Te āhua o te Rohe Te Ika Whenua o Waitākere 2017-2022

Waitākere Ranges Heritage Area 2017–2022

Five-year Monitoring Report

July 2023

aucklandcouncil.govt.nz

Waitākere Ranges Heritage Area 2017-2022

Five-year Monitoring Report

Plans and Places

Planning Environment and Parks Committee approval June 2023

July 2023

ISBN 978-1-99-106060-0 (Print)

ISBN 978-1-99-106061-7 (PDF)

Cover Photo 0-1 View from Waikumete Cemetery looking across Parrs Park and over the rural foothills towards the Waitākere Mountain Range

Contents

He mihi

Ko Hikurangi te maunga.	Hikurangi is the mountain.
Ko Waitākere te awa.	Waitākere is the river.
Ko Te Au o te Whenua te tangata.	Te Au o te Whenua is the chief.
Ko Te Kawerau-a-Maki te iwi.	Te Kawerau-a-Maki is the tribe.
Korōria ki te Atua	Glory to God
Maungārongo ki te whenua	Peace to the land
Whakaaro pai ki ngā tāngata katoa.	May good thoughts come to all.
I te tuatahi ka mihi ki a Kingi Tūheitia, ki tōna hoa rangatira, a Atawhai me tā rāua whānau e noho mai nei i runga i te ahurewa o ōna mātua tūpuna, pai marire.	Firstly, I greet King Tūheitia, And his wife Atawhai and their family who are descendants of royal ancestry, pai marire.
Ki ngā mate, koutou kua whetūrangitia, kua mene ki te pō – haere, haere, haere.	To the departed dead, those who have recently passed. Darkness has called upon you. Go once, go twice, go thrice.
Mai i Te Mānukanuka o Hoturoa ki nga wai whakapapa pounamu o te Waitematā, he reo mihi tenei kia koutou.	From Te Mānukanuka o Hoturoa to the pristine waters of the Waitematā, this greeting to all.
Nga Mana Whenua o tenei takiwa, Ngati Whatua me Te Kawerau a Maki. Ko koutou e whakaruruhau nei i te Tāone Nui o Tāmaki Makaurau – Ko Te Wao-nui-a-Tiriwa - tu te Ao, tu te Po - tu rangatira mai.	From the tribes of this region, Ngati Whatua, Te Kawerau-a-Maki and Te Wao nui o Tiriwa - stand by day, stand by night, stand proudly.
E kore e taea e te kupu te whakapuaki i te mahana o te rā, te mākuku o te ua, me te marietanga o te hau. Mā te kite, mā te rongo, mā te whakaaro ka tau te kupu.	There are no words to express the warmth of the sun, the drizzle of the rain, and the peaceful wind. With sight, with sound with thoughts, words will appear.
‘Ahakaoa he iti, he pounamu.’	‘Though small, it is precious.’
He mihi poto engari he whakaaro nui.	Through a small greeting, many thoughts appear.
Noho ora mai i raro i ngā manaakitanga o te Runga Rawa	Farewell and thanks to God almighty
Aroha nui.	With deep affection.

The Waitākere Ranges Heritage Area

The Waitākere Ranges Heritage Area Act 2008 (the Act) establishes the heritage area as a place of national, regional, and local significance.

The Act identifies specific 'heritage features' and seeks to 'promote', 'protect' and 'enhance' these for present and future generations.

These heritage features include:

- ecosystems
- landscapes and landforms
- the subservience of the built environment to the natural and rural landscape
- past and present human culture
- opportunities for wilderness experiences and recreation
- the regional park
- the water catchment and supply system.

The Act says that the heritage area has its own intrinsic value. It:

- sets the boundary of the heritage area
- responds to concerns about the effects of development within the heritage area
- aims to preserve the heritage area's unique natural character and cultural heritage
- recognises that people live and work within the heritage area in distinct communities and enables them to provide for their social, economic, environmental, and cultural wellbeing
- recognises the importance of the Regional Park as an accessible public place with significant natural, historical, cultural, and recreational resources
- acknowledges the heritage area's particular cultural significance to Te Kawerau ā Maki and Ngāti Whātua,
- provides additional matters for Auckland Council and 'certain other persons' to consider when making a decision, exercising a power, or carrying out a duty that relates to the heritage area, and
- sets a five-year monitoring period over which to report on progress against the objectives of the Act.

