. While disturbance will occur from time to time, it is unlikely to be of equivalent frequency to disturbance at the rock platform at Meola Creek for example that has public access from Coyle Park. The frequency of disturbance at the subject roost is not considered to be a confounding factor regarding the roost's ecological significance; at high tide kayakers were common but generally maintained a reasonable distance from roosting birds to the extent that no disturbance was observed. Very few walkers and dogs were observed traversing the intertidal area between Garnet Road and Cox's Bay during the surveys (noting that surveys did not occur during weekends).

As noted above, there are alternative, potential roosting sites on the ramps at outer Cox's Bay acknowledging that they too would be subject to disturbance at times. Occasional counts were recorded from the boat ramps and are shown in Table 3. While numbers of birds were generally low, relatively high numbers of Variable Oystercatcher also used that area on an intermittent basis.

Table 3: Birds recorded at the Boat Ramps in the eastern part of Outer Cox's Bay

Species recorded	18/07/2022	30/09/2022	28/10/2022	23/02/2023	23/03/2023	27/04/2023
Black-backed gull	2	0	0	1	0	0
Little shag	1	0	0	0	1	1
Pied shag	8	0	0	2	0	5
Variable Oystercatcher	0	20	2	15	92	66

4.3 Roost occupation

Field surveys were scheduled to commence well in advance of high tide to record the duration of roost occupancy by birds. Following high tide, the observations generally continued until the roost had been vacated.

Table 4 summarises roost occupancy by Variable Oystercatcher (VO) and the survey duration relative to the entire tidal cycle. The focus on variable oystercatcher in the analysis of the results was considered appropriate in an ecological context as a result of the following –

(i) Variable oystercatcher is an endemic species (its entire population is in New Zealand).

(ii) Its population is relatively low in comparison with South Island Pied oystercatcher (SIPO) for example.

(iii) It breeds locally rather than migrating (mainly) to the South Island (as for pied oystercatcher) and is therefore a consistent component of the local avifauna.

(iv) Its population in the survey area.

(v) Variable oystercatcher is the key indicator of coastal bird use of the high tide roost on a regular tidal and seasonal basis.

The field observations of variable oystercatcher are used below to indicate the period in which the roost is unoccupied and therefore any potential disturbance factors and potential effects on roosting birds would be avoided.

The key for Table 4 is as follows:

Key :
LW = low water
LW+1 = low water plus one hour etc
HW = high water
HW+1 = high water plus one hour etc
VO = variable oystercatcher

Table 4: PERIODS OF ROOST OCCUPANCY BY VARIABLE OYSTERCATCHER

4-Jul-22													
Tidal state :	LW	LW+1	+2	+3	+4	+5	HW	HW+1	+2	+3	+4	+5	
Time :				0800	0900	1000	1100	1200	1300	1400			
Survey period :				+	+	+	+	+	+	+			
VO at roost :					V	V	V						
Note : anomalous result relative to results below; all VO to Cox's Bay ramps to roost after HW													

18-Jul-22													
Tidal state :	LW	LW+1	+2	+3	+4	+5	HW	HW+1	+2	+3	+4	+5	
Time:				0800	0900	1000	1100	1200	1300	1400	1500	1600	
Survey period :				+	+	+	+	+	+	+			
VO at roost :					V	V	V	V	V				
Note : VO to roost at 0905; roost fully vacated at 1325													

30-Sep-22													
Tidal state :	LW	LW+1	+2	+3	+4	+5	HW	HW+1	+2	+3	+4	+5	
Time :				0830	0930	1030	1130	1230	1330	1430			
Survey period :				+	+	+	+	+	+	+			
VO at roost :					V	V	V	V	V				
Note : VO to roost at 0900; roost vacated at 1430													

28-Oct-22													
Tidal state :	LW	LW+1	+2	+3	+4	+5	HW	HW+1	+2	+3	+4	+5	
Time :				0700	0800	0900	1000	1100	1200	1300	1400		
Survey period :				+	+	+	+	+	+	+	+		
VO at roost :					V	V	V	V	V	V			
Note : VO to roost at 0720; roost vacated by 1400.													

13-Jan-23													
Tidal state :	LW	LW+1	+2	+3	+4	+5	HW	HW+1	+2	+3	+4	+5	
Time :				0930	1030	1130	1230	1330	1430	1530			
Survey period :				+	+	+	+	+	+	+			
VO at roost :				V	V	V	V	V	V	V			
Note : VO to roost at 0920; roost vacated 1545.													

23-Feb-23													
Tidal state :	LW	LW+1	+2	+3	+4	+5	HW	HW+1	+2	+3	+4	+5	
Time :			0700	0800	0900	1000	1100	1200	1300	1400	1500		
Survey period :			+	+	+	+	+	+	+	+	+		
VO at roost :				V	V	V	V	V	V				
Note : first VO to roost at 0750; no VO at roost at 1430													

23-Mar-23													
Tidal state :	LW	LW+1	+2	+3	+4	+5	HW	HW+1	+2	+3	+4	+5	
Time :					0730	0830	0930	1030	1130	1230			
Survey period :					+	+	+	+	+	+			
VO at roost :				?V	V	V	V	V	V				
Note : VO assumed to be at roost at 0630; roost vacant at 1200.													

27-Apr-23													
Tidal state :	LW	LW+1	+2	+3	+4	+5	HW	HW+1	+2	+3	+4	+5	
Time :				0930	1030	1130	1230	1330	1430	1530			
Survey period :				+	+	+	+	+	+	+			
VO at roost :					V	V	V	V	V				
Note : 1 x VO to roost at 1012; roost vacated at 1515 – 61 VO & 92 SIPO; conservative 'VO at roost' decision.													

Overall, and with the result for 4 July 2022 noted as being atypical behaviour at the Rawene roost (total roost desertion at high tide) relative to the other seven surveys, Variable Oystercatchers and other species variously were generally present at the roost for about half a 12-hour tidal cycle (i.e. there was a significant period of the tidal cycle where no roosting activity would be disturbed by any extraneous factors because birds were not there). For clarity, the period of roost vacancy is summarised in Table 5 with the annotation (0) indicating that no birds were present at the roost. The periods in which no Variable Oystercatchers were present were also those in which no South Island pied oystercatcher, Caspian tern or pied shag were present.

Table 5: Periods of Roost Vacancy recorded during the surveys (result for 4 July, 2022 omitted)

	18 July 2022	30 Sept 2022	28 Oct 2022	13 Jan 2023	23 Feb 2023	23 Mar 2023	27 Apr 2023
High Water plus 3 Hours	0	0	–	–	0	0	0
High Water plus 4 Hours	0	0	0	0	0	0	0
High Water plus 5 Hours	0	0	0	0	0	0	0
Low Water	0	0	0	0	0	0	0
Low Water plus 1 hour	0	0	0	0	0	0	0
Low Water plus 2 hours	0	0	0	0	0	0	0
Low Water plus 3 hours	0	0	0	–	–	–?	0
Note: (?) birds assumed to have been at roost							

Key: roost vacant (0)

4.4 Meola Reef and Outer Cox's Bay

Both areas were surveyed over eight low tides and the numbers and species of birds present recorded. The broader survey area was separated into 'Meola Reef' and 'Outer Cox's Bay' because (a) the habitats are different with a greater diversity of habitat types at Meola Reef and (b), it is understood that the flight path of a helicopter using the proposed helipad would be over Outer Cox's Bay rather than over Meola Reef to the west.[6]

The species recorded during the low tide counts are shown in Table 6. Additional species recorded are also noted below. The conservation status of species is from Robertson et al, 2021.

[6] As is discussed later in this report, a key recommendation is that flight paths associated with the proposed helipad avoid the Meola Reef airspace; movement to and from the proposed helipad should use a north to north- north east route.

Table 6: Species recorded using the Meola Reef and Outer Cox's Bay areas at Low Tide

Species	Scientific name	Threat status	Meola Reef	Outer Cox's Bay
Black Swan	*Cygnus atratus*	Not threatened	✓	✓
Black-backed Gull	*Larus dominicanus dominicanus*	Not threatened	✓	✓
Caspian tern	*Hydroprogne caspia*	Threatened - Nationally vulnerable	✓	✓
Eastern Bar-tailed Godwit	*Limosa lapponica baueri*	At Risk - declining	✓	✓
Kingfisher	*Todiramphus sanctus*	Not threatened	✓	✓
Lesser Knot	*Calidris canutus*	At risk - declining	✓	
Little Black Shag	*Phalacrocorax sulcirostris*	At risk - naturally uncommon		✓
Little Shag	*Microcarbo melanoleucos*	At risk (relict)	✓	✓
New Zealand Dotterel	*Charadrius obscurus aquilonius*	Threatened - Nationallly increasing	✓	
Paradise Shelduck	*Tadorna variegata*	Not threatened	✓	
Pied Shag	*Phalacrocorax varius varius*	At risk - recovering	✓	
Pied Stilt	*Himantopus himantopus*	At risk - recovering	✓	✓
Red-billed Gull	*Larus novaehollandiae scopulinu*	At Risk - declining	✓	✓
Royal Spoonbill	*Platalea regia*	At risk - naturally uncommon	✓	✓
South Island Pied Oystercatcher	*Haematopus finschi*	At Risk - declining	✓	✓
Variable Oystercatcher	*Haematopus unicolor*	At risk - recovering	✓	✓
White-faced Heron	*Egretta novaehollandiae*	Not threatened	✓	✓

The Meola Reef and Outer Cox's Bay habitats were utilised by a similar diversity of species at low tide; Lesser Knot was recorded at Meola Reef only (1 individual once only) while species that were not recorded at Outer Cox's Bay at low tide were Little Black Shag, NZ Dotterel, Paradise Shelduck and Pied Shag. Additional species recorded at Meola Reef during the roosting surveys were Banded Dotterel; pohowera (4 July, 2022 only; 10 individuals; At Risk - declining), Spur-winged Plover (28 October, 2022; 1 individual; Not Threatened) and White-fronted Tern; tara (23 March, 2023; max. 27 individuals; At Risk - Declining).

Overall, two threatened species were recorded; NZ Dotterel and Caspian Tern variously at Meola Reef and Outer Cox's Bay. One NZ Dotterel was recorded on one occasion at Meola Reef during a low tide survey and two were recorded in Outer Cox's Bay on one occasion during a roosting survey (at half tide rising). Caspian Tern was common at Meola Reef and recorded in all low tide counts with an average number of 4.3 and a maximum of 13 individuals. Only two Caspian Tern were recorded at Outer Cox's Bay during the low tide counts but they were occasional during the roosting surveys.

NZ Dotterel is considered to be 'recovering' as a result of active management at its mainly coastal nesting habitats. Caspian Tern is also considered to be a threatened species as a result of disturbance and predation at its coastal nesting sites.

No suitable nesting sites for either NZ Dotterel or Caspian Tern are present within or adjacent to the survey area.

Table 7 and Table 8 summarise the low tide counts for Meola Reef and Outer Cox's Bay.

Table 7: Meola Reef Low tide summary. Numbers of birds of each species seen at Low tide at Spring tide and Neap tide in each quarter.

Date	15/07/2022	12/08/2022	7/10/2022	27/10/2022	18/01/2023	21/02/2023	3/04/2023	20/04/2023	Mean	%
Tide	**Neap**	**Spring**	**Neap**	**Spring**	**Neap**	**Spring**	**Neap**	**Spring**		
Species										
Black Swan	0	0	27	12	85	82	73	0	34.9	20.2
Black-backed Gull	0	9	19	9	8	15	37	36	16.6	9.6
Caspian tern	3	4	1	1	2	13	1	9	4.3	2.5
Eastern Bar-tailed Godwit	4	9	76	12	98	47	5	0	31.4	18.1
Kingfisher	0	2	0	0	0	0	0	1	0.4	0.2
Lesser Knot	0	0	0	1	0	0	0	0	0.1	0.1
Little Shag	2	2	1	3	0	0	11	2	2.6	1.5
New Zealand Dotterel	0	0	1	0	0	0	0	0	0.1	0.1
Paradise Shelduck	0	0	0	1	0	0	0	0	0.1	0.1
Pied Shag	0	0	0	0	1	0	0	5	0.8	0.4
Pied Stilt	2	0	0	0	0	0	15	8	3.1	1.8
Red-billed Gull	7	8	33	1	45	18	183	20	39.4	22.8
Royal Spoonbill	2	0	1	0	0	0	0	0	0.4	0.2
South Island Pied Oystercatcher	14	0	1	0	14	16	25	26	12.0	6.9
Variable Oystercatcher	14	11	11	21	6	20	15	39	17.1	9.9
White-faced Heron	2	6	5	4	27	7	25	1	9.6	5.6
TOTAL	**50**	**51**	**176**	**65**	**286**	**218**	**390**	**147**	**172.9**	**100**
Total records										
1383										

Table 8: Outer Cox's Bay Low tide summary. Numbers of birds of each species seen at Low tide at Spring tide and Neap tide in each quarter

Date	15/07/2022	12/08/2022	7/10/2022	27/10/2022	18/01/2023	21/02/2023	3/04/2023	20/04/2023	Mean	%
Tide	Neap	Spring	Neap	Spring	Neap	Spring	Neap	Spring		
Species										
Black Swan	9	0	0	66	34	124	92	166	61.4	25.0
Black-backed Gull	24	29	0	9	4	55	26	37	23.0	9.4
Caspian tern	0	2	0	0	0	0	0	0	0.3	0.1
Eastern Bar-tailed Godwit	0	0	99	35	15	0	0	0	18.6	7.6
Kingfisher	1	0	2	3	0	0	0	0	0.8	0.3
Little Black Shag	0	0	0	0	0	0	0	5	0.6	0.3
Little Shag	0	0	0	0	0	1	0	0	0.1	0.05
Pied Stilt	47	6	0	0	0	0	19	29	12.6	5.1
Red-billed Gull	73	386	86	49	17	85	58	99	106.6	43.5
Royal Spoonbill	3	0	4	0	0	0	0	0	0.9	0.4
South Island Pied Oystercatcher	1	5	0	0	4	5	1	0	2.0	0.8
Variable Oystercatcher	2	5	0	0	2	0	0	0	1.1	0.5
White-faced Heron	8	15	8	9	9	33	20	36	17.3	7.0
TOTAL	168	448	199	171	85	303	216	372	245.25	100
Total records										
1962										

The total number of records at Outer Cox's Bay (1962) were significantly higher statistically than those at Meola Reef (1383) (chi-squared = 100.2; p 001). The overall averages at low tide were 245.3 at Outer Cox's Bay and 172.9 at Meola Reef; i.e. significantly higher statistically at the former (chi-squared = 12.5; p 0.01).

The coastal bird population at Meola Reef was dominated, in decreasing order, by Red-billed Gull (39.4% of records), Black Swan (34.9%), Eastern Bar-Tailed Godwit (31.4%), Variable Oystercatcher (17.1%) and Black-backed Gull (16.6%). The remainder of the species each comprised less than 10% of the population.
Similarly, the population at Outer Cox's Bay was dominated by Red-billed Gull (43.5% of records) with Black Swan (25.0%) but the remaining species were each all less than 10% of the population. Black-backed Gull (9.4%) and Eastern Bar-Tailed Godwit (7.6%) were prominent, as at Meola Reef, but below the 10% dominance level; in contrast Variable Oystercatcher was infrequent (0.5%).

While Variable Oystercatcher was the most notable species in Outer Cox's Bay at high tide, it was sparse at low tide with an average of 1.1 individuals (SE = 0.64) compared with a significantly higher average number at Meola Reef of 17.1 individuals (SE = 3.6; chi-squared = 14.0; p 0.001).

A notable species at low tide in Outer Cox's Bay was Eastern Bar-Tailed Godwit but it was only present in November 2022 and January 2023 in contrast to Meola Reef where it was recorded in 7 of 8 surveys at low tide. The average number of Bar-Tailed Godwit at Outer Cox's Bay was relatively low at 18.6 individuals but higher at Meola Reef (31.4 individuals) (chi-squared= 3.3; not significant at p 0.05 but significant at p 0.1).

With Black Swan deleted (refer Note of Table 12), the averages at low tide remained significantly different statistically - 184.0 at Outer Cox's Bay and 138.0 at Meola Reef (chi-squared = 6.6; p 0.05).

Meola Reef provided the more consistently attractive habitat to Bar-Tailed Godwit. The population of Bar-Tailed Godwit in New Zealand is about 75,000 birds and it is the most common Arctic migrant with a probable world population of less than 150,000 individuals[3]. Eastern Bar-Tailed Godwit is an 'at risk' species in New Zealand. but the main cause of its population decrease is extensive habitat loss at critical migration stopover sites in the Yellow Sea region[3].

The highest numbers of Bar-Tailed Godwit were 99 at Outer Cox's Bay (7 October 2022) and 98 at Meola Reef (18 January 2023). The maximum of 99 individuals was equivalent to 0.13% of the New Zealand population and 0.07% of the maximum estimated world population.

Overall, however, Outer Cox's Bay was dominated by Red-billed Gull and Black Swan at low tide; these two species comprised 68.5% of the records compared with 43.0% of the records at Meola Reef (chi-squared = 5.8; statistically significant difference at p 0.05).

Table 9: Summary of the average number of bird groups at low tide

Bird Group	Meola Reef	Outer Cox's Bay	Chi-squared	Significance of difference
Waders	73.9	52.5	3.6	0.1 (a)
Gulls	56	129.6	29.2	0.001
Other (b)	43	63.1	3.8	0.05

(a) 0.05 significance = 3.8
(b) Swan, Shags, Terns, Kingfisher, Ducks

Therefore, at low tide the average number of waders was higher at Meola Reef while the average numbers of Gulls and 'other' birds were higher at Outer Cox's Bay.

4.5 Habitat Use

Table 10 summarises habitat use at Meola Reef and Outer Cox's Bay at low tide. Clearly the most significant habitat use in Outer Cox's Bay is the occupation of the high tide roost. That has been discussed above in Section 4.1.

Table 10: Summary of habitat use at Low Tide (percentage)

Habitat Use	Meola Reef	Outer Cox's Bay
Feeding in Intertidal	70.3%	84.7%
Resting in Intertidal	28.4%	14%
Feeding over/in water	0.3%	0.3%
Resting on water	-	0.93%
Roosting/resting on poles etc	1%	0.07%

Feeding was the predominant habitat use activity at low tide throughout, an expected result, but appeared more prominent in Outer Cox's Bay mainly due to relatively high numbers of feeding Red-billed Gull at times. Large aggregations of feeding red-billed gulls at low tide are common at times throughout the larger inlets of Waitemata Harbour (pers. obs.). Chi-squared testing, however, indicated that the apparent difference was clearly not statistically significant (chi-squared = 1.4). In contrast, there was a significantly higher proportion (i.e. by 50%) of resting at Meola Reef (chi-squared = 4.8 p 0.05). That is likely to reflect the elevated intertidal areas along the reef and its generally more sheltered conditions than at Outer Cox's Bay.

Table 11 and Table 12 summarise the habitat use data for the period of about half tide rising to half tide falling.

Table 11: Habitat use activities – half tide rising to half tide falling (approx.) - percentages with Black Swan data excluded (refer note below).