See **Appendix A** for a complete list of the heritage features and objectives of the Act.

Acknowledgement of storm events in early 2023 (outside the monitoring period)

On 27 January the region had its wettest day on record, following which a state of emergency remained in place for three weeks. This was closely followed by tropical Cyclone Gabrielle on 10 February.

Widespread damage was caused to roads, parks, drains, water pipes, bridges, buildings, homes, businesses and facilities across the already saturated heritage area. On both occasions, many people were forced to flee their homes, and in Titirangi, Karekare, Piha and Bethells / Te Henga many homes were destroyed or severely damaged. At its height, West Coast communities were cut off with limited communication. The regional scale of the damage means that it may take a significant period of time to rebuild and recover (Auckland Council, 2023).

While the impact on the heritage area was immediate, they occurred outside the 2017 to 2022 reporting period, and will be addressed in the next report.

He kupu whakataki / Foreword from the Waitākere Ranges Local Board Chair

An underlying message of the Waitākere Ranges Heritage Area Act 2008 is that our connection to the whenua is enduring and perpetual.

In the heritage area, the physical and emotional impact of five years of drought, Covid-19 restrictions, and a series of storms and flood events cannot help but be felt by us all. We all need no more reminder to acknowledge and prepare for global pressures which are changing our climate and challenging the way we live. The heritage area is of course not immune to this, and the personal and collective impact of flooding and slips on homes and communities remain top of mind.

That being said, this report contains much to be positive about, and I want to take a moment to reflect on this. I am pleased that the purpose of the Act, which is to promote the protection and enhancement of its heritage features for present and future generations, is occurring. I am also pleased to see that our forest ecosystems continue to regenerate, and that gains in bird numbers and other indicators which show ecosystem improvements, are happening.

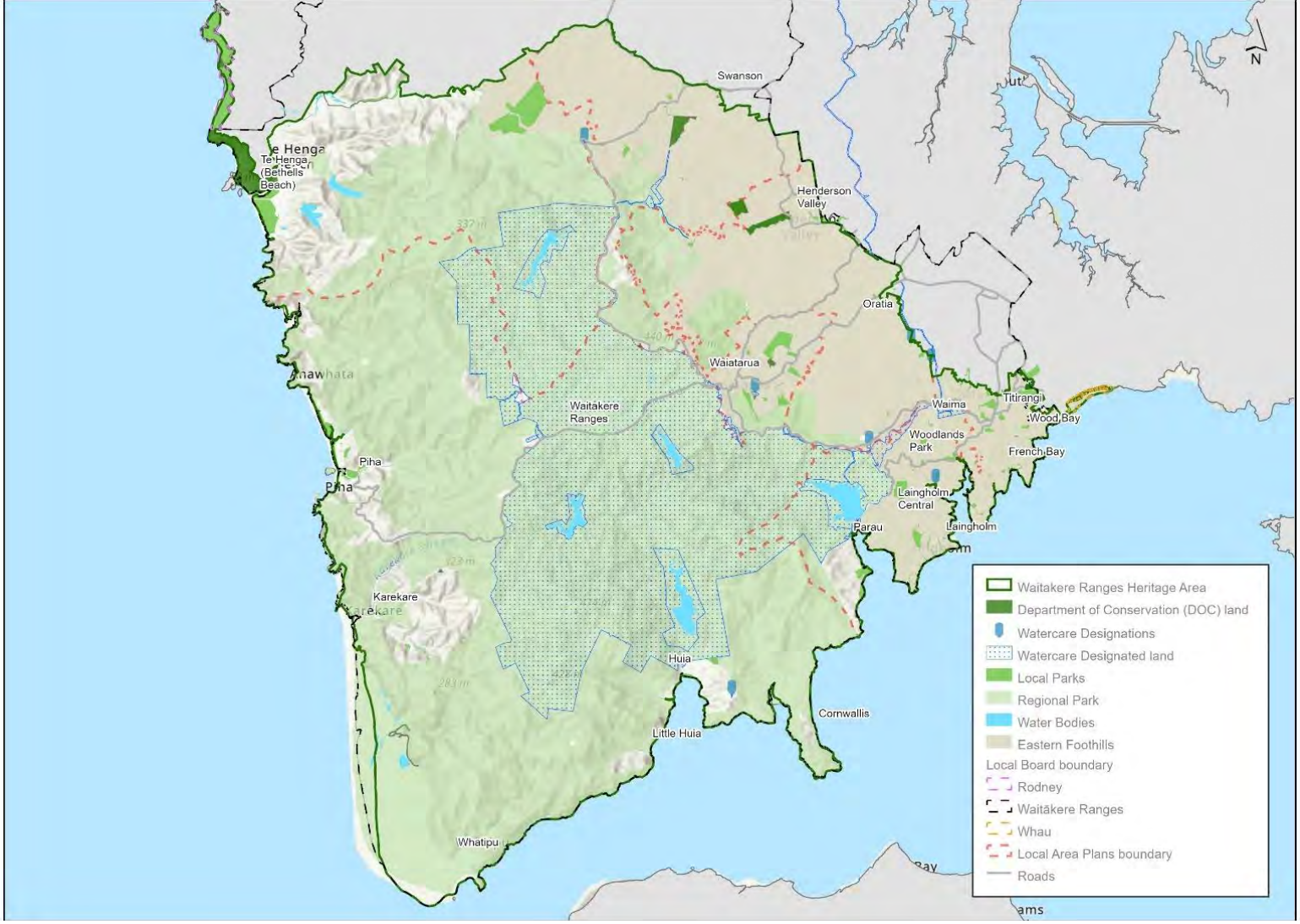
It is vital that this improvement continues, and this is a subject that needs to be considered when Council formulates the next ten-year budget. I, and many locals, am concerned that the heritage area is not adequately resourced and that the need for further resourcing is very visible in key areas such as the environment, and infrastructure. Current and future decisions about funding need to consider the heritage area's immediate and long term needs.