	Meola Reef		Outer Cox's Bay	
Behaviour	Spring Tide	Neap Tide	Spring Tide	Neap Tide
FI	52.15%	44.94%	7.46%	3.06%
FW	-	0.11%	0.18%	0.16%
REI	31.49%	35.89%	2.14%	1.31%
REW	6.77%	1.06%	1.38%	1.20%
REG	6.51%	-	-	-
ROI	2.37%	1.70%	88.83%	94.27%
ROG	0.18%	15.44%	-	-
ROP	0.53%	0.86%	-	-

Code	Behaviour
FI	**Feeding** in the intertidal habitat
FW	**Feeding** in (e.g. shags) or over (e.g. terns) the water
REG	**Resting** on grass (end Garnet Road)
REI	**Resting** in the intertidal habitat
REW	**Resting** on the water
ROG	**Roosting** on grass (end Garnet Road)
ROI	**Roosting** in the intertidal area
ROP	**Resting/Roosting** on Plants (mangroves, dead trees, structures and debris)

NOTE: The Black Swan data have been excluded because the large number of Black Swan present (and the subsequent number of records arising) clearly skewed the results to the extent that they did not reflect the more 'typical' coastal bird population using intertidal habitats of the Harbour. Black Swan is more typically a lake species but has proliferated in Auckland in recent years as a result of the ecological demise of some Waikato lakes that were key habitats, and the increase of seagrass in Auckland harbours that is grazed by swans.

At Meola Reef the average proportion of birds (Table 11) feeding during the period half tide rising to half tide falling was 48.55% and the average proportion resting in the intertidal habitat was 33.69%. There was no statistical difference between spring tide and neap tide for either activity (chi-squared = 0.53 and 0.29 respectively; not significant). The proportion of roosting in the intertidal area at Meola Reef was low but birds occasionally roosted on the grass, road and carpark at the end of Garnet Road, mostly at neap tide.

The overall average (ie. average of spring plus neap tides) habitat use over this tidal period was as follows:

Meola Reef
Feeding : 46.45%
Resting/roosting : 53.55%

Habitat use at Outer Cox's Bay in the half tide rising to half tide falling period was dominated by roosting in the intertidal area (ie. the rock platform) that comprised an average of 91.55% of records. There was no statistical difference in the proportion of roosting between spring tides and neap tides (chi-squared = 0.16; not significant). Other activities were minor in comparison, noting

that tidal inundation of habitats was earlier and subsequent exposure later at Outer Cox's Bay compared with the inner Meola Reef area that also contains raised topography.

The overall average habitat use in Outer Cox's Bay over this tidal period, and in contrast to the Meola Reef average above, was as follows:

Outer Cox's Bay
Feeding : 5.43%
Resting & roosting : 94.57%

Table 12: Habitat use activities - half tide rising to half tide falling (approx.) – percentages – all data included.

	Meola Reef		Outer Cox's Bay	
Behaviour	Spring Tide	Neap Tide	Spring Tide	Neap Tide
FI	18.51%	15.51%	7.89%	2.50%
FW	0.0158	5.60%	0.92%	2.50%
REI	15.92%	13.03%	7.37%	0.90%
REW	61.60%	60.62%	3.43%	18.30%
REG	1.63%	-	-	-
ROI	0.59%	0.49%	80.39%	75.80%
ROG	0.04%	4.49%	-	-
ROP	0.13%	-	-	-

Code	Behaviour
FI	**Feeding** in the intertidal habitat
FW	**Feeding** in (e.g. shags) or over (e.g. terns) the water
REG	**Resting** on grass (end Garnet Road)
REI	**Resting** in the intertidal habitat
REW	**Resting** on the water
ROG	**Roosting** on grass (end Garnet Road)
ROI	**Roosting** in the intertidal area
ROP	**Resting/Roosting** on Plants (mangroves, dead trees, structures and debris)

NOTE: Table 12 shows the habitat use for half tide rising to half tide falling (approx.) with all data (i.e. including Black Swan) included.

Although the conclusions regarding the habitat use activities do not change with the data for Black Swan included, the

Table 11 results more accurately reflect 'typical' coastal birds e.g. waders, gulls, shags, terns. The high proportion of resting at Meola Reef in Table 12 refers mainly to large aggregations of Black Swan that were especially common in that area.

4.6 Existing environment - conclusion

The high tide roost adjacent to 38 Rawene Ave is not recorded as an SEA, although it is proximate to Meola Reef, which is recorded as an SEA in the Plan. Notwithstanding, the high tide roost represents important habitat for a range of threatened and at-risk species, and as such, is subject to the 'avoidance' requirements originating in the NZCPS.

Against this discussion of the existing environment, the potential effects on coastal birds of the proposed helicopter operation are assessed below. It is also considered whether effects on the relevant species (and/or characteristics and qualities) can be avoided.

5. EFFECTS ASSESSMENT & RECOMMENDATIONS

5.1 Literature Summary

A primary concern where aircraft, including helicopters, are operated in the vicinity of bird habitats is the potential for bird strike. This can have very significant consequences for both the birds (often leading to fatalities) and the aircraft.

Information was obtained via a literature search and updating conclusions from data obtained during a 2007 assessment of proposed helicopter use. At that time the overall conclusion was that specific New Zealand data on bird strike by helicopters were sparse; that situation has not changed in 2023.

An analysis by Dolbeer et al, 2006 using 16 years of data showed that 0.6% of 64734 bird strike incidents involved helicopters and that the extent of damage from strikes exceeded that incurred by fixed-wing aircraft. The data indicated that the majority of bird strike incidents were en route (63%) (Dolbeer et al, 2018; Stadtmueller, 2016), reflecting their generally lower flying altitude. The majority (60%) of collisions with helicopters occurred in the 101-1000 feet (30-300m) altitude range compared with 20% for all aircraft in that range. The collisions with birds were lower in the descent and takeoff run phases of flights that would be the more usual flights at the proposed Rawene Ave helipad, and were 3% and 2% respectively. Generally, the number of bird-helicopter collisions declines by 32-44% for every 1000 foot (300 metre) gain in altitude (Dolbeer et al 2018).

New Zealand Civil Aviation Authority (CAA) provides advice to aircraft operators in its Good Aviation Practice document entitled 'Bird hazards' (CAA, 2020). Regarding helicopters specifically it advises as follows:

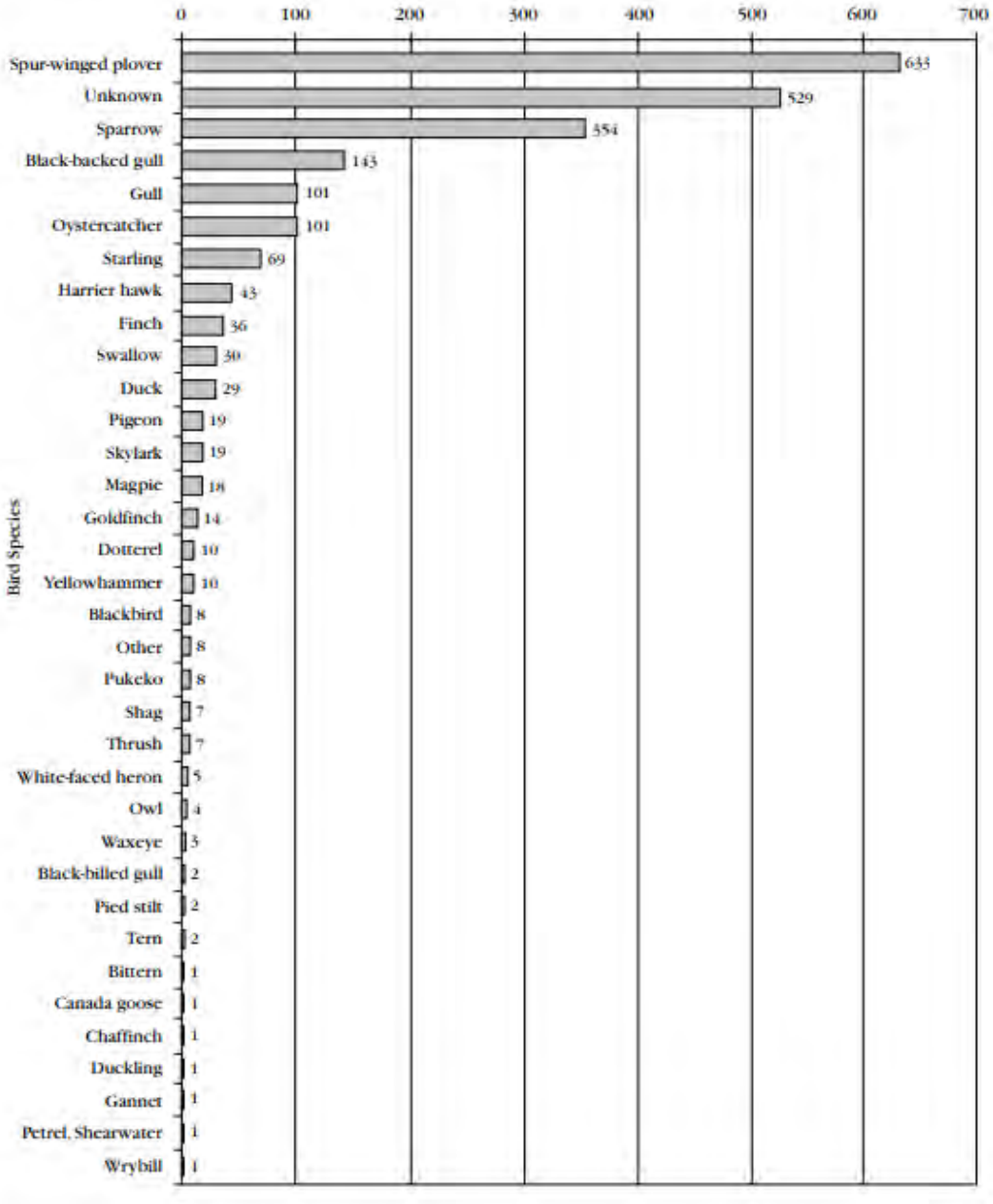
> *Helicopters fly in the same airspace as birds, often below 500 feet, and theoretically should face a higher bird strike risk. Birds, however, seem to perceive the presence of helicopters a lot easier than they do aeroplanes and move out of their path. This could be for a number of reasons; the relatively low airspeed, the large amount of downwash air, and the noise.*

In this instance, the proposed flights over the intertidal habitat would be infrequent and of short duration, with steep angles of arrival and departure. That is the typical flight pattern that occurs at the Heletranz Helicopters base at Rosedale Rd, Albany that is situated immediately adjacent to a significant waterfowl habitat at the Wastewater Treatment Plant (pers. obs.; 10 years of monthly surveys). The summary below of potential helicopter effects is from both the scientific literature and field observations (pers. obs.).

The species of birds recorded as having been involved with aircraft collisions, are shown in Table 13 (Department of Conservation, 2006) that refers to the 1999-2004 period, noting that 23.8% of records are 'unknown'. The data are biased towards fixed-wing aircraft and require caution in this instance where the focus is on helicopter movements, but are included to indicate the susceptibility of some species to collision with aircraft.

Spur-winged Plover was the most common species involved in aircraft collisions (and consequently is now not a protected species) followed by Sparrow, Black-backed Gull, Gull, Oystercatcher (presumably South Island Pied rather than Variable), Starling and Harrier. Spur-winged Plover was involved in 28.5% of incidents while coastal birds were involved in 18.2%.

Table 13: Bird species involved in bird strikes: October 1999-September 2004. Adapted from Department of Conservation (DOC), 2006[7].



Regardless of aircraft type, over- flights during low tide, when birds are spread out over the intertidal habitat may have a significantly different response than when birds are concentrated at a high tide roost (van der Grift and de Molenaar, 2008). Most commonly, major disturbances adjacent to high tide roosts result in mass desertion of the roost and large numbers of birds in the air in a high concentration. Some birds may return to the roost after a period while others may leave the area and move to alternative roosting sites (pers. obs.)

[7] New Zealand Department of Conservation (DOC) Strategy and Policy Group. 2006. Review of Level of Protection for Some New Zealand Wildlife. Public Discussion Document. Department of Conservation, Wellington

5.2 Previous Helicopter Trial

The impact of a helicopter approach, landing, shut down, start-up and take-off on coastal birds in Mangere Inlet was monitored by the author of this report during a flight in July 2005 (Bioresearches,2007; now Auckland Helicopters). The trial focussed on typical wading bird species, particularly endemic Wrybill; ngutu pare (Threatened; Nationally Increasing). The trial occurred during a rising tide, 3-4 hours prior to high water, when birds were using the habitat for feeding.

At the time of the helicopter's arrival the coastal birds (Wrybill, South Island Pied Oystercatcher, Red-billed Gull, White-faced Heron) were spread out across the intertidal habitat with Wrybill only about 60 – 70 metres from the helicopter's flight path.

There was no reaction whatsoever to the helicopter's approach and landing which was unexpected; Wrybill continued to feed and there was no movement by any of the other coastal birds nearby. After a 10- minute shutdown the engine re-start resulted in a startle reaction by the closest birds (60-70 metres away) that flew about 70 metres and then continued to feed. As the tide was rising that would anyway have been the normal pattern of movement expected by the birds. Similarly, birds feeding about 100m plus away showed no response. The helicopter's departure and ascent did not cause any fright reactions or any movement of birds from the immediate area of the flight path. The helicopter also flew directly over four Royal Spoonbill which showed no reaction and continued to feed and preen. Immediately following the helicopter's departure, birds present within 300 metres of its flight path were Bar-Tailed Godwit (46 individuals), Black-backed Gull (5), Pied Stilt (3), Red-billed Gull (40), South Island Pied Oystercatcher (97), White-faced Heron (3) and Wrybill (133), a total of 327 individuals.

A subsequent analysis in 2023 compared the numbers and diversity of coastal birds in the Onehunga-Mangere Inlet section of the Manukau Harbour where regular helicopter flights occur to and from the Auckland Helicopter base. Data supplied by Ornithological Society of New Zealand (Birds New Zealand) are acknowledged and presented in Appendix 7.4. The data were collected at high tide roosts around the Onehunga-Mangere Inlet area and are considered to be indicative of the numbers and diversity of birds using those habitats for feeding and resting during low tides. The periods 2005-07 and 2016-18 correspond to before and after heliport establishment respectively. Two spread sheets are shown. The first is with overseas migrant species such as lesser knot and eastern bar-tailed godwit excluded on the basis that the New Zealand populations are dependent upon factors outside New Zealand such as in the Yellow Sea, western Alaska and various points along the East Asian Australasian Flyway. The Onehunga-Mangere Inlet average results for lesser knot are a good example with an average of 450 individuals in the 2005-07 period and an average of 10.3 in the 2016-18 period.

With respect to the data excluding overseas migrant species, the abundance data show 229.3 individuals pre-establishment of the helicopter base and 357.0 individuals post-establishment of the helicopter base. The difference is statistically significant (chi-squared = 27.8; p 0.001) with the higher average occurring following the commencement of regular helicopter flights. The species diversity data indicate that there was no change, and in particular no decrease, in the diversity of

coastal birds following the presence of regular helicopter movements (chi-squared = 0.03; not statistically significant).

Relevantly, there were no statistically significant differences in the average numbers of South Island pied oystercatcher, variable oystercatcher, pied stilt, white-faced heron or red-billed gull using the Mangere Inlet roosts following the commencement of helicopter flights.

These data and the observations of the effects of actual helicopter flight would indicate the effects on feeding and resting birds at low tide in Outer Cox's Bay would be minor and transitory and that the overall coastal bird values of the wider area would not be diminished.

That conclusion, however, does not apply to birds using a high tide roost, only resting and feeding birds using the exposed intertidal habitat between high tide periods.

5.3 Assumptions

It is recommended that flights arriving at and departing from the proposed helipad would use a north-northeast flight path approximately in line with the Chelsea Sugar Refinery. That would avoid flights over Meola Reef and the SEA – M1 zone defined by the Plan. It is understood that this recommendation has been accepted by the applicant and is to be proposed as a condition of resource consent.

It is further understood that the likely descent and approach of a helicopter from the standard minimum flight altitude of 500 feet would take about 57 seconds. Based on a conservative best rate of climb of 1600 feet per second the time required to reach 500 feet would be 19 seconds. The combined engine close down and engine start up period required for the Airbus H130T2 helicopter that would use the helipad is 1 minute i.e. 30 seconds respectively for both close down and start up (Hegley Acoustic Consultants 2021 & 2022a).

Based on the above assessment, the total period of helicopter activity below the standard flight altitude of 500 feet immediately adjacent to the site would be about 136 seconds or 2.27 minutes. Therefore, any potential disturbance to feeding and resting birds at low tide would be of a temporary nature. It is noted that at present there is no impediment to helicopter flights over this site at an altitude of 500 feet.

Noise contours adjacent to the helipad (Hegley Acoustic Consultants,2021 & 2022b) indicate that the maximum noise level applying to the coastal bird feeding habitats at low tide would be about 80 to 85 dB LAF max for 2-3 minutes. The average noise level would be about 50 dB Ldn. In perspective, a similar exercise by Hegley Acoustic Consultants for the proposed (but not proceeded with) Rosebank Road heliport (Oceania Helicopters) showed that the noise level from motorway traffic at the southern end of Traherne Island, Waterview (Pollen Island Marine Reserve) was 71 dBA on a regular basis. That area has high ecological values and is a significant coastal bird feeding and resting habitat. Under the Plan the wider Pollen and Traherne Island area is designated as an SEA – M1 zone: area 53w1-2 consists of shell banks that 'form key roosting and nesting sites for

shorebirds and there is extensive intertidal feeding habitat for waders along this coastline' (AUP; Schedule 4, p46).

5.4 Assessment

5.4.1 Effects on Rawene Ave roost

The presence of a helicopter in proximity to roosting birds would cause increased noise levels, and the close overhead presence of an aircraft may be perceived by the birds as a potential predator. The reaction would be desertion of the roost and dispersal of birds to available roosting sites nearby. The alternative areas available for roosting are dependent on the height of high tides and their use and will be variable.

Other potential disturbance factors have been discussed in Section 4.2 above and can include pedestrians, dogs (especially unleashed), watercraft maintenance in the Cox's Bay mooring area, watercraft movements and the use of the nearby boat ramps in the eastern part of Outer Cox's Bay. Disturbance of roosting birds is also highly likely as a result of activities occurring on the roost itself, on the adjoining promontory and along the cliff edge above the roost. In this regard it is noted that there is no impediment to the use of the sandstone platform of the roost by the general public or local residents.

The observations of roost occupancy indicated that (with the 4 July 2022 atypical result excluded) the roost was generally occupied from half tide rising (i.e. LW plus 3 hours) to half tide falling (i.e. HW plus 3 hours) or for about 6 hours of the twelve- hour tidal cycle. Therefore, there was a period either side of low tide when the roost was not occupied by any species of coastal bird.

With behavioural variations allowed for, the period where there is certainty that no Variable Oystercatcher (or other species) will be present at the roost is from High Water plus 4 hours to Low Water plus 2 hours (i.e. a four-hour period of two hours either side of low tide). A four-hour period of potential helicopter operation either side of low water would provide assurance, supported by the data on bird presence and variability, that any effect on birds roosting at the Rawene Ave high tide roost was avoided.

There are several other variables that can influence the behaviour of coastal birds at high tide roosts such as seasonal differences of bird diversity and abundance; when bird numbers are high and roosting space is at a premium, roosting birds are more easily disturbed and there is a higher probability of birds vacating the roost 'earlier', especially as the tide ebbs. Secondly there are highly variable local levels of disturbance, such as noise, that can result in birds avoiding or deserting a roost. For example, there was intermittent vessel maintenance of low frequency occurring in the mooring area immediately adjacent to the Rawene Ave roost during this survey. Climatic conditions are also variables that can affect the behaviour of roosting birds and their presence at a roost, particularly wading species that react to their preferred feeding habitats being exposed and inundated by tidal movement. That can be affected by wind direction, wind strength and storm surges together with barometric pressure; a difference in barometric pressure of 1 hectopascal (hPa) can cause a difference in tidal height of 1cm – a low barometer will increase tidal height while

a high barometer will depress it (www.linz.govt.nz). In combination and individually, such factors can result in the behaviour of birds diverging from the times of both high tide and low tide that are predicted in the standard tide tables.

The period of two hours either side of high tide has been carefully considered to accommodate these variables, including bird behaviour generally, especially by coastal birds at a high tide roost (pers. obs.). Species such as variable oystercatcher and individual birds will commonly linger at a roost until a preferred feeding habitat (eg outer Meola Reef rocky habitat) is exposed at a later stage of an ebb tide. Conversely, some birds will vacate a high tide roost as soon as patches of upper intertidal habitat become exposed after an ebb tide commences.

Based on the above observations and surveys of roosting by variable oystercatcher in particular, that is considered to be the key indicator of roosting behaviour at this site, and allowing for variability in roost departures around the time of half tide, it is similarly concluded that there is a **period of 2 hours either side of low tide** (i.e. 4 hours in total; from high water plus 4 hours to low water plus 2 hours) **when use of the proposed helipad would avoid any adverse effects on roosting birds**, roosting behaviour, or the quality of the roost in terms of its ongoing attractiveness to birds. As shown in Table 5 there were occasions when birds were at the roost at half-tide falling (i.e. High Water plus 3 hours) and at half-tide rising (i.e. Low Water plus 3 hours); a 4 hour period would, therefore, allow for behavioural variability that is typical of coastal birds, and ensure that effects on roosting birds were avoided.

Therefore, the recommendation of two hours either side of low tide reflects the results of the surveys and, supported by the extensive observations of bird behaviour at the site, is considered the most appropriate ecological conclusion.

Equally, if for any other reason, birds are not present at the Rawene Ave high tide roost, then it is self-evident that disturbance effects associated with helicopter takeoff and landing would not be experienced (i.e. there would be no 'receptor' for those effects).

5.4.2 Recommendation

It is recommended that the proposed helicopter arrivals and departures are managed to only occur in the period two hours either side of low tide; that would ensure that any effects on all the Threatened and At Risk species using the high tide roost are avoided and that the quality, and significance of the roost are not compromised.

5.4.3 Effects on Meola Reef and Outer Cox's Bay areas

The diversity of birds recorded at low tide in the Meola Reef and Outer Cox's Bay areas was similar and was moderate-high over the survey period.

Two threatened species were recorded, Caspian tern and NZ dotterel. At low tide Caspian tern was recorded in both areas while NZ dotterel was only recorded at Meola Reef. Numbers and occurrence of those species were low in Outer Cox's Bay.

A total of nine At Risk species were recorded at low tide using the Meola Creek habitats while eight At Risk species were recorded at Outer Cox's Bay, noting that of the 17 species recorded across the entire survey area, 12 are considered either Threatened or At Risk.

Average numbers of birds were significantly higher in Outer Cox's Bay than at Meola Reef but Outer Cox's Bay was dominated by Red-billed Gull and Black Swan, neither of which is particularly sensitive to disturbance factors; similarly, Meola Reef was also dominated by Red-billed Gull and Black Swan but Eastern Bar-Tailed Godwit, Variable Oystercatcher and Black-backed Gull were also relatively common. Meola Reef was the more consistently attractive habitat to Bar-Tailed Godwit and was generally the more significant habitat for wading birds, whereas Outer Cox's Bay was dominated by Gulls.

To place the dominant species numbers in perspective, Black-backed Gull is not a protected species, while Black Swan is not threatened and is a gamebird; neither is of particular conservation concern. The maximum number of Variable Oystercatcher recorded during low tide was 5 individuals and that is equivalent to 0.09% of the total population. The maximum number of eastern Bar-Tailed Godwit recorded was 99 (in one survey only).

Red-billed Gull numbers were higher with a maximum recorded at low tide in Outer Cox's Bay of 386 individuals (12 August 2022) but with a significantly lower average number statistically of 106.6 individuals (chi-squared = 158.5; p less than 0.001).

Therefore, although relatively high numbers of the dominant species were recorded using Outer Cox's Bay during low tide, the numbers were not significant in the context of either their conservation status (two species – Black Swan, Red-billed Gull), or in the context of their national populations (three species -Variable Oystercatcher, eastern Bar-Tailed Godwit, Red-billed Gull), especially as the potential effect would be intermittent, short term and temporary.

Feeding was the most common activity at low tide with a significantly higher proportion of resting at Meola Reef that has the greater habitat diversity and more elevated topography in parts.

As discussed above, indications from the literature, supported by empirical observations, are that collisions between birds and helicopters are of low probability; in this instance the approach and departure flight paths would be steep and of short duration, and occur at low tide with birds well separated from the aircraft. Spur-winged Plover is the most common species involved in aircraft collisions in New Zealand (see Section 5.1). Spur-winged Plover was an incidental species only, in this survey area. Collision of birds with a helicopter using the proposed helipad at Rawene Ave is considered unlikely, especially as the period of potential collision risk would be 2 to 3 minutes per flight; in the event of a collision, the effect on the coastal avifauna would be less than minor.

In general, the reactions of coastal birds to helicopters have been recorded as both minor and temporary with no indication that uses of nearby intertidal habitats are diminished. There was little reaction by birds to a helicopter flying at a relatively low altitude over Mangere Inlet

(Bioresearches, 2007) and there is no indication that a 'helicopter induced' decrease in coastal bird populations in that area has occurred, particularly regarding species that are frequent in Outer Cox's Bay. Similarly, the effect of low altitude vertical training flights from close to ground level to about 50-100 feet on feeding wading birds about 500 metres away was observed at the Wairoa River Mouth, Clevedon during a coastal bird survey of that area; no significant disruption to feeding activities occurred (pers. obs.). Further, there is virtually no reaction by feeding birds close to large commercial aircraft taking off and landing at the western end of the runway at Auckland International Airport (pers. obs.).

Nevertheless, there will be displacement of feeding birds at times with the effects diminishing with increasing distance from the helicopter. Birds using the Meola Reef habitats would be some 300 to 400 metres from the helicopter on the flight path assumed above. If there was any reaction it would be less than minor and would not decrease the diversity of coastal birds using that area or diminish its value as a coastal bird habitat. The significance of the SEA-M1 zone of the Auckland Unitary Plan would not be compromised.

Similarly, there are likely to be startle reactions at times by birds feeding in Outer Cox's Bay, especially at helicopter start up. Their typical startle reaction is to fly a short distance (eg. 50-100 metres), land and resume feeding. Movement within the intertidal feeding areas is the normal behaviour of feeding birds and the effect of occasional startle reactions as a result of helicopter presence for 2 to 3 minutes would also be less than minor in an ecological context, have no significant ecological consequences and would not diminish the value of Outer Cox's Bay to feeding and resting coastal birds.

It is concluded that based on the information above, any effects on Threatened and At Risk species using the Outer Cox's Bay habitats two hours either side of low water would be both minor and transitory and would not diminish the coastal bird values of either Meola Reef or Cox's Bay, including that it would not noticeably reduce the level of use of those areas.

5.4.4 Recommendation

The recommended flight path two hours either side of low tide should be in a north-northeast direction to avoid flying over Meola Reef that, in this survey, was the more notable coastal bird habitat, and to avoid flying over the SEA-M1 zone as designated in the Auckland Unitary Plan.

5.4.5 Assessment against NPS-IB

Effects on SEA-M1, including in particular those effects set out at cl 3.10(2) of the NPS-IB, are avoided as noted above, and will be otherwise managed by avoiding and minimising in accordance with the effects management hierarchy as set out in that policy document.

With recommendations on the flight path and helipad usage, the effects on the Rawene Ave Roost (which is not an SNA pursuant to the NPS-IB) will not be significant, and will not result in any overall loss of biodiversity and otherwise give effect to the objective and policies of the NPS-IB.

5.5 Overall conclusion as to effects

Overall, provided helicopter arrivals and departures occur in the period two hours either side of low tide and the flight path avoids traversing Meola Reef and its Significant Ecological Area, any potential effects on the Rawene Ave high tide roost would be avoided, and the effects on feeding and resting birds at low tide would at most be minor and transitory; material harm to those bird species would be avoided; the use of those areas would not be noticeably reduced; and the coastal bird biodiversity and abundance and the significance of the Meola Reef – Outer Cox's Bay habitats would not be diminished.

6. REFERENCES

Auckland Council, 2012. Auckland Council's Indigenous Biodiversity Strategy. 41pp

Bioresearches, 2007. Proposed Pikes Point Heliport Effects on Avifauna. For Ports of Auckland Ltd. 38pp

CAA, 2020 (revised). Bird Hazards. Good Aviation Practice. Civil Aviation Authority of New Zealand.

Denyer, K and Robertson, H 2016. National guidelines for the assessment of potential Ramsar wetlands in New Zealand. Department of Conservation. 62pp

Department of Conservation, 2006. Review of Level of Protection for some New Zealand Wildlife. Strategy and Policy Group Public Discussion Document. 44 pp

Dolbeer,RA; Wright,SE and Cleary, EC, 2006. Bird Strikes to Civil Helicopters in the United States, 1990-2005. Appendix A, pp 45-50 in Cleary, EC; Dolbeer, RA and Wright SE 2006. Wildlife Strikes to Civil Aircraft in the United States 1990-2005. US Department of Agriculture, Federal Aviation Authority, Serial Report No. 12.

Dolbeer, RA; Begier, MJ and Weller, JR 2018. The National Wildlife Strike Database: A Scientific Foundation to Enhance Aviation Safety. USDA Wildlife Services (https://digitalcommons.uni.edu/icwdm_usdanwrc)

Hegley Acoustic Consultants. 2021. Proposed Helipad. 38 Rawene Avenue Westmere. Assessment of Noise. Report No 21021. 11pp.

Hegley Acoustic Consultants. 2022a. Consent Application LUC60389929 – 38 Rawene Avenue, Westmere. Request for further information – 21 March, 2022 (to Mount Hobson Group) 5pp.

Hegley Acoustic Consultants. 2022b. Consent Application LUC60389929 – 38 Rawene Avenue, Westmere. Request for further information – 10 June, 2022 (to Mount Hobson Group) 6pp.

Robertson, HA; Baird, KA; Elliot, GP; Hitchmough, RA; McArthur, NJ; Makan, TD; Miskelly, CM; O'Donnell, CFJ; Sagar, PM; Scofeld, RP; Taylor, GA and Michel,P. 2021. Conservation status of birds in Aotearoa New Zealand, 2021 . New Zealand Threat Classification Series 36. Dept of Conservation 43 pp.

Stadtmueller, T 2016. Rotocraft Bird Strike Data. US Dept. Transportation, FAA. DOT/FAA/TC-TN 16/48.

Van der Grift, EA and de Molenaar, 2008. Effects of low flying aircraft on wildlife. Literature review. Alterra, Wageningen, The Netherlands.

7. APPENDIX

7.1 HIGH TIDE ROOST RAW DATA

7.1.1 WINTER 2022

7.1.1.1 MEOLA REEF

Table 14: Meola Reef Neap tide WINTER roost data 4/7/2022

Location	Meola Reef													
Date	4/07/2022													
Tide	Neap tide													
Time	8:00		9:00		10:00		11:00		12:00		13:00		14:00	
Tidal state	LW+3		LW+4		LW+5		HW		HW+1		HW+2		HW+3	
Species	NUMBER	BEHAVIOUR	NUMBER	BEHAVIOUR	NUMBER	BEHAVIOUR	NUMBER	BEHAVIOUR	NUMBER	BEHAVIOUR	NUMBER	BEHAVIOUR	NUMBER	BEHAVIOUR
Banded Dotterel	10	FI												
Black-backed Gull											1	REI	5	REI
Black Swan	75	REW	36	REW					82	REW	91	REW	118	REW
Caspian Tern														
Eastern Bar-Tailed Godwit	6	FI												
Kingfisher													1	FI
Little Shag											4	REI		
Pied Stilt	25	FI	11	FI										
"			39	REI										
Red-billed Gull	58	FI	1	REI							4	FI	82	REI
South Island Pied Oystercatcher	9	FI	33	REI							10	FI	13	FI
"											11	REI		
Variable Oystercatcher	2	FI	2	REI									6	FI
White-faced Heron													2	REI
Total number	**185**		**122**		**0**		**0**		**82**		**121**		**227**	

Table 15: Meola Reef Spring tide WINTER roost data 18/7/2022

Location	Meola Reef													
Date	18/07/2022													
Tide	Spring tide													
Time	8:00		9:00		10:00		11:00		12:00		13:00		14:00	
Tidal state	LW+3		LW+4		LW+5		HW		HW+1		HW+2		HW+3	
Species	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV
Black-backed Gull	2	REI	1	REI			1	REW	4	REI	1	REW	5	REI
Black Swan	16	REW	15	REI	9	REW	20	REW	19	REW	12	REI	3	REI
Caspian Tern														
Eastern Bar-Tailed Godwit														
Kingfisher													1	FI
Little Shag											1	REI		
Little Black Shag											5	REI		
Pied Stilt	4	FI											20	FI
"	3	REI											4	REI
Pied Shag													1	REI
Red-billed Gull	17	FI	24	REI	12	REI			22	REI	40	REI	177	FI
"													65	REW
Royal Spoonbill													1	REI
South Island Pied Oystercatcher	10	FI									11	REI	13	FI
"														
Variable Oystercatcher	7	FI									1	FI	17	FI
"											4	REI		
White-faced Heron													2	FI
Total number	**59**		**40**		**21**		**21**		**45**		**75**		**309**	

7.1.1.2 OUTER COX'S BAY

Table 16: Outer Cox's Bay Neap tide WINTER roost data 4/7/2022

Location	Outer Cox's Bay		† = Moved to Cox's Pt ramps											
Date	4/07/2022													
Tide	Neap tide													
Time	8:00		9:00		10:00		11:00		12:00		13:00		14:00	
Tidal state	LW+3		LW+4		LW+5		HW		HW+1		HW+2		HW+3	
Species	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV
Banded dotterel														
Black-backed Gull							1	REI	2	REI	1	REW	1	REI
Black Swan	12	REW							56	REW	48	REW	28	REW
Caspian Tern			1	REI	1	REI	1	REI						
Eastern Bar-Tailed Godwit														
Kingfisher	1	FI												
Little Shag														
New Zealand Dotterel	2	FI												
Pied Stilt	15	FI											10	FI
"														
Pied Shag	1	FW			1	REI	1	REI					1	FW
Red-billed Gull													19	REW
South Island Pied Oystercatcher	2	FI	4	ROI	5	ROI	8	ROI	†		†		9	FI
"														
Variable Oystercatcher			4	ROI	70	ROI	76	ROI	†		†		2	FI
White-faced Heron													2	FI
Total number	**33**		**9**		**77**		**87**		**58**		**49**		**72**	

Table 17: Outer Cox's Bat Spring tide WINTER roost data 18/7/2022

Location	Outer Cox's Bay													
Date	18/07/2022													
Tide	Spring tide													
Time	8:00		9:00		10:00		11:00		12:00		13:00		14:00	
Tidal state	LW+3		LW+4		LW+5		HW		HW+1		HW+2		HW+3	
Species	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV
Black-backed Gull			1	ROI										
Black Swan	4	FW					2	REW					15	FW
Caspian Tern									1	REI				
Eastern Bar-Tailed Godwit														
Kingfisher	1	FI												
Pied Stilt	7	FI												
"														
Red-billed Gull									3	REI			24	REW
South Island Pied Oystercatcher	1	FI	15	ROI	90	ROI	95	ROI	95	ROI	42	ROI		
Variable Oystercatcher			48	ROI	52	ROI	52	ROI	52	ROI	34	ROI		
Total number	13		64		142		149		151		76		39	

7.1.2 SPRING 2022

7.1.2.1 MEOLA REEF

Table 18: Meola Reef Neap tide SPRING roost data 30/9/2022

Location	Meola Reef													
Date	30/09/2022													
Tide	Neap tide													
Time	8:30		9:30		10:30		11:30		12:30		13:30		14:30	
Tidal state	LW+3		LW+4		LW+5		HW		HW+1		HW+2		HW+3	
Species	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV
Black-backed Gull	1	REI											10	REI
Black Swan	72	REW	20	REW	10	REW					36	REI	13	REI
"											15	REW	56	FI
Canada Goose	1	REI												
Caspian Tern	3	REI											3	REI
Red-billed Gull	2	REI											5	REI
South Island Pied Oystercatcher	11	REI											13	REI
"													14	FI
Variable Oystercatcher	1	FI	1	ROI	15	ROI							10	REI
"	3	REI											18	FI
White-faced Heron														
Total number	**94**		**21**		**25**		**0**		**0**		**51**		**142**	

Table 19: Meola Reef Spring tide SPRING roost data 28/10/2022

Location	Meola Reef															
Date	28/10/2022															
Tide	Spring tide															
Time	7:00		8:00		9:00		10:00		11:00		12:00		13:00		14:00	
Tidal state	LW+3		LW+4		LW+5		HW		HW+1		HW+2		HW+3		HW+4	
Species	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV
Black-backed Gull	2	REW													6	REI
Black Swan	64	REW	45	REW	56	REW	68	REW	75	REW	65	REW	65	REI	72	REW
Caspian Tern													1	REI		
Eastern Bar-Tailed Godwit															4	FI
Little Shag															1	REI
Red-billed Gull	4	REI											1	REI	1	FI
South Island Pied Oystercatcher	1	FI														
"	23	REI											3	FI	20	FI
Spur-winged Plover	1	REI														
Variable Oystercatcher	11	FI											2	REI	3	REI
"															12	FI
White-faced Heron															1	FI
Total number	106		45		56		68		75		65		72		120	

7.1.2.2 OUTER COX'S BAY

Table 20: Outer Cox's Bay Neap tide SPRING roost data 30/9/2022

Location	Outer Cox's Bay			ǂ = Moved to Cox's Pt ramps										
Date	30/09/2022													
Tide	Neap tide													
Time	8:30		9:30		10:30		11:30		12:30		13:30		14:30	
Tidal state	LW+3		LW+4		LW+5		HW		HW+1		HW+2		HW+3	
Species	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV
Black Swan							14	REW	52	REW			4	REW
Caspian Tern			2	ROI			1	ROI	1	ROI				
Eastern Bar-Tailed Godwit													2	FI
Paradise Duck											2	REI		
Red-billed Gull							1	REI	1	REI				
South Island Pied Oystercatcher			31	ROI	31	ROI	31	ROI	13	ROI	16	ROI		
Variable Oystercatcher			77	ROI	82	ROI	62	ROI	27	ROI	31	ROI	3	FI
Total number	0		110		113		109		94		49		9	

Table 21: Outer Cox's Bay Spring tide SPRING roost data 28/10/2022

Location	Outer Cox's Bay															
Date	28/10/2022															
Tide	Spring tide															
Time	7:00		8:00		9:00		10:00		11:00		12:00		13:00		14:00	
Tidal state	LW+3		LW+4		LW+5		HW		HW+1		HW+2		HW+3		HW+4	
Species	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV
Black-backed Gull									1	REW						
Kingfisher															1	FI
Little Shag			1	FW							1	FW	2	FW		
Little Black Shag							1	ROI								
South Island Pied Oystercatcher			46	ROI	46	ROI	31	ROI	29	ROI	44	ROI	27	ROI		
Variable Oystercatcher	2	FI	62	ROI	62	ROI	59	ROI	62	ROI	68	ROI	39	ROI	4	REI
White-faced Heron															9	FI
Total number	2		109		108		91		92		113		68		14	

7.1.3 SUMMER 2022/2023

7.1.3.1 MEOLA REEF

Table 22: Meola reef Neap Tide SUMMER roost data 13/1/2023

Location	Meola Reef													
Date	13/01/2023													
Tide	Neap tide													
Time	9:30		10:30		11:30		12:30		13:30		14:30		15:30	
Tidal state	LW+3		LW+4		LW+5		HW		HW+1		HW+2		HW+3	
Species	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV
Black-backed Gull	1	REI												
Black Swan	119	REW	104	REW	82	REW	96	REW	107	REW	74	REW	82	REW
Caspian Tern	8	REI											2	REI
Eastern Bar-Tailed Godwit	41	FI												
Little Shag	1	REI												
Pied Stilt	2	REI												
Pied Shag							1	FW						
Red-billed Gull							8	ROG[‡]	12	ROG[‡]				
South Island Pied Oystercatcher	5	REI											8	REI
"	5	FI												
Variable Oystercatcher	7	REI	35	ROG[‡]	25	ROG[‡]	25	ROG[‡]	20	ROG[‡]	20	ROG[‡]	10	REI
"	4	FI											2	FI
White-faced Heron	2	FI												
Total number	195		139		107		130		139		94		104	
TOTAL NUMBER (LESS BLACK SWAN)	76		35		25		34		32		20		22	