Some of the findings are not surprising. We have been aware for some time that the conservation approach taken to reduce the spread of kauri dieback has caused concern among some locals. I think that we can all appreciate that change in tone from five years ago, when this was a clear and present threat, but we need to be continuously vigilant and protective. Before the recent floods I was myself taking advantage of new tracks in the Regional Park as they reopened, and local park tracks as they were also upgraded.

I must acknowledge that while budgets spent in the heritage area are never as comprehensive as any of us might want them to be, Council does operate in a constrained funding environment, and this has implications here as well as elsewhere. But the Heritage Area is a taonga, it is special, and it deserves and needs our continued support.

Greg Presland

Waitākere Ranges Local Board Chair



Map 0-1 Several organisations have responsibilities within the heritage area

Governance, management and stewardship

Tiakina Te Wao Nui a Tiriwa, hei oranga mou | If we all take care of the Great Forest of Tiriwa, in return we will all flourish.

The heritage area is part of the Auckland region, and the land within is a combination of public and private landholdings.

Several organisations have complementary and / or overlapping responsibilities for it.

Te Kawerau ā Maki and Ngāti Whātua are mana whenua. Governance responsibilities are shared between the Governing Body of Auckland Council and three local boards.

A significant majority of the heritage area is within the Waitākere Ranges Local Board boundary.

Most operational functions and decision-making powers are delegated to council employees.

Watercare Services Limited has designated land, water supply and catchment functions, and manages specific assets and activities.

Auckland Transport (AT) provides and maintains roads and other transport assets, services, and related infrastructure.

The Department of Conservation (DOC) manages several small areas of parkland.

Residents and visitors all play a stewardship role.

Particular cultural significance to Te Kawerau ā Maki and Ngāti Whātua

Te Kawerau ā Maki

Te Kawerau a Maki maintains its own identity, mana, tikanga (customs), rights and kaitiaki (guardianship) responsibilities to the lands, forest, natural resources and taonga of the heritage area.

The iwi has existed as a distinct tribal entity since the early 1600s when the ancestor Maki and his brother Mataahu and their people conquered and settled 'Te Ipu Kura ā Maki' (the Tāmaki Isthmus) and the wider area. Its customary interests extend from the Tāmaki isthmus, northwards through Hikurangi (West Auckland) and to lands around the upper Waitemata Harbour and North Shore and into the south Kaipara and Mahurangi.

Te Kawerau ā Maki has several statutory acknowledgements within the heritage area. The Te Kawerau a Maki Claims Settlement Act 2015 saw the Crown apologise to the iwi for breaches of Te Tiriti o Waitangi and the return of culturally significant lands including at Te Henga, Parihoa, Muriwai, Opareira, and Wai Whauwhaupaku.

Te Kawerau a Maki's ancestral associations with West Auckland are expressed in many ways, including whakapapa (genealogy), pūrākau