Table 23: Meola reef Spring Tide SUMMER roost data 23/2/2023

Location	Meola Reef																	
Date	23/02/2023																	
Tide	Spring tide																	
Time	7:00		8:00		9:00		10:00		11:00		12:00		13:00		14:00		15:00	
Tidal state	LW+2		LW+3		LW+4		LW+5		HW		HW+1		HW+2		HW+3		HW+4	
Species	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV
Black-backed Gull	1	REI					2	ROP			2	ROP	2	ROP	2	REI	1	REI
"																	10	FI
"																	4	REW
Black Swan	266	FI	260	REI	250	REW	250	REW	250	REW	250	REW	250	REW	250	REW	250	REW
Caspian Tern	1	REI													1	REI		
Eastern Bar-Tailed Godwit																	9	FI
Little Shag																	1	REI
Pied Stilt	2	FI																
Pied Shag																	5	REI
Red-billed Gull	11	FI	4	REI					7	ROG[‡]	17	ROG[‡]	50	ROG[‡]	12	FI	134	FI
South Island Pied Oystercatcher	6	FI													10	FI	14	FI
"	19	REI																
Variable Oystercatcher	3	FI	47	REI	4	ROI			2	ROI					4	FI	17	FI
"	17	REI							2	ROG[‡]					9	REI	2	REI
White-faced Heron	4	FI															5	FI
Total number	330		311		254		252		261		269		302		288		452	
TOTAL NUMBER (LESS BLACK SWAN)	64		51		4		2		11		19		52		38		202	

ROG[‡] = Resting on Grass; end of Garnet RD

7.1.3.2 OUTER COX'S BAY

Table 24: Outer Cox's Bay Neap Tide SUMMER roost data 13/1/2023

Location	Outer Cox's Bay													
Date	13/01/2023													
Tide	Neap tide													
Time	9:30		10:30		11:30		12:30		13:30		14:30		15:30	
Tidal state	LW+3		LW+4		LW+5		HW		HW+1		HW+2		HW+3	
Species	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV
Caspian Tern			2	REI	2	REI	2	ROI	2	REI	2	REI		
Pied Shag	1	FW												
South Island Pied Oystercatcher			55	ROI	57	ROI	57	ROI	57	ROI	57	ROI	27	ROI
"														
Variable Oystercatcher	1	FI	16	ROI	47	ROI	47	ROI	47	ROI	49	ROI	24	ROI
"	1	ROI												
Total number	**3**		**73**		**106**		**106**		**106**		**108**		**51**	

Table 25: Outer Cox's Bay Spring Tide SUMMER roost data 23/2/2023

Location	Outer Cox's Bay																	
Date	23/02/2023																	
Tide	Spring tide																	
Time	7:00		8:00		9:00		10:00		11:00		12:00		13:00		14:00		15:00	
Tidal state	LW+2		LW+3		LW+4		LW+5		HW		HW+1		HW+2		HW+3		HW+4	
Species	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV
Black-backed Gull					5	REW			8	REW							31	REI
"									1	REI								
Red-billed Gull	30	FI															83	FI
South Island Pied Oystercatcher			10	ROI	46	ROI	6	ROI	6	ROI	6	ROI	17	ROI				
Variable Oystercatcher	1	REI	76	ROI	106	ROI	99	ROI	92	ROI	96	ROI	99	ROI				
White-faced Heron	1	FI															17	FI
Total number	**32**		**86**		**157**		**105**		**107**		**102**		**116**		**0**		**131**	

7.1.4 AUTUMN 2022

7.1.4.1 MEOLA REEF

Table 26: Meola Reef Neap tide AUTUMN roost data 27/4/2023

Location	Meola Reef											
Date	27/04/2023											
Tide	Neap tide											
Time	9:30		10:30		11:30		12:30		13:30		14:30	
Tidal state	LW+3		LW+4		LW+5		HW		HW+1		HW+2	
Species	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV
Black-backed Gull	6	REW	3	REW			1	REW				
Black Swan	180	FW	200	REW	156	REW	237	REW	150	REW	165	REW
Caspian Tern	3	REI										
Eastern Bar-Tailed Godwit	4	FI										
Little Shag	1	ROP[x]	2	ROP[x]								
"	13	REI	1	REI								
Little Black Shag	5	ROP										
Pied Stilt	47	FI										
Pied Shag	5	REI										
Red-billed Gull	1	REI					1	REI				
Royal Spoonbill	1	FI										
South Island Pied Oystercatcher	80	FI	2	FI								
"	8	REI										
Variable Oystercatcher	32	FI	6	FI								
"			19	REI								
White-faced Heron	9	FI	7	FI								
Total number	395		240		156		239		150		165	
TOTAL NUMBER (LESS BLACK SWAN)	215		40		0		2		0		0	

Table 27: Meola Reef Spring tide AUTUMN roost data 23/3/2023

Location	Meola Reef											
Date	23/03/2023											
Tide	Spring tide											
Time	7:30		8:30		9:30		10:30		11:30		12:30	
Tidal state	LW+4		LW+5		HW		HW+1		HW+2		HW+3	
Species	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV
Black-backed Gull											4	REW
Black Swan	76	REW	107	REW	103	REW	96	REW	71	REW	80	REI
Caspian Tern											4	REI
Pied Stilt											3	FI
Red-billed Gull			1	REI	3	REI						
South Island Pied Oystercatcher											21	REI
"											7	FI
Variable Oystercatcher			4	ROI	8	ROI	6	ROI	3	ROI	19	REI
"											18	FI
White-faced Heron											2	FI
White-fronted Tern							2	REI	7	REI	27	REI
Total number	76		112		114		104		81		185	
TOTAL NUMBER (LESS BLACK SWAN)	0		5		11		8		10		105	

ROG[†] = Resting on Grass; end of Garnet RD

[x]= Dead tree in intertidal

7.1.4.2 OUTER COX'S BAY

Table 28: Outer Cox's Bay Neap tide AUTUMN roost data 27/4/2023

Location	Outer Cox's Bay											
Date	27/04/2023											
Tide	Neap tide											
Time	9:30		10:30		11:30		12:30		13:30		14:30	
Tidal state	LW+3		LW+4		LW+5		HW		HW+1		HW+2	
Species	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV
Black-backed Gull	2	REW										
Black Swan	53	FW	33	REW					82	REW	62	REW
Caspian Tern					1	REI [a]	1	REI [a]				
South Island Pied Oystercatcher	7	FI	1	ROI	86	ROI	95	ROI	95	ROI	92	ROI [b]
Variable Oystercatcher			2	ROI	57	ROI	62	ROI	62	ROI	61	ROI
White-faced Heron											1	REI [a]
Total number	**62**		**36**		**144**		**158**		**239**		**216**	
TOTAL NUMBER (LESS BLACK SWAN)	**9**		**3**		**144**		**158**		**157**		**154**	

Table 29: Outer Cox's Bay Spring tide AUTUMN roost data 23/3/2023

Location	Outer Cox's Bay											
Date	23/03/2023											
Tide	Spring tide											
Time	7:30		8:30		9:30		10:30		11:30		12:30	
Tidal state	LW+4		LW+5		HW		HW+1		HW+2		HW+3	
Species	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV	NUMBER	BEHAV
Black-backed Gull							4	REW	9	REW	3	REW
"									1	REI		
Black Swan							12	REW	12	REW	2	REW
Little Shag									1	REI	3	REI
South Island Pied Oystercatcher	3	ROI	5	ROI	17	ROI	26	ROI	18	ROI		
"									16	FI		
Variable Oystercatcher	45	ROI	45	ROI	7	ROI	4	ROI	16	ROI		
"	7	REI										
Total number	**55**		**50**		**24**		**46**		**73**		**8**	
TOTAL NUMBER (LESS BLACK SWAN)	**55**		**50**		**24**		**34**		**61**		**6**	

7.2 LOW TIDE DATA

7.2.1 WINTER

Table 30: Low tide WINTER coastal bird count for SPRING TIDE at Meola Reef and Cox's Bay

LOW TIDE COUNT - SPRING TIDE				
15/07/2022	**Meola Reef**		**Outer Cox's Bay**	
Time	14:30		14:30	
Tidal state	LW		LW	
Species	NUMBER	BEHAVIOUR	NUMBER	BEHAVIOUR
Black-backed Gull			4	FI
"			20	REI
Black Swan			9	REW
Caspian Tern	3	REI		
Eastern Bar-Tailed Godwit	4	FI		
Kingfisher			1	FI
Little Shag	2	REI		
Pied Stilt	2	FI	47	FI
Red-billed Gull	7	FI	4	FW
"			11	REW
"			58	FI
Royal Spoonbill	2	FI	3	FI
South Island Pied Oystercatcher	10	FI	1	FI
"	4	REI		
Variable Oystercatcher	12	FI	2	FI
"	2	REI		
White-faced Heron	2	FI	8	FI
Total	**50**		**168**	

Table 31: Low tide WINTER coastal bird count for NEAP TIDE at Meola Reef and Cox's Bay

LOW TIDE COUNT - NEAP TIDE				
12/08/2022	**Meola Reef**		**Outer Cox's Bay**	
Time	13:10		13:10	
Tidal state	LW		LW	
Species	NUMBER	BEHAV	NUMBER	BEHAV
Black-backed Gull	9	REI	29	REI
Caspian Tern	1	FW	2	REI
"	3	REW		
Eastern Bar-Tailed Godwit	9	FI		
Kingfisher	2	FI		
Little Shag	2	FW		
Pied Stilt			6	FI
Red-billed Gull	8	FI	2	REI
"			384	FI
South Island Pied Oystercatcher			5	FI
Variable Oystercatcher	3	FI	5	FI
"	8	REI		
White-faced Heron	6	FI	15	FI
Total	**51**		**448**	

7.2.2 SPRING 2022

Table 32: Low tide SPRING coastal bird count for SPRING TIDE at Meola Reef and Cox's Bay

LOW TIDE COUNT - SPRING TIDE				
27/10/2022	**Meola Reef**		**Outer Cox's Bay**	
Time	15:00		15:00	
Tidal state	LW		LW	
Species	NUMBER	BEHAV	NUMBER	BEHAV
Black-backed Gull	9	REI	9	REI
Black Swan	12	FI	66	FI
Caspian Tern	1	REI		
Eastern Bar-Tailed Godwit	10	FI	35	FI
"	2	REI		
Kingfisher			3	FI
Lesser Knot	1	FI		
Little Shag	3	REI		
Paradise Duck	1	FI		
Red-billed Gull	1	REI	49	FI
Variable Oystercatcher	8	FI		
"	13	REI		
White-faced Heron	4	FI	9	FI
Total	**65**		**171**	

Table 33: Low tide SPRING coastal bird count for NEAP TIDE at Meola Reef and Cox's Bay

LOW TIDE COUNT - NEAP TIDE				
7/10/2022	**Meola Reef**		**Outer Cox's Bay**	
Time	11:55		11:55	
Tidal state	LW		LW	
Species	NUMBER	BEHAV	NUMBER	BEHAV
Black-backed Gull	19	REI		
Black Swan	7	REI		
"	20	REW		
Caspian Tern	1	REI		
Eastern Bar-Tailed Godwit	76	FI	99	FI
Kingfisher			2	FI
Little Shag	1	REI		
New Zealand Dotterel	1	FI		
Red-billed Gull	33	REI	86	FI
Royal Spoonbill	1	FI	4	FI
South Island Pied Oystercatc	1	FI		
Variable Oystercatcher	11	FI		
White-faced Heron	5	FI	8	FI
Total	**176**		**199**	

7.2.3 SUMMER 2022/2023

Table 34: Low tide SUMMER coastal bird count for SPRING TIDE at Meola Reef and Cox's Bay

LOW TIDE COUNT - SPRING TIDE				
21/02/2023	Meola Reef		Outer Cox's Bay	
Time	14:30		14:30	
Tidal state	LW		LW	
Species	NUMBER	BEHAV	NUMBER	BEHAV
Black-backed Gull	14	REI	55	REI
"	1	FI		
Black Swan	82	FI	124	FI
Caspian Tern	13	REI		
Eastern Bar-Tailed Godwit	47	FI		
Little Shag			1	ROP
Paradise Duck		FI		
Red-billed Gull	13	REI	1	REI
"	5	FI	84	FI
South Island Pied Oystercatcher	16	FI	5	FI
Variable Oystercatcher	10	FI		
"	10	REI		
White-faced Heron	7	FI	33	FI
Total	**218**		**303**	
TOTAL NUMBER (LESS BLACK SWAN)	**136**		**179**	

Table 35: Low tide SUMMER coastal bird count for NEAP TIDE at Meola Reef and Cox's Bay

LOW TIDE COUNT - NEAP TIDE				
18/01/2023	**Meola Reef**		**Outer Cox's Bay**	
Time	10:30		10:30	
Tidal state	LW			
Species	NUMBER	BEHAV	NUMBER	BEHAV
Black-backed Gull	8	REI	4	REI
Black Swan	85	REI	34	REI
Caspian Tern	2	REI		
Eastern Bar-Tailed Godwit	98	FI	15	FI
Kingfisher				FI
Pied Shag	1	REI		
Red-billed Gull	45	FI	17	REI
South Island Pied Oystercatcher	10	FI	3	FI
"	4	REI	1	REI
Variable Oystercatcher	6	FI	2	FI
White-faced Heron	27	FI	9	FI
Total	**286**		**85**	
TOTAL NUMBER (LESS BLACK SWAN)	**201**		**51**	

7.2.4 AUTUMN 2023

Table 36: Low tide AUTUMN coastal bird count for SPRING TIDE at Meola Reef and Cox's Bay

LOW TIDE COUNT - SPRING TIDE				
20/04/2023	Meola Reef		Outer Cox's Bay	
Time	13:20		13:20	
Tidal state	LW		LW	
Species	NUMBER	BEHAV	NUMBER	BEHAV
Black-backed Gull	36	REI	37	REI
Black Swan			166	FW
Caspian Tern	9	REI		
Kingfisher	1	FI		
Little Shag	2	REI		
Little Black Shag			5	FW
Pied Stilt	8	FI	3	REI
"			26	FI
Pied Shag	5	REI		
Red-billed Gull	20	REI	99	FI
South Island Pied Oystercatcher	6	REI		
"	20	FI		
Variable Oystercatcher	25	REI		
"	14	FI		
White-faced Heron	1	FI	36	FI
Total	**147**		**372**	
TOTAL NUMBER (LESS BLACK SWAN)	**147**		**206**	

Table 37: Low tide AUTUMN coastal bird count for NEAP TIDE at Meola Reef and Cox's Bay

LOW TIDE COUNT - NEAP TIDE				
3/04/2023	Meola Reef		Outer Cox's Bay	
Time	10:45		10:45	
Tidal state	LW		LW	
Species	NUMBER	BEHAV	NUMBER	BEHAV
Black-backed Gull	30	REI	26	REI
"	7	FI		
Black Swan	73	FI	92	FW
Caspian Tern	1	REI		
Eastern Bar-Tailed Godwit	5	FI		
Little Shag	11	ROP		
Pied Stilt	15	FI	19	FI
Red-billed Gull	3	REI	58	FI
"	180	FI		
South Island Pied Oystercatcher	25	FI	1	FI
Variable Oystercatcher	15	FI		
White-faced Heron	25	FI	20	FI
Total	**390**		**216**	
TOTAL NUMBER LESS BLACK SWAN	**317**		**124**	

7.3 WEATHER RECORDS DURING OBSERVATIONS

7.3.1 WINTER 2022

4/07/2022	Neap tide	HW 10:54 (2.9m)					
Time	**8:00**	**9:00**	**10:00**	**11:00**	**12:00**	**13:00**	**14:00**
Tidal state	LW+3	LW+4	LW+5	HW	HW+1	HW+2	HW+3
Air temp (*C)	10	11.7	14.8	15.9	15.2	16.8	15.9
Barometric pressure (hPa)	1026	1026	1026	1026	1026	1025	1025
Winds (Kts)	0	0	1	3	4	5	0
Wind direction	nil	nil	SW	SW	SW	SW	nil
General weather (precipitation)	dry	dry	dry	dry	dry	dry	dry
General weather (cloud)	cloudy	part cloudy	part cloudy	part cloudy	part cloudy	part cloudy	cloudy

18/07/2022	Spring tide	HW 10:54 (3.3m)					
Time	**8:00**	**9:00**	**10:00**	**11:00**	**12:00**	**13:00**	**14:00**
Tidal state	LW+3	LW+4	LW+5	HW	HW+1	HW+2	HW+3
Air temp (*C)	9.6	10.3	11.8	12.5	14.2	14.3	13.3
Barometric pressure (hPa)	1031	1031	1031	1030	1030	1029	1028
Winds (Kts)	0	0	0	0	1	1	4
Wind direction	nil	nil	nil	nil	SE	SE	SE
General weather (precipitation)	dry	dry	dry	dry	dry	dry	dry
General weather (cloud)	cloudy	cloudy	cloudy	cloudy	cloudy	part cloudy	part cloudy

15/07/2022	Spring tide
Time	14:30
Tidal state (m from LW)	0.3
Air temp (*C)	16.8
Barometric pressure (hPa)	1003
Winds (Kts)	3
Wind direction	SW
General weather (precipitation)	dry
General weather (cloud)	cloudy

12/08/2022	Neap tide
Time	13:10
Tidal state (m from LW)	0.4
Air temp (*C)	13.5
Barometric pressure (hPa)	1018
Winds (Kts)	10
Wind direction	SW
General weather (precipitation)	dry
General weather (cloud)	part cloudy

7.3.2 SPRING 2022

30/09/2022	Neap tide	HW 11:21 (3.2m)					
Time	**8:30**	**9:30**	**10:30**	**11:30**	**12:30**	**13:30**	**14:30**
Tidal state	LW+3	LW+4	LW+5	HW	HW+1	HW+2	HW+3
Air temp (*C)	16.8	17.3	18	18.3	17	18.2	18.3
Barometric pressure (hPa)	1015	1014	1014	1014	1014	1013	1013
Winds (Kts)	4	3	5	4	5	5	6
Wind direction	N	N	N	NE	NE	NE	NE
General weather (precipitation)	dry	dry	dry	dry	drizzle/light rain	dry	dry
General weather (cloud)	cloudy	cloudy	cloudy	cloudy	cloudy	part cloudy	part cloudy

28/10/2022	Spring tide	HW 10:16 (3.3m)					
Time	**7:00**	**8:00**	**9:00**	**10:00**	**11:00**	**12:00**	**13:00**	**14:00**
Tidal state	LW+3	LW+4	LW+5	HW	HW+1	HW+2	HW+3	HW+4
Air temp (*C)	17.6	17.5	18.5	19	20.2	19.7	19.6	20.5
Barometric pressure (hPa)	1016	1016	1016	1016	1016	1015	1015	1015
Winds (Kts)	4	6	7	13	10	13	14	8
Wind direction	NE	NE	NE	NE	NE	NE	NE	NE
General weather (precipitation)	dry	dry	dry	dry	dry	dry	dry	dry
General weather (cloud)	cloudy	part cloudy	part cloudy	part cloudy	part cloudy	part cloudy	cloudy	part cloudy

27/10/2022	Spring tide
Time	**15:00**
Tidal state (m from LW)	0.5
Air temp (*C)	18.8
Barometric pressure (hPa)	1016
Winds (Kts)	12
Wind direction	NE
General weather (precipitation)	dry
General weather (cloud)	part cloudy

7/10/2022	Neap tide
Time	**12:00**
Tidal state (m from LW)	0.7
Air temp (*C)	15.7
Barometric pressure (hPa)	1028
Winds (Kts)	8
Wind direction	SW
General weather (precipitation)	dry
General weather (cloud)	part cloudy

7.3.3 SUMMER 2022/2023

13/01/2023	Neap tide	HW 12:36 (3.0m)						
Time	**9:30**	**10:30**	**11:30**	**12:30**	**13:30**	**14:30**	**15:30**	
Tidal state	LW+3	LW+4	LW+5	HW	HW+1	HW+2	HW+3	
Air temp (*C)	19.3	20.1	20.5	20.5	20.6	21.3	22.2	
Barometric pressure (hPa)	1015	1015	1015	1016	1016	1016	1015	
Winds (Kts)	1	1	6	7	8	5	3	
Wind direction	SE	NE	E	E	E	E	E	
General weather (precipitation)	dry	dry	dry	dry	dry	dry	dry	
General weather (cloud)	cloudy	cloudy	cloudy	cloudy	cloudy	cloudy	cloudy	

23/02/2023	Spring tide	HW 10:46 (3.6m)						
Time	**7:00**	**8:00**	**9:00**	**10:00**	**11:00**	**12:00**	**13:00**	**14:00**	**15:00**
Tidal state	LW+2	LW+3	LW+4	LW+5	HW	HW+1	HW+2	HW+3	HW+4
Air temp (*C)	18.9	19.7	20.5	21.3	22.1	23.7	22.8	21.6	21.7
Barometric pressure (hPa)	1011	1011	1011	1010	1010	1010	1009	1009	1010
Winds (Kts)	8	3	5	3	8	7	12	13	13
Wind direction	W	W	W	W	W	W	W	W	W
General weather (precipitation)	showers	dry	dry	dry	dry	showers	dry	dry	dry
General weather (cloud)	cloudy	part cloudy	part cloudy	part cloudy	part cloudy	cloudy	cloudy	cloudy	cloudy

21/02/2023	Spring tide
Time	14:35
Tidal state (m from LW)	0.5
Air temp (*C)	30.1
Barometric pressure (hPa)	1021
Winds (Kts)	3
Wind direction	SW
General weather (precipitation)	dry
General weather (cloud)	sunny

18/01/2023	Neap tide
Time	10:30
Tidal state (m from LW)	1
Air temp (*C)	21.7
Barometric pressure (hPa)	1010
Winds (Kts)	1
Wind direction	SW
General weather (precipitation)	dry
General weather (cloud)	sunny

7.3.4 AUTUMN 2023

27/04/2023	Neap tide	HW 12:41(2.8m)				
Time	**9:30**	**10:30**	**11:30**	**12:30**	**13:30**	**14:30**
Tidal state	LW+3	LW+4	LW+5	HW	HW+1	HW+2
Air temp (*C)	15.8	17.1	20.8	20.8	20.7	22.5
Barometric pressure (hPa)	1024	1024	1024	1024	1023	1023
Winds (Kts)	2	0	3	4	1	1
Wind direction	SW		E	E	Variable	Variable
General weather (precipitation)	dry	dry	dry	dry	dry	dry
General weather (cloud)	part cloudy	cloudy	cloudy	part cloudy	part cloudy	part cloudy

23/03/2023	Spring tide	HW 10:46 (3.6m)				
Time	**7:30**	**8:30**	**9:30**	**10:30**	**11:30**	**12:30**
Tidal state	LW+4	LW+5	HW	HW+1	HW+2	HW+3
Air temp (*C)	12.2	14	16.3	18.2	19.5	22.7
Barometric pressure (hPa)	1019	1019	1021	1021	1020	1020
Winds (Kts)	1	1	2	4	5	3
Wind direction	NE	NE	SW	SW	SW	SW
General weather (precipitation)	dry	dry	dry	dry	dry	dry
General weather (cloud)	cloudy	cloudy	part cloudy	part cloudy	part cloudy	part cloudy

20/04/2023	Spring tide
Time	13:20
Tidal state (m from LW)	0.5
Air temp (*C)	22.4
Barometric pressure (hPa)	1020
Winds (Kts)	13
Wind direction	E
General weather (precipitation)	dry
General weather (cloud)	part cloudy

3/04/2023	Neap tide
Time	10:45
Tidal state (m from LW)	1.1
Air temp (*C)	21.2
Barometric pressure (hPa)	1014
Winds (Kts)	7
Wind direction	SW
General weather (precipitation)	dy
General weather (cloud)	part cloudy

7.4 ORNITHOLOGICAL SOCIETY OF NEW ZEALAND (OSNZ) WADER CENSUS DATA

Location: Onehunga Upper Harbour data Timing: pre- and post – heliport (2010)

Table 38: Ornithological Society New Zealand (OSNZ) **Onehunga Upper Harbour wader census data, exluding international migratory wader species.** (N.B.: International waders excluded from analysis as variations in flock sizes and arrival dates are dependent on influences outside of New Zealand).

	PRE-HELIPORT				POST-HELIPORT			
Species	**6/11/2005**	**5/11/2006**	**25/11/2007**	**Average**	**13/11/2016**	**19/11/2017**	**25/11/2018**	**Average**
Pied Oystercatcher	56	53	12	40.33	23	49	99	57.00
Variable Oystercatcher	1	1	0	0.67	24	24	20	22.67
New Zealand Dotterel	0	0	0	0.00	0	0	3	1.00
Pied Stilt	7	103	13	41.00	7	9	78	31.33
Black Shag	1	6	0	2.33	2	5	2	3.00
Pied Shag	5	31	8	14.67	1	7	14	7.33
Little Black Shag	0	12	10	7.33	0	0	2	0.67
Little Shag	1	2	1	1.33	1	2	2	1.67
White Faced Heron	36	37	30	34.33	32	46	40	39.33
Royal Spoonbill	0	0	0	0.00	12	6	0	6.00
Spur-winged Plover	2	1	4	2.33	6	4	11	7.00
Black-backed Gull	27	65	37	43.00	50	58	81	63.00
Red-billed Gull	3	56	2	20.33	88	111	63	87.33
Caspian Tern	1	1	5	2.33	1	0	0	0.33
White-fronted Tern	13	3	7	7.67	7	6	15	9.33
Bittern	0	1	0	0.33	0	0	0	0.00
Paradise Duck	3	1	0	1.33	0	0	0	0.00
Mallard Duck	7	6	2	5.00	4	3	16	7.67
Harrier	1	0	0	0.33	0	0	2	0.67
Pukeko	4	7	3	4.67	11	8	12	10.33
Duck sp.	0	0	0	0.00	2	2	0	1.33
Total number	**168**	**386**	**134**	**229.33**	**271**	**340**	**460**	**357.00**
Diversity (# sp)	**16**	**17**	**13**	**18**	**16**	**15**	**16**	**19**

Table 39: Ornithological Society New Zealand (OSNZ) **Onehunga Upper Harbour wader census data, including international migratory wader species.**

	PRE-HELIPORT				POST-HELIPORT			
Species	**6/11/2005**	**5/11/2006**	**25/11/2007**	**Average**	**13/11/2016**	**19/11/2017**	**25/11/2018**	**Average**
Pied Oystercatcher	56	53	12	40.33	23	49	99	57.00
Variable Oystercatcher	1	1	0	0.67	24	24	20	22.67
New Zealand Dotterel	0	0	0	0.00	0	0	3	1.00
Lesser Knot	100	1150	100	450	0	11	20	10.33
Bar-tailed Godwit	326	630	400	452	205	550	260	338.33
Pied Stilt	7	103	13	41.00	7	9	78	31.33
Black Shag	1	6	0	2.33	2	5	2	3.00
Pied Shag	5	31	8	14.67	1	7	14	7.33
Little Black Shag	0	12	10	7.33	0	0	2	0.67
Little Shag	1	2	1	1.33	1	2	2	1.67
White Faced Heron	36	37	30	34.33	32	46	40	39.33
Royal Spoonbill	0	0	0	0.00	12	6	0	6.00
Spur-winged Plover	2	1	4	2.33	6	4	11	7.00
Black-backed Gull	27	65	37	43.00	50	58	81	63.00
Red-billed Gull	3	56	2	20.33	88	111	63	87.33
Caspian Tern	1	1	5	2.33	1	0	0	0.33
White-fronted Tern	13	3	7	7.67	7	6	15	9.33
Bittern	0	1	0	0.33	0	0	0	0.00
Paradise Duck	3	1	0	1.33	0	0	0	0.00
Mallard Duck	7	6	2	5.00	4	3	16	7.67
Harrier	1	0	0	0.33	0	0	2	0.67
Pukeko	4	7	3	4.67	11	8	12	10.33
Duck sp.	0	0	0	0.00	2	2	0	1.33
Total number	**594**	**2166**	**634**	**1131.33**	**476**	**901**	**740**	**705.67**
Diversity (# sp)	**18**	**19**	**15**	**20**	**17**	**17**	**18**	**21**

7.5 PLATES

PLATE I: High tide roost at 38 Rawene Ave, Westmere, showing Variable Oystercatchers and South Island Pied Oystercatchers roosting at high tide at the end of the promontory, adjacent to the proposed Helipad site. Photo taken by G.Don (July 2022).

C

APPENDIX C

Memorandum of Effects on Recreation Activities and Values – Rob Greenaway & Associates

Memo

Rob Greenaway & Associates
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To	Chris Simmons, Chancery Green
From	Rob Greenaway
Date	3 October 2023
Project	Rawene Avenue consent for helicopter take-off and landing
Subject	Desktop analysis – recreation effects
Status	**Final**

Purpose

1. Describe the existing environment for recreation on publicly accessible areas potentially affected by the proposed helicopter activity at 38 Rawene Ave, Westmere, based on a desktop analysis;

2. Assess the likely effects of the proposal on identified recreation activities and values.

Proposal

A full description of the proposal is set out in the Assessment of Environmental Effects which accompanied the application.[1]

Briefly, the proposal is for two helicopter landings and take-offs per day from private land at 38 Rawene Avenue on the plateau of the western headland of Coxs Bay (Figure 1). Flight times will be limited to within two hours of low tide to avoid impacts on roosting birds (a four-hour window). The proposed flight path is within the northern quadrant (between north-west and north-east), avoiding passing over Meola Reef to reduce effects on birdlife. The time for an aircraft to descend from 500 feet to landing would be approximately 1 minute and that the departure from take-off to a height of 500 feet would be approximately 20 seconds.

Executive summary

Existing environment

The data presented indicate the following recreational activities occurring near the site, and their significance:

- Kite surfing on the eastern side of Meola Reef, with activity avoided at high tide due to a lack of local beaches for launching (although there are differing opinions about preferred tide times). Of regional significance.
- Walking with and without dogs along the coast between Westmere Park and Coxs Bay, with low levels of activity and not possible at high tides. Of local significance.

[1] Mt Hobson Group AEE Report: 38 Rawene Avenue, Westmere – 2 November 2021.

- Paddle boarding and kayaking between Westmere and into Coxs Bay, with most activity in Coxs Bay and east of the proposal site, but passing close to the headland. Of local significance.
- No significance for swimming due to poor water quality for contact recreation.
- Boat mooring in Coxs Bay. Of local significance.

The level of use of the setting from Meola Reef to Herne Bay is likely to increase as a result of water quality improvements resulting from the operation of Watercare's Central Interceptor, planned to be complete in 2028.[2]

Effects

Overall, I consider that the potential effects of the proposal on recreation will be minor. This scale of effect might change once the Central Interceptor is complete and water quality in the Coxs Bay / Meola Reef area improves after project completion in 2028. Participation in water-based recreation in the area is then likely to increase, particularly swimming and the likes of paddle boarding and kayaking. However, the proposal limits helicopter activity to within two hours of low tide. Any increase in water-based activities resulting from improved water quality will occur at and near high tide due to the tidal nature of the setting, and the scale of effect will likely remain minor in the future.

Existing environment and recreational uses

Site and location

The helicopter landing and take-off site is proposed to be located on the coastal headland at the western end of Coxs Bay. The site is on private land on the lawn to the east of a private dwelling located at 38 Rawene Avenue (a 4530m² section made up of 38A and 38B Rawene Avenue). Rawene Avenue terminates opposite the property and leads to public steps to the shore in Coxs Bay.

Publicly accessible areas

Figure 1 indicates public land near Coxs Bay sourced from the Auckland Council GeoMaps.[3] This is not entirely complete, but shows the main relevant public recreation settings. Coxs Bay itself (the marine area) has a title issued to Auckland Council and so appears as 'public land'. The green and puce colours are intended to indicate different land owners (local government, Crown or 'other'), but these are not accurate (Coxs Bay Reserve is fully owned by Auckland Council, for example, and should be green), but the differences are not relevant to recreational users. There is a small coastal marginal strip, esplanade strip and two esplanade reserves on the waterfrontages of properties on Garnet Road, West End Road, Jervois Road and Marine Parade, but none provide practical public access and appear as private curtilage.

Coxs Bay Reserve, the Weona Walkway, Westmere Park and Meola Reef are the main local terrestrial recreation settings. Local coastal access is available at Garnet Road (the northern end of the Weona Walkway and Westmere Park), the eastern end of Rawene Road (particularly for dinghies to access

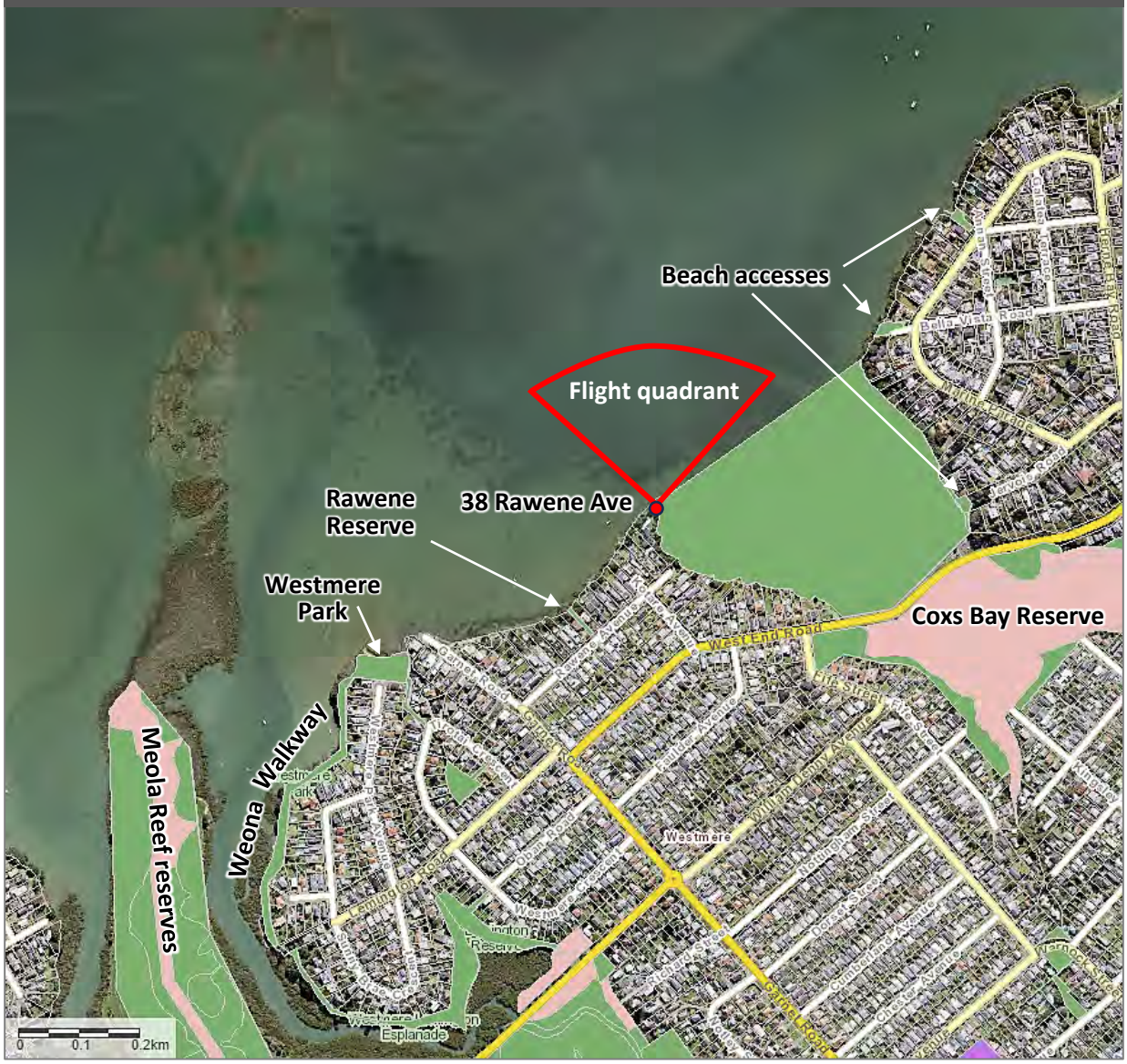
[2] Consent was issued for the 'Central Interceptor Extension - Pt Erin Tunnel - Pt Erin Park & Curran Street & Road Reserve' on 21 September 2023

[3] See https://geomapspublic.aucklandcouncil.govt.nz/viewer/index.html

moored vessels), the western end of Jervois Road (the Coxs Bay Walkway), Bella Vista Reserve off Bella Vista Road and Marine Parade Reserve off Marine Parade. All sites have no high tide beaches.

The local coastal marine area is fully accessible to the public with vessels when tides suit.

Figure 1: Public land titles near Rawene Ave, Auckland Council GeoMaps

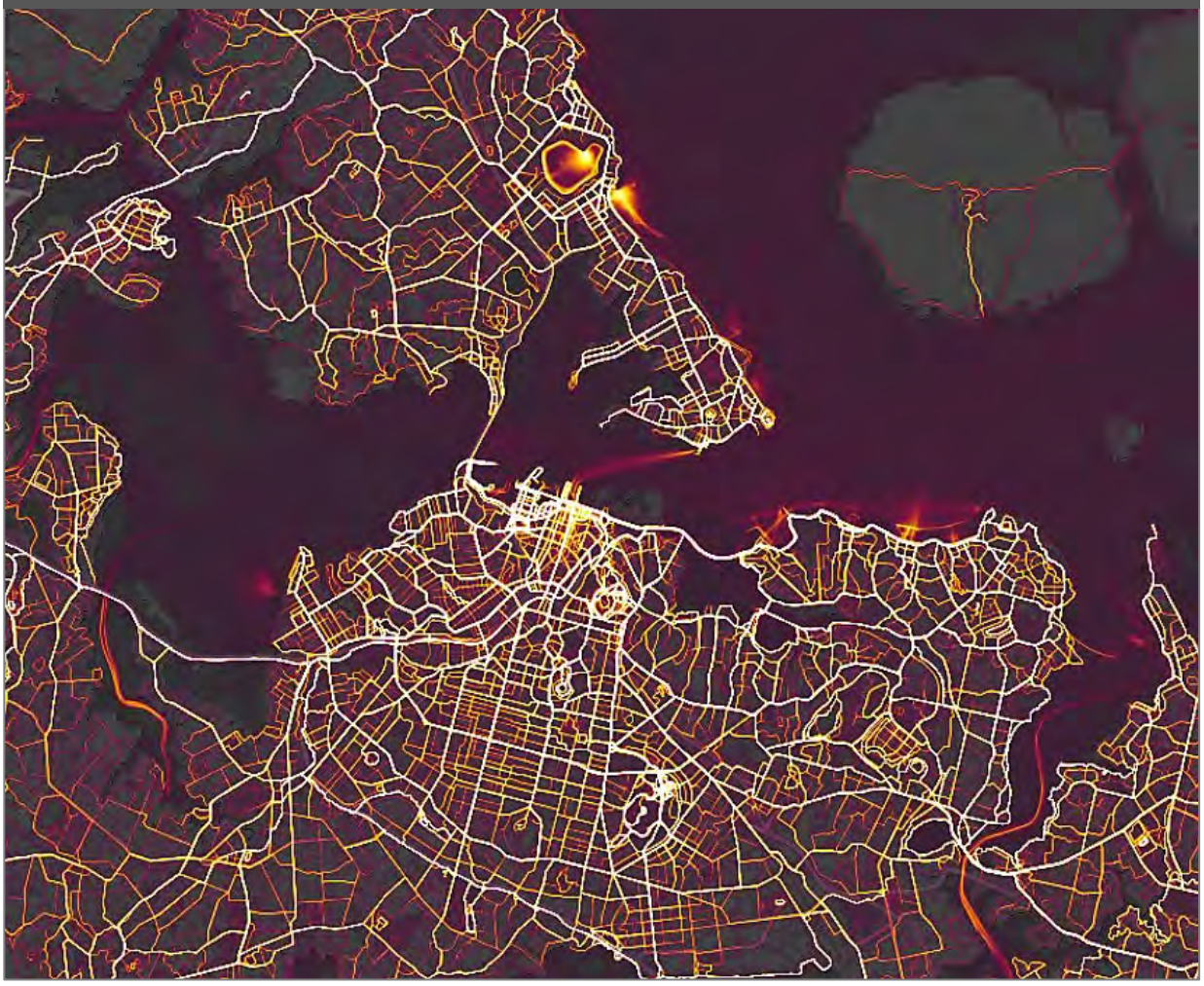


Strava use summary – pedestrian, cycling, water-based

Strava is increasingly becoming a useful tool for identifying the relative levels of interest in various recreation activities by setting. Strava is a social media platform where users record their GPS activity via their smartphones and other devices while recreating. The data are uploaded to a central database, allowing speed and time comparisons with other cyclists, runners, kayakers and swimmers (for example), and the monitoring of individual activity or training targets. While the service is popular with professional athletes, its membership is dominated by casual recreation participants. Strava indicates that it had 95 million international users in 2022 (80% outside the United States) with nearly an additional two million joining per month. It is now popular amongst regular cyclists and runners, and is also used by the likes of rowers, kayakers, walkers, waka ama and swimmers.

International comparisons between different forms of data gathering show a degree of reliability for Strava data with a range of 1% to 12% of users recorded on-site that are connected to the service; and this is growing. The author of this report has recorded participation levels for cycling in Aotearoa/New Zealand up to 20%. Strava is therefore a little like a tag and release programme. Strava essentially tags several thousand active people in an area and monitors where and how they recreate. Its greatest strength is in showing the relative value of settings for different forms of recreation. However, it must be noted that Strava data are biased to a sector of the population which is more likely to be physically active and reasonably tech-savvy. Some Strava data are also recorded while users are driving from their activity (they forget to turn tracking off), and some users miscode their activities (marine cyclists

Figure 2: Strava heatmap, all activities, Auckland, 12 months of data to Sept 2023



for example). There is also inaccuracy in GPS recording from some devices, with some recorded routes offset. Figure 2 shows heatmap data for all activities for central Auckland and the North Shore to indicate the scale of data available. The 'hotter' the colour, the more activity recorded in the setting.

Figure 3 shows Strava data for pedestrian activities near Coxs Bay, with Point Chevalier Beach included for comparison. Activity is concentrated on the roads and main reserves near Coxs Bay, with activity on the Weona and Coxs Bay Walkways obvious. Point Chevalier Beach is also very popular. There is little activity around the coast between Westmere Park and Coxs Bay, but several tracks have been recorded.

Figure 3: Strava heatmap, pedestrian, 12 months of data to Sept 2023

Figure 4 shows Strava data for cycling, which is less relevant for this assessment, but indicating activity largely focused on the main local roads, with some use of local residential streets, and some popular routes through Point Chevalier. The routes shown within Coxs Bay appear to be GPS offset errors.

Figure 5 is included to indicate the scale of data available for water-based activities in the region. These include all forms of non-motorised activity, such as swimming, paddle boarding, waka ama, kayaking and wind and kite surfing. Each is generally obvious from its pattern of activity.

Figure 4: Strava heatmap, cycling, 12 months of data to Sept 2023

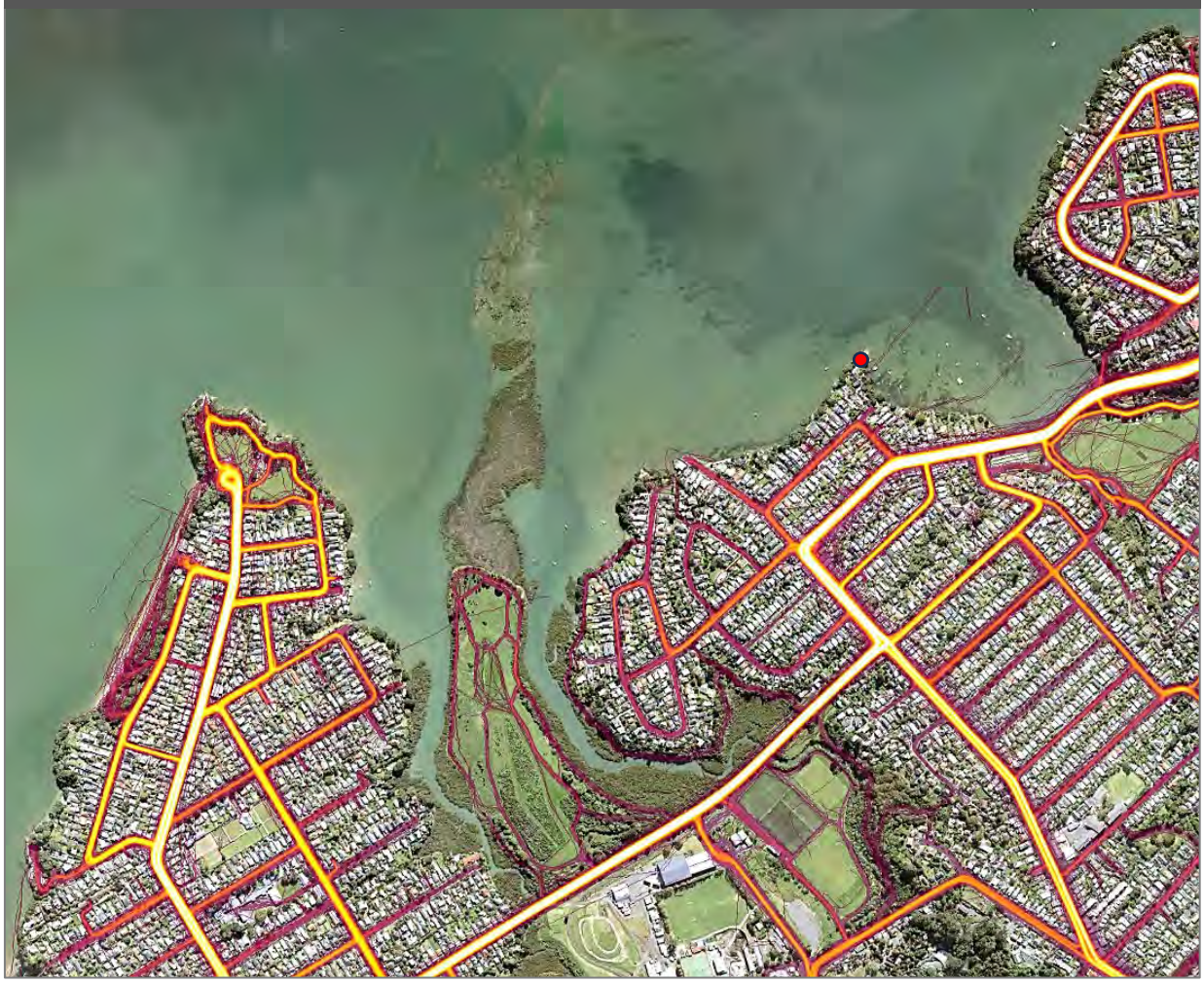


Figure 5: Strava heatmap Auckland, water-based, 12 months of data to Sept 2023

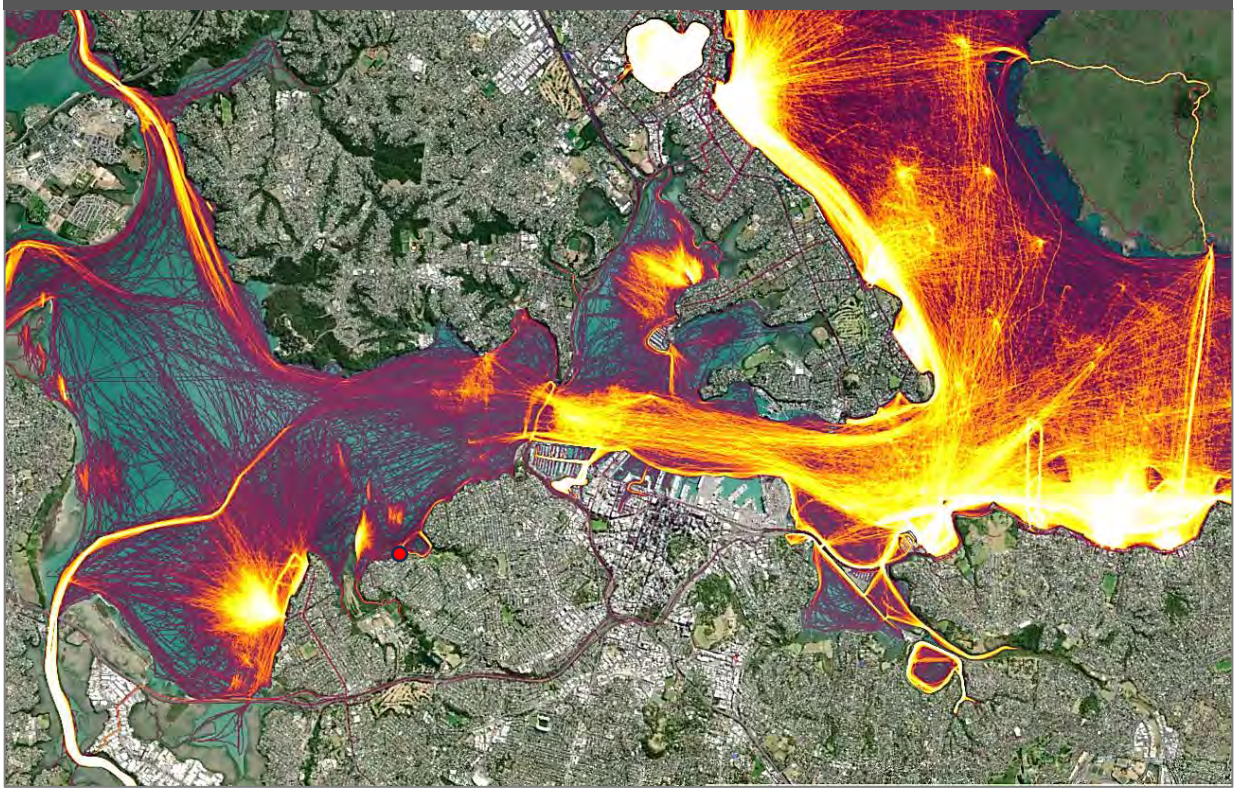


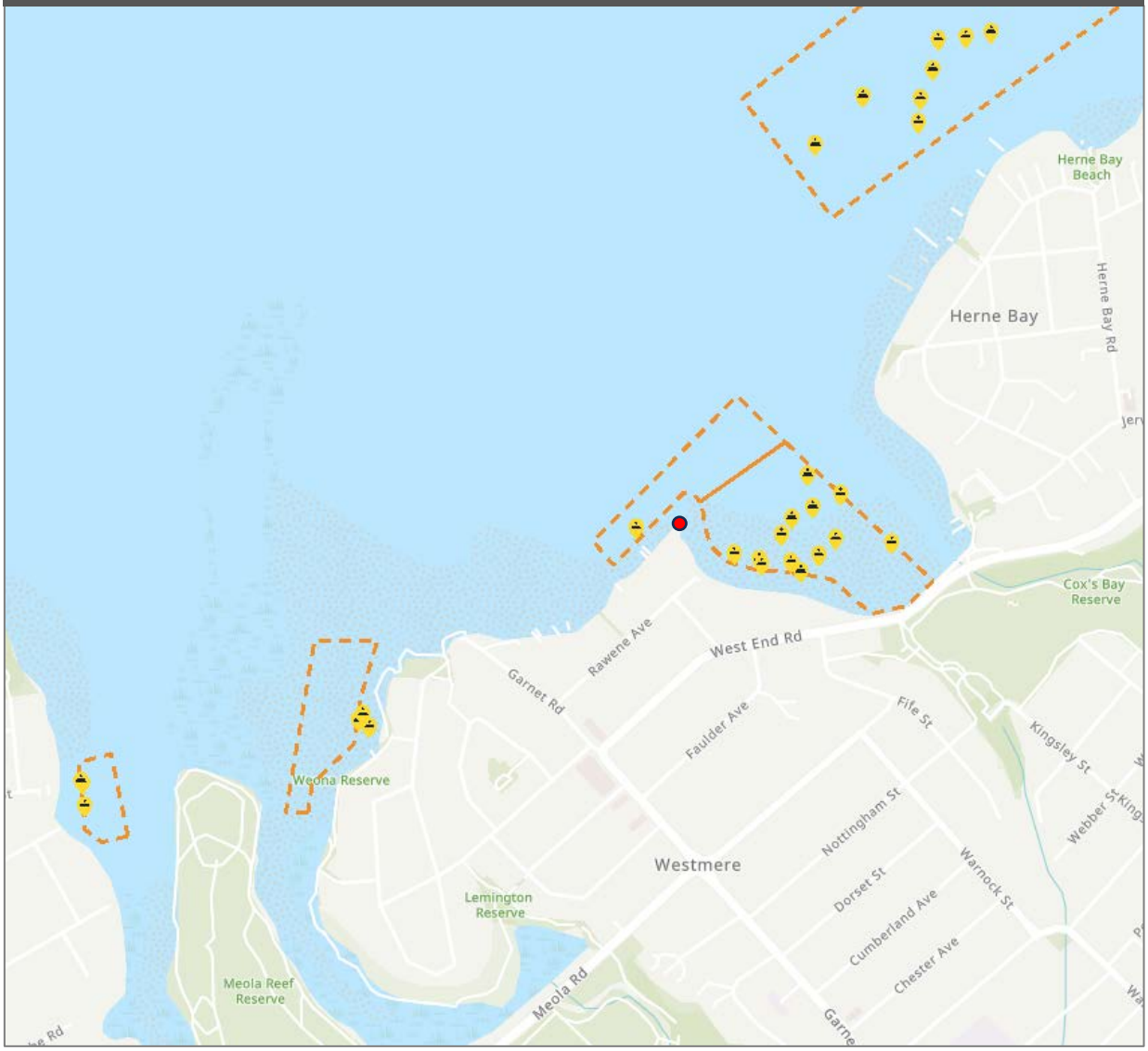
Figure 6 shows Strava data for water-based activities at and near Coxs Bay, showing also Point Chevalier for comparison. The concentrated patterns of activity east of Meola Reef are typical of kite or wind surfing (but kite surfing in this location as discussed below), as is the fan shaped grouping off Point Chevalier Beach. The routes shown within Coxs Bay suggest paddle boarding or kayaking (sit-upons or sea kayaks). Ocean swimming is shown by the point-to-point routes off and along Point Chevalier Beach. Long distance and relatively straight lines are generally sea kayaks, rowers, waka ama or kite or wind surfing. The data show relatively little activity parallel to Rawene Avenue, but some regular use of Coxs Bay for, most likely, paddle boarding and kayaking.

Figure 6: Strava heatmap Coxs Bay, water-based, 12 months of data to Sept 2023

Moorings and large vessels

Mooring zones are defined by the Auckland Unitary Plan.[4] The placement and management of moorings is controlled by Auckland Transport.[5] Fourteen moorings are consented within Coxs Bay and immediately west (Figure 7).[6] Coxs Bay and the coast parallel to Rawene Avenue is tidal and all moorings are exposed at low tides (Figure 8 and Figure 9).

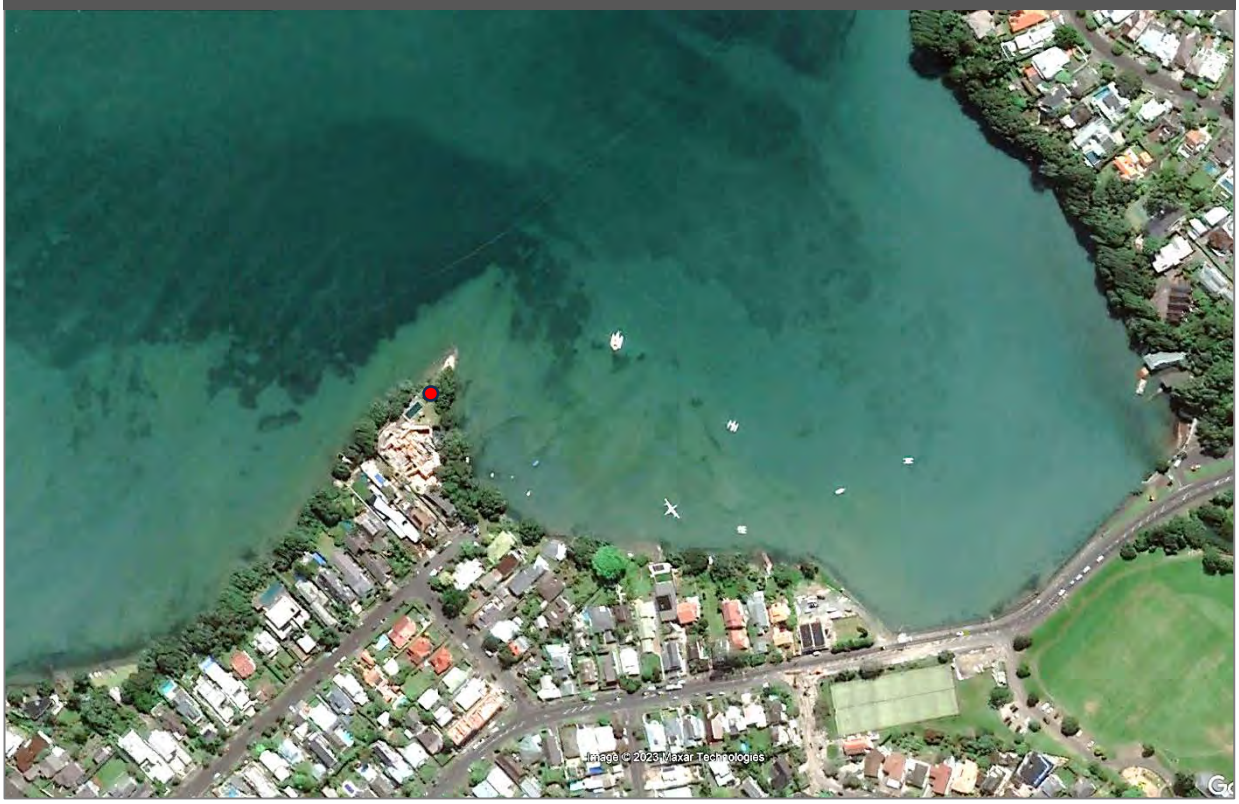
Figure 7: Mooring zones and consented mooring location, Auckland Transport data



[4] Auckland Unitary Plan: Chapter F4 Coastal – Mooring Zone and moorings outside the Coastal Mooring Zone
[5] https://at.govt.nz/boating-marine/moorings/#zones
[6] https://mahere.at.govt.nz/portal/apps/webappviewer/index.html?id=c677de273d674c08a9572b741c1f9b75

Figure 8: Coxs Bay low tide (Google Earth image 6/2022)

Figure 9: Coxs Bay high tide (Google Earth image 10/2022)



The passage of larger recreational vessels[7] at sea is indicated by AIS tracking data. An AIS is an Automatic Identification System mounted on a vessel which periodically transmits the vessel's 'personal' information – such as name, size and type – as well as its speed and heading, via VHF radio signal and, when capable, by satellite. It also receives the same data from other vessels via VHF and can track their courses and warn of collisions.

Certain rules apply to the compulsory use of AIS on commercial vessels, but they are voluntary for pleasure craft. There are no available data about the uptake of AIS systems by pleasure craft in New Zealand, but Figure 10 shows a reasonably high level of use in Auckland, considering the pleasure craft indicated are largely at anchor or in a marina, and most pleasure craft will turn the transmission off when the vessel is not in use (that is, Figure 10 shows only a percentage of pleasure craft fitted with AIS).[8] The AIS data therefore provide a sample of recreational boating activity, much in the same manner as a sample applied in a social survey. Like Strava, the respondent group is self-selected and the biases are unknown (it is another form of 'tag and release').

Figure 10: Pleasure craft transmitting live AIS data, Auckland, 15/9/23 – Marine Traffic data

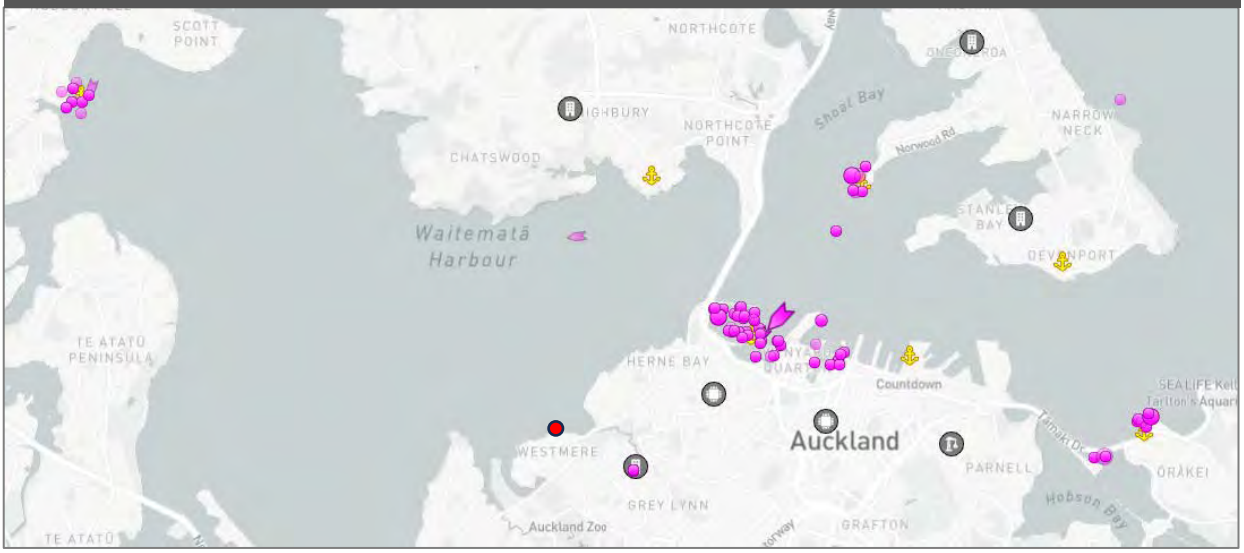


Figure 11 shows recorded vessel tracks for Auckland Harbour for 2022. There is no recorded activity near the proposal site, which is likely due to the shallow local water depths (Figure 12). Almost all traffic is confined to the channels leading to Westpark Marina and anchorages in the Whau River and towards Hobsonville.

[7] Generally 10m plus, although some small craft like sea kayaks used for fishing offshore carry AIS to help avoid being hit by other craft. For example, see:
https://www.marinetraffic.com/en/ais/details/ships/shipid:837588/mmsi:915120030/imo:0/vessel:DESTIN

[8] The author's experience of sailing near Auckland with AIS is that there is such a high level of uptake by pleasure craft that it is necessary to turn off all collision warnings.

Figure 11: AIS data 2022, all vessels, Auckland – Marine Traffic data

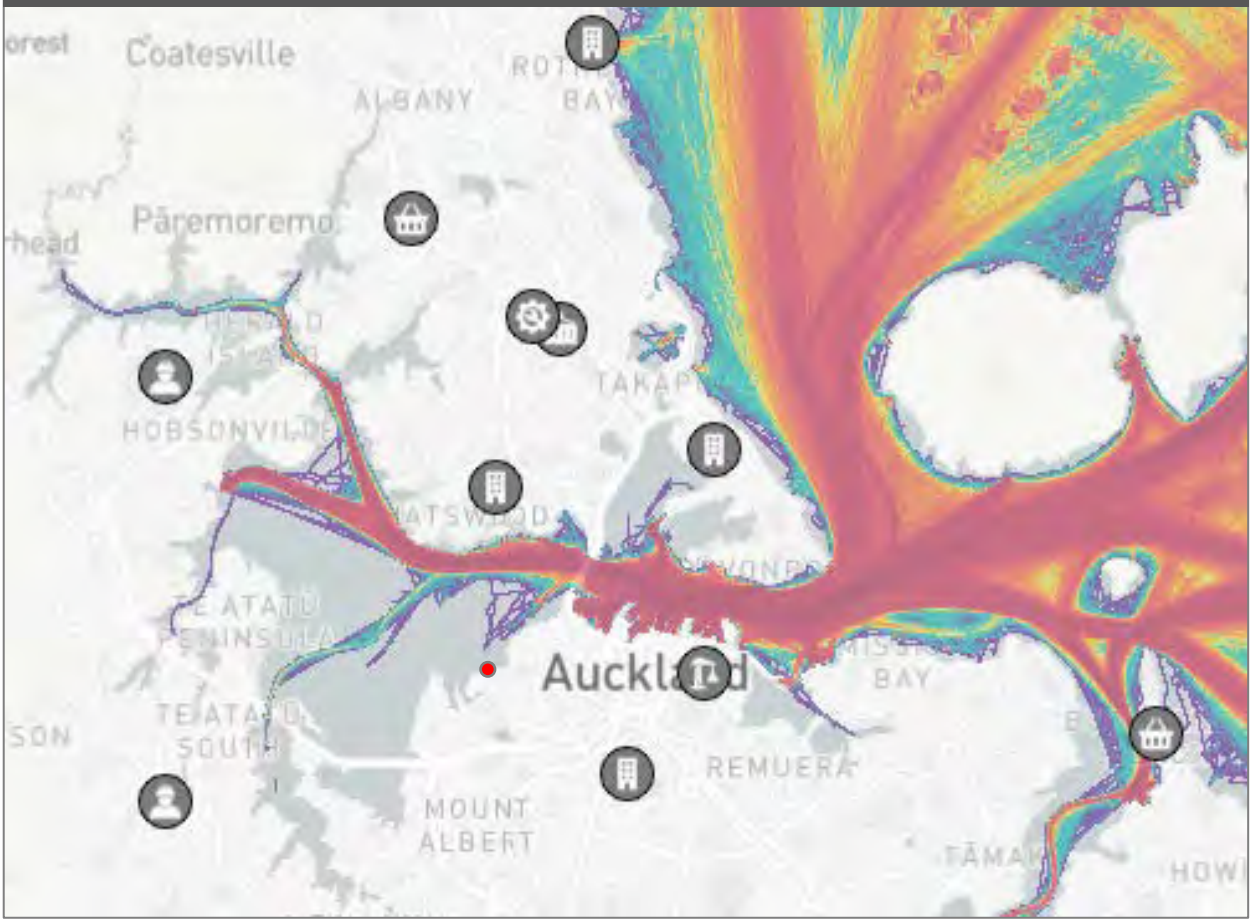
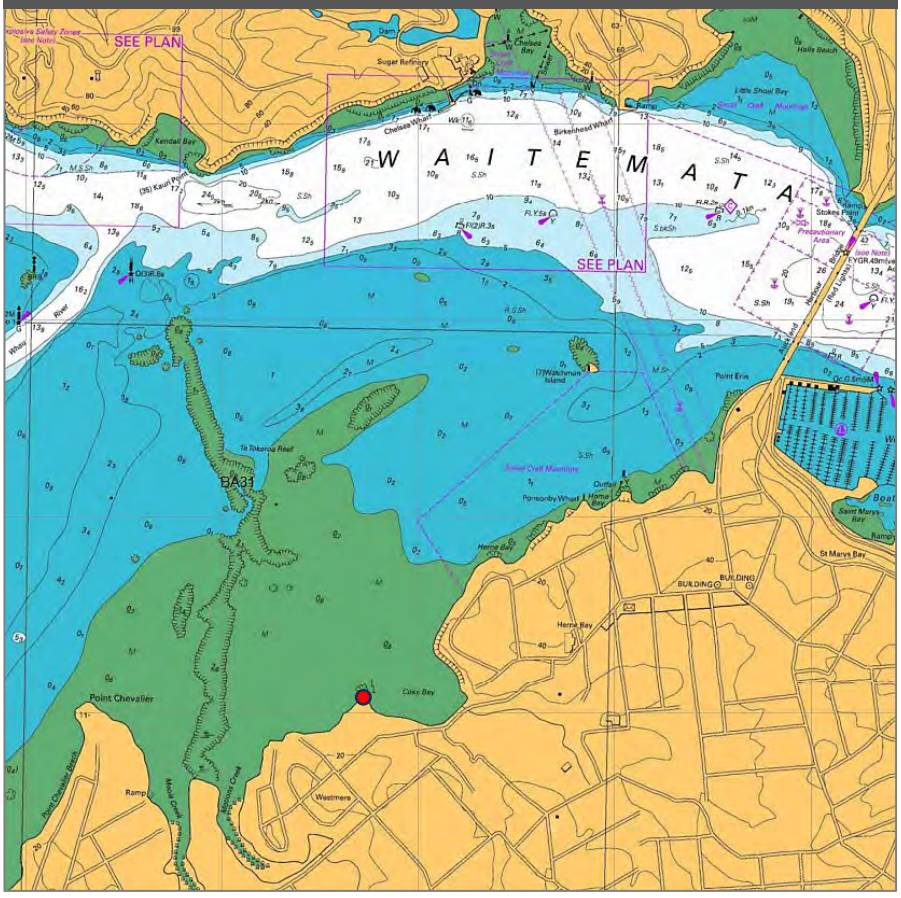


Figure 12: NZ5323 chart detail



Swimming

Auckland Council monitors bathing water quality at multiple swimming sites in the Waitematā Harbour, including at Coxs Bay and near Meola Reef (Figure 13, with green showing good bathing water quality at the time of writing). The data are reported on the LAWA national water quality website. LAWA reports Coxs Bay and Meola Reef to have a 'special status', stating:[9,10]

> *Unsuitable for swimming.*
> *This site has a long-term notice in place, as there is a moderate to high risk of illness for swimmers.*
>
> *Sites with this special status have a history of poor or highly variable water quality. This status is applied if known risk factors occur, such as:*
>
> - *having known discharges (e.g. stormwater, sewage) impacting on water quality, or*
> - *having consistently poor water quality based on monitoring data collected.*

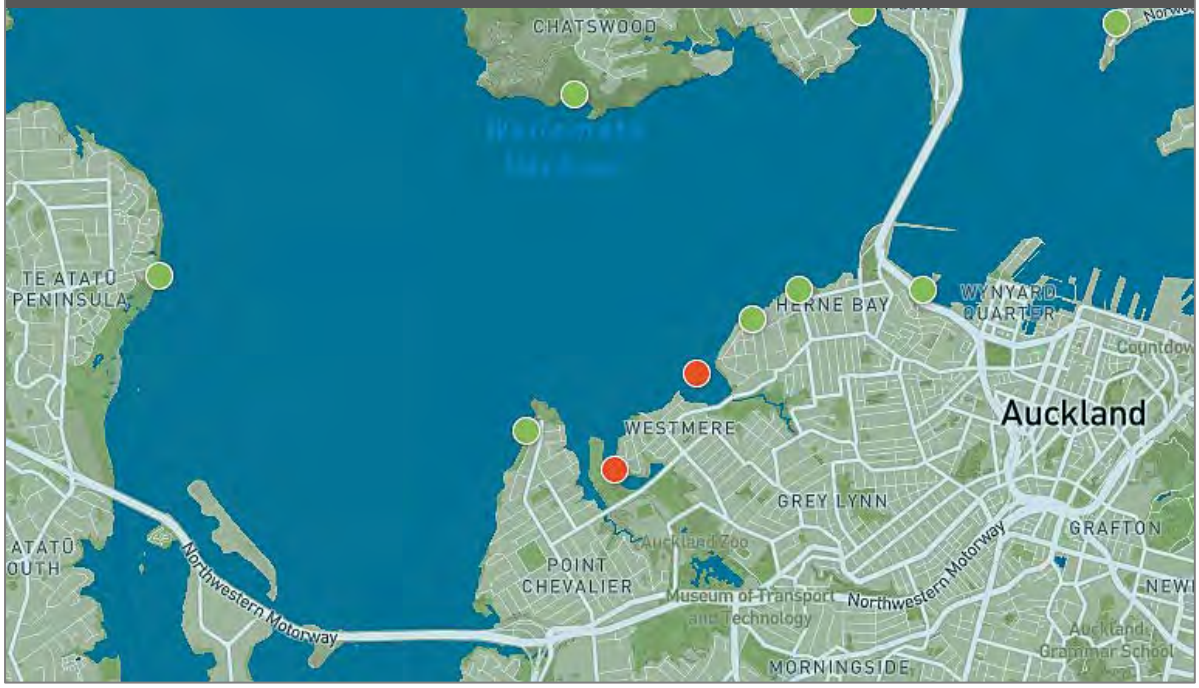
And:

> *Meola Reef/Coxs Bay is a good spot for a walk.*
>
> *Swimming, collecting shellfish, and fishing are not recommended due to poor water quality.*

Watercare's Central Interceptor project intends to significantly improve water quality in the Meola catchment: [11]

> *Within the Central Interceptor catchment area there are some 122 active overflows which currently discharge in the order of 2,200,000 m^3 of untreated diluted wastewater to the environment each year. These overflows affect the natural and ecological values of Motions Creek, Meola Creek, Oakley Creek, Whau Creek, and the coastal waters around Point*

Figure 13: Local Auckland Council bathing water quality measurement sites



[9] https://www.lawa.org.nz/explore-data/auckland-region/swimming/coxs-bay/swimsite
[10] https://www.lawa.org.nz/explore-data/auckland-region/swimming/meola-reef/swimsite
[11] Watercare, 2012. *Central Interceptor Main Project Works Resource Consent Applications and Assessment of Effects on the Environment Part A – AEE Report*. Section 10.2.4

Chevalier and the Waterview Inlet, creating potential public health risks for recreational users, and reducing the amenity and cultural values of the waterbodies. With ongoing growth and development these overflow quantities and the associated effects will continue to increase….

Watercare's two largest network overflows discharge to the head of Meola Creek, adjacent to Mount Albert Grammar School and the Roy Clements Treeway walkway. Other significant overflows occur further downstream. These overflows adversely affect the amenity values of these public areas, reducing aesthetic and recreational values. The main project works will significantly reduce the level of overflow to the Meola Creek, and will enhance amenity values.

Works on the Central Interceptor are expected to be completed by 2028,[12] which should result in increased water-based recreation in the Coxs Bay / Meola Reef area.

Online references to recreational activities

Kite surfing at and near Meola reef is referenced multiple times in online guides or discussions (verbatim):

- *The huge natural Waitemata Harbour offers two more options: Pt. Chevalier is best three hours either side of low tide, then at high water Herne Bay stays particularly flat on 'Meola Reef'.*[13]
- *North Island has many spots around Auckland. Point Chevalier is a shallow spot for beginners close to the city. Meola Reef is perfect for freestyle, but there is no beach to launch from. Shoal Bay is another good spot with a sandbar that suits more advanced riders.*[14]
- *For westerlies Pt Chev. is okay although the oyster shells can rip your kite to bits, hence the nick name Pt Shred. Meola Reef, just up the road is great for flat water 2hrs either side of low water but quite hard to find. (i can give directions). Shoal bay is another fantastic place with really nice flat water 2 hrs either side of high tide this time and there is a really good bunch of people who kite there.*[15]
- *Auckland in Feb tends to be light with late afternoon seabreezes usually reaching kiteable levels of 10-12 knots, but the occasional northerly storm. Bring your 20 but you should have a 12 or 10. Waiheke is OK at low tide, otherwise all the usual haunts-Shoal bay, Orewa, Shakespeare Bay, Takapuna. My fave is Meola reef at low tide-a long walk out but smoooth water, steady winds in SW and safe.*[16]
- *Meola reef is just above the harbour bridge.*
  Any local kite shop can point you there. If you are good you can jump mangroves when the tide is close to high, but when the tide is full there's no beach to land/launch so you gotta get off the water 1 hour either side of high tide. Only works in the westerly quarter.[17]
- *Meola reef, Garnet Rd Description:*
  Great Location. Best suited to Beginners at Low as it is waist deep forever. Beginners stay

[12] https://www.watercare.co.nz/About-us/Projects-around-Auckland/Grey-Lynn-to-Point-Erin-Central-Interceptor-extens Consent was issued for the 'Central Interceptor Extension - Pt Erin Tunnel - Pt Erin Park & Curran Street & Road Reserve' on 21 September 2023.
[13] https://web.kite-and-windsurfing-guide.com/spots/kiteboarding-windsurfing-sup/jenkins-bay-auckland-new-zealand.html
[14] https://rove.me/to/new-zealand/kitesurfing-and-windsurfing
[15] https://www.extremekites.org/topic/41278-beaches-in-new-zealand-auckland-coromandel/
[16] https://kiteforum.com/viewtopic.php?t=5435
[17] https://kiteforum.com/viewtopic.php?t=5435

out of the channel and close to shore. Take a mental picture of the Oysters at Low because if you end up on them at Mid-High, Watch out! Take a pump with you aa well because its a long walk back if the kite goes soft.
Wind: WSW/W-Cross shore NW-Cross on
Tides: Low for Beginners, Mid to high for Locals and Experienced (because of the Oysters)
Rigging: Pump up in front of the carpark. Rig by the water.[18]

There are sparse references for other activities (paddle boarding and kayaking only, and noting the kayaking reference is a decade old):

- *Being a water baby, I was excited (albeit a little nervous) about my first-ever stand up paddle board lesson with Eddie from NZ Boardstore. After some handy hints about how to hold my paddle, a few choice instructions and a bit of practise on the grass, he helped me glide gently out into the calm waters of the Meola Reef inlet feeling as in control as I possibly could. He even promised me there was no way I would fall in and that gave me enough confidence to get my stroke on as we ventured out and around the reef.*[19]
- *Trip Name: Westhaven to Point Chevalier*
  Date: 11 August 2013
  General Plan: Meet 0830 on the water by 0900. Meeting outside 86 Westhaven Drive (Yachting NZ). Paddling through Westhaven and under the Auckland Harbour Bridge. We will pass a number of small bays, all of which have their share of expensive homes. This stretch of coastline includes Te Tokoroa Reef, or more commonly referred to as Meola Reef. Lunch will be at Point Chevalier Beach, then returning to Westhaven.
  Distance:15 km
  Minimum Ability Level: Beginner
  Emergency Exit Points: Home Bay, Herne Bay, Coxs Bay[20]

On-site Observations

The ecology assessment completed by Treffery Barnett of Bioresearches (1 April 2022) reported on observed recreational activity near the proposal site, including:

- *1 April 2022 – within an hour of high tide four paddle boarders (three separate occurrences), and two kayakers were present within 100m of the roosts.*
- *…existing water based recreational uses of the area, which primarily occur at high tide, public access of the coastline outside high tide and activities from the property from children and animals who regularly use the point.*

The applicant has noted (as reported in the Mt Hobson Group *Further information request response 1 April 2022*):

- *Walkers – the area around the headland is sporadically used by people walking with or without dogs, this is generally in the morning and evening but only up to around 3 hours before or after high tide as there is no walking access around the headland during the high tide sea level.*

[18] https://www.google.com/maps/d/u/0/viewer?mid=1keW0B-41o86xIzvleMNpRFlTFNU&hl=en_US&ll=-36.85188054338234%2C174.73194917182218&z=15
[19] https://localist.co.nz/l/the-nz-boardstore-18817
[20] https://www.yakityyak.co.nz/North+Shore/North+Shore+Yakity+Yak+Kayak+Club/Older+Trips/Westhaven+to+Point+Chevalier.html

- *Kite surfers: Kite surfers do not enter Cox's Bay itself, due to the presence of moored boats and lack of wind with it being a sheltered bay. Kite surfers are generally observed on weekends and only when wind conditions allow for it, given the need for high winds. Kite surfers are generally seen a minimum of 250m from the headland in a north westerly direction.*
- *Kayaks / Paddleboarders / Rowers etc: The area around the headland is accessible to kayaks and paddleboarders within approximately 1.5 hours of high tide, as outside these times the water has receded from around the headland itself.*
- *Swimmers: Due to ongoing water quality issues within Cox's Bay (monitoring indicates a high risk of illness from swimming), there are only very rarely people swimming.*

Recreation activity summary

The data presented indicate:

- Regional significance for kite surfing on the eastern side of Meola Reef, with activity avoided at high tide due to a lack of local beaches for launching (although there are differing opinions about preferred tide times).
- Local significance for walking with and without dogs along the coast between Westmere Park and Coxs Bay, with low levels of activity and not possible at high tides.
- Local significance for paddle boarding and kayaking between Westmere and into Coxs Bay, with most activity in Coxs Bay and east of the proposal site, but passing close to the headland.
- No significance for swimming.
- Local significance for boat mooring in Coxs Bay.

The level of use of the setting from Meola Reef to Herne Bay is likely to increase as a result of water quality improvements resulting from the operation of Watercare's Central Interceptor.

Effects analysis

I consider two potential effects on recreational users of the setting: hazard from rotor downwash, and noise.

Rotor downwash

John Fogden notes in his s92 response to Auckland Council (letter dated 14 March 2022):[21]

> *While unlikely, any effects on recreational uses of Cox's Bay, including activities such as kite surfing, sailing or other coastal or water users transiting below the departure or arrival flight path of the helicopter utilising the proposed helipad, from a safety or compliance perspective, would be the effects of rotor downwash while directly underneath or close to (within approx. 200 ft) the helicopter.*
>
> *Such effects would be negated by the actions of the pilot complying with Civil Aviation Rules [CARs].*
>
> ***Civil Aviation Rules [CARs]***

[21] I have corrected the heading number references in the Civil Aviation Rules quoted.

CAR Part 91 General Aviation

91.127 Use of aerodromes ….

(b) No person may operate an aircraft at an aerodrome unless—….

(4) the runway, heliport, or water channel, is clear of all persons, animals, vehicles, vessels, or other obstructions during landing or take-off, other than persons, vehicles, or vessels essential to the operation.

To comply with this rule requirement, the pilot (in this scenario) will have two options available:

- *They may deviate their flight path to another portion of [but remaining within] the approach/departure sector as shown in Fig. 1 of the Hegley Acoustic Consultants Acoustic Report filed with the application, to avoid overflying or otherwise affecting other persons; or*
- *They may delay their approach or departure, for what will amount to a minute or so, whilst recreational or other water users continue on their travels away from the beneath the flight path.*

Both options are common practices pilots employ to comply with the rule where third parties are involved.

The four-hour low tide window for helicopter movements will limit the potential for effects on kite surfers and other sailors close to the landing site due to the extent of local dry mudflat, and the separation between the preferred kite surfing location at Meola Reef. Paddle boarding and kayaking will be similarly separated from the site during the low tide window. Potential effects from rotor downwash on wind-sensitive activities are likely to be less than minor.

Noise

Noise sensitive recreation activities are primarily walking with and without dogs between Westmere Park and Coxs Bay on the foreshore at low tide (the four-hour window of activity).

Swimming near the landing site at low tide now and in the future is unlikely to be affected due to the site's distance from beach access points and the nature of the local mudflats.

Boating activities – especially those associated with moored vessels – will be similarly limited due to the tidal nature of the setting. Boat users may, however, access their vessels at low tide for, for example, maintenance activities.

Sea kayaking and paddle boarding will be carried out with some separation from the landing site during the low tide window.

Treffery Barnett of Bioresearches noted recreational activity in the setting primarily near high tide.

Potential noise effects are therefore limited in opportunity considering the short period of effect (descent from 500 feet to landing in approximately 1 minute and that the departure from take-off to a height of 500 feet in approximately 20 seconds) and the need for those short movements to coincide with the presence of a walker or other visitor to the coast. John Fogden's response to the s92 request, quoted above, indicates the requirement to avoid passing close to any member of the public. Noise effects from a very close encounter will therefore be avoided.

Nevil Hegley in his response to the s92 request (dated 21 March 2022) describes a 50dBA Ldn contour around the proposed landing site (his Attachment A). I take this to be an area where noise effects are likely to have high adverse effects on a person's enjoyment of their recreation, albeit momentarily. This will include fewer than a dozen moored vessels and the walking opportunity immediately surrounding the Rawene Avenue headland.

Due to the infrequency of helicopter activity (four movements per day) and the low use of the setting for recreation, effects of noise on recreation must be considered to be minor.

Conclusion on recreation effects

Overall, I consider that the potential effects of the proposal on recreation will be minor. This scale of effect might change once the Central Interceptor is complete and water quality in the Coxs Bay / Meola Reef area improves after project completion in 2028. Participation in water-based recreation in the area is then likely to increase, particularly swimming and the likes of paddle boarding and kayaking. However, the proposal limits helicopter activity to within two hours of low tide. Any increase in water-based activities resulting from improved water quality will occur at and near high tide due to the tidal nature of the setting, and the scale of effect will likely remain minor in the future.

D

APPENDIX D

Written Approval Forms

Written approval of affected persons

PART A (to be completed by applicant)

PART A – APPLICATION

Applicant(s) name: (*please write all names in full*): ANNA MOWBRAY AND ALI WILLIAMS

Address of proposed activity: 38 RAWENE AVENUE, WESTMERE

Consent number if known:

Brief description of proposed activity:

USE OF THE SITE FOR THE TAKE-OFF AND LANDING OF A HELICOPTER

Plan references (including title, author and date):

NORTH EAST OF HOUSE AS SHOWN ON FIGURE 1 WITHIN HEGLEY ACOUSTIC CONSULTANTS REPORT "PROPOSED HELIPAD 38 RAWENE AVENUE, WESTMERE - ASSESSMENT OF NOISE DATED 24 SEPTEMBER 2021

Resource consent(s) being sought for (describe area(s) of non-compliance):

NON-COMPLYING ACTIVITY CONSENT PURSUANT TO H4.4.1 (A1) - ACTIVITIES NOT PROVIDED FOR AND RESTRICTED DISCRETIONARY ACTIVITY CONSENT PURSUANT TO E25.4.1(A2) FOR AN ACTIVITY THAT DOES NOT COMPLY WITH STANDARD E25.6.32 NOISE LEVELS FOR HELICOPTERS TAKE-OFF AND LANDING

PART B (to be completed by persons and/or organisations providing written approval)

PART B – AFFECTED PERSON(S)

		Tick if Owner	Tick if Occupier
Full name: (*in print*)	THE STARK TRUSTEES LIMITED	✓	
Full name: (*in print*)	(Stefanie Winitana as sole director)		
Full name: (*in print*)			

Address of affected property: 34 RAWENE AVENUE, WESTMERE Postcode:

Phone: Mobile:

PART B – AFFECTED PERSON(S) *(continued)*

I have authority to sign on behalf of all the other: (*tick one*)

✔ OWNER(S) ☐ OCCUPIER(S)

of the property. Please provide documentation proving this authority.

Please note: the approval of all the legal owners and the occupiers of the affected property may be necessary.

PART C (to be completed by persons and/or organisations providing written approval)

PART C – DECLARATION

✔ I/We have been given details of the proposal and plans to which I/we are giving written approval.

✔ I/We have signed each page of the plans in respect of this proposal. These need to accompany this form.

✔ I/We understand that by giving my/our written approval, the Council when considering the application cannot take account of any actual or potential effects of the activity on my/our property.

✔ Further, I/we understand that at any time before the determination of the application, I/we may give notice in writing to the Council that this approval is withdrawn.

Note: You should only sign below if you fully understand the proposal. If you require the resource consent process to be explained you can contact the Customer Service Team at the Council who can provide you with information.

Signature(s):		Date:	19/10/21
Signature(s):		Date:	
Signature(s):		Date:	

PRIVACY INFORMATION

The council requires the information you have provided on this form to process your application under the RMA and to collect statistics. The council will hold and store the information, including all associated reports and attachments, on a public register. The details may also be made available to the public on the council's website. These details are collected to inform the general public and community groups about all consents which have been processed or issued through the council. If you would like to request access to, or correction of any details, please contact the council.

Written approval of affected persons

PART A (to be completed by applicant)

PART A – APPLICATION

Applicant(s) name: (*please write all names in full*)	ANNA MOWBRAY AND ALI WILLIAMS
Address of proposed activity:	38 RAWENE AVENUE, WESTMERE
Consent number if known:	

Brief description of proposed activity:

USE OF THE SITE FOR THE TAKE-OFF AND LANDING OF A HELICOPTER

Plan references (including title, author and date):

NORTH EAST OF HOUSE AS SHOWN ON FIGURE 1 WITHIN HEGLEY ACOUSTIC CONSULTANTS REPORT "PROPOSED HELIPAD 38 RAWENE AVENUE, WESTMERE - ASSESSMENT OF NOISE DATED 24 SEPTEMBER 2021

Resource consent(s) being sought for (describe area(s) of non-compliance):

NON-COMPLYING ACTIVITY CONSENT PURSUANT TO H4.4.1 (A1) - ACTIVITIES NOT PROVIDED FOR AND RESTRICTED DISCRETIONARY ACTIVITY CONSENT PURSUANT TO E25.4.1(A2) FOR AN ACTIVITY THAT DOES NOT COMPLY WITH STANDARD E25.6.32 NOISE LEVELS FOR HELICOPTERS TAKE-OFF AND LANDING

PART B (to be completed by persons and/or organisations providing written approval)

PART B – AFFECTED PERSON(S)

		Tick if Owner	Tick if Occupier
Full name: (*in print*)	THE STARK TRUSTEES LIMITED	✓	✓
Full name: (*in print*)	(Stefanie Winitana as sole director)		
Full name: (*in print*)			

Address of affected property:	34 RAWENE AVENUE, WESTMERE	Postcode:	
Phone:		Mobile:	

PART B – AFFECTED PERSON(S) *(continued)*

I have authority to sign on behalf of all the other: (*tick one*)

☑ OWNER(S) ☐ OCCUPIER(S)

of the property. Please provide documentation proving this authority.

Please note: the approval of all the legal owners and the occupiers of the affected property may be necessary.

PART C (to be completed by persons and/or organisations providing written approval)

PART C – DECLARATION

☑ I/We have been given details of the proposal and plans to which I/we are giving written approval.

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Signature(s):		Date:	
Signature(s):		Date:	

PRIVACY INFORMATION

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Written approval of affected persons

Auckland Council
Te Kaunihera o Tāmaki Makaurau

PART A (to be completed by applicant)

PART A – APPLICATION

Applicant(s) name: (*please write all names in full*)	ANNA MOWBRAY AND ALI WILLIAMS	
Address of proposed activity:	38 RAWENE AVENUE, WESTMERE	Consent number if known:

Brief description of proposed activity:

USE OF THE SITE FOR THE TAKE-OFF AND LANDING OF A HELICOPTER

Plan references (including title, author and date):

NORTH EAST OF HOUSE AS SHOWN ON FIGURE 1 WITHIN HEGLEY ACOUSTIC CONSULTANTS REPORT "PROPOSED HELIPAD 38 RAWENE AVENUE, WESTMERE - ASSESSMENT OF NOISE DATED 24 SEPTEMBER 2021

Resource consent(s) being sought for (describe area(s) of non-compliance):

NON-COMPLYING ACTIVITY CONSENT PURSUANT TO H4.4.1 (A1) - ACTIVITIES NOT PROVIDED FOR AND RESTRICTED DISCRETIONARY ACTIVITY CONSENT PURSUANT TO E25.4.1(A2) FOR AN ACTIVITY THAT DOES NOT COMPLY WITH STANDARD E25.6.32 NOISE LEVELS FOR HELICOPTERS TAKE-OFF AND LANDING

PART B (to be completed by persons and/or organisations providing written approval)

PART B – AFFECTED PERSON(S)

		Tick if Owner	Tick if Occupier
Full name: (*in print*)	Dean Hugh Nicolson	✓	
Full name: (*in print*)			
Full name: (*in print*)			

Address of affected property: 36 RAWENE AVENUE, WESTMERE Postcode: 1022

Phone: Mobile: 0275770575

PART B – AFFECTED PERSON(S) *(continued)*

I have authority to sign on behalf of all the other: (*tick one*)

✓ OWNER(S) ☐ OCCUPIER(S)

of the property. Please provide documentation proving this authority.

Please note: the approval of all the legal owners and the occupiers of the affected property may be necessary.

PART C (to be completed by persons and/or organisations providing written approval)

PART C – DECLARATION

✓ I/We have been given details of the proposal and plans to which I/we are giving written approval.

✓ I/We have signed each page of the plans in respect of this proposal. These need to accompany this form.

✓ I/We understand that by giving my/our written approval, the Council when considering the application cannot take account of any actual or potential effects of the activity on my/our property.

✓ Further, I/we understand that at any time before the determination of the application, I/we may give notice in writing to the Council that this approval is withdrawn.

Note: You should only sign below if you fully understand the proposal. If you require the resource consent process to be explained you can contact the Customer Service Team at the Council who can provide you with information.

Signature(s):		Date:	1-11-21
Signature(s):		Date:	
Signature(s):		Date:	

PRIVACY INFORMATION

The council requires the information you have provided on this form to process your application under the RMA and to collect statistics. The council will hold and store the information, including all associated reports and attachments, on a public register. The details may also be made available to the public on the council's website. These details are collected to inform the general public and community groups about all consents which have been processed or issued through the council. If you would like to request access to, or correction of any details, please contact the council.

Written approval of affected persons

Auckland Council
Te Kaunihera o Tāmaki Makaurau

PART A (to be completed by applicant)

PART A – APPLICATION

Applicant(s) name: (please write all names in full): Ali Williams and Anna Mowbray

Address of proposed activity: 38 Ranvere Ave. | Consent number if known:

Brief description of proposed activity:

Helicopter Pad and use for flights

Plan references (including title, author and date):

On the site – northeast of swimming pool.

Resource consent(s) being sought for (describe area(s) of non-compliance):

- Resource consent is required to use site for a helipad and for take offs + landings.

PART B (to be completed by persons and/or organisations providing written approval)

PART B – AFFECTED PERSON(S)

		Tick if Owner	Tick if Occupier
Full name: (in print)	CLARENCE HUGH NICHOLSON.	✓	
Full name: (in print)	Margaret Joyce Nicholson	✓	
Full name: (in print)	BRUCE CYRIL McNEILL	✓	

Address of affected property: 36 Ranvere Ave. Postcode 1022

Phone: | Mobile: 0274938872.

PART B – AFFECTED PERSON(S) *(continued)*

I have an only or shared [illegible] (tick one):

☑ OWNER(S) ☐ OCCUPIER(S)

of the property. Please provide documentation proving this authority.

Please note: the approval of all the legal owners and the occupiers of the affected property may be necessary.

PART C (to be completed by persons and/or organisations providing written approval)

PART C – DECLARATION

☑ I/We have been given details of the proposal and plans to which I/we are giving written approval.

☐ I/We have signed each page of the plans in respect of this proposal. These need to accompany this form. N/A

☑ I/We understand that by giving my/our written approval, the Council when considering the application cannot take account of any actual or potential effects of the activity on my/our property.

☑ Further, I/we understand that at any time before the determination of the application, I/we may give notice in writing to the Council that this approval is withdrawn.

Note: You should only sign below if you fully understand the proposal. If you require the resource consent process to be explained you can contact the Customer Service Team at the Council who can provide you with information.

Signature(s):	N. Nicholson	Date:	28/7/21.
Signature(s):	[signature]	Date:	28-7-2021
Signature(s):	[signature]	Date:	29/7/21

PRIVACY INFORMATION

The council requires the information you have provided on this form to process your application under the RMA and to collect statistics. The council will hold and store the information, including all associated reports and attachments, on a public register. The details may also be made available to the public on the council's website. These details are collected to inform the general public and community groups about all consents which have been processed or issued through the council. If you would like to request access to, or correction of any details, please contact the council.

Written approval of affected persons

Auckland Council
Te Kaunihera o Tāmaki Makaurau

PART A (to be completed by applicant)

PART A – APPLICATION

Applicant(s) name: *(please write all names in full)*: Ali Williams and Anna Mowbray

Address of proposed activity: 38 Ranere Ave.

Consent number if known:

Brief description of proposed activity:

Helicopter Pad and use for flights

Plan references (including title, author and date):

On the site – northeast of swimming pool.

Resource consent(s) being sought for (describe area(s) of non-compliance):

- Resource consent is required to use site for a helipad and for take offs + landings.

PART B (to be completed by persons and/or organisations providing written approval)

PART B – AFFECTED PERSON(S)

		Tick if Owner	Tick if Occupier
Full name: *(in print)*	Dean Nicholson	✓	✓
Full name: *(in print)*	Amanda Jane Nicholson	✓	✓
Full name: *(in print)*			

Address of affected property: 36 Ranere Ave. Postcode: 1022

Phone:

Mobile:

PART B – AFFECTED PERSON(S) *(continued)*

I have authority to sign on behalf of all the other: *(tick one)*

☑ OWNER(S) ☑ OCCUPIER(S)

of the property. Please provide documentation proving this authority.

Please note: the approval of all the legal owners and the occupiers of the affected property may be necessary.

PART C (to be completed by persons and/or organisations providing written approval)

PART C – DECLARATION

☑ I/We have been given details of the proposal and plans to which I/we are giving written approval.

☐ I/We have signed each page of the plans in respect of this proposal. These need to accompany this form. N/A

☑ I/We understand that by giving my/our written approval, the Council when considering the application cannot take account of any actual or potential effects of the activity on my/our property.

☑ Further, I/we understand that at any time before the determination of the application, I/we may give notice in writing to the Council that this approval is withdrawn.

Note: You should only sign below if you fully understand the proposal. If you require the resource consent process to be explained you can contact the Customer Service Team at the Council who can provide you with information.

Signature(s):		Date:	29-7-2021
Signature(s):		Date:	29.07.2021
Signature(s):		Date:	

PRIVACY INFORMATION

The council requires the information you have provided on this form to process your application under the RMA and to collect statistics. The council will hold and store the information, including all associated reports and attachments, on a public register. The details may also be made available to the public on the council's website. These details are collected to inform the general public and community groups about all consents which have been processed or issued through the council. If you would like to request access to, or correction of any details, please contact the council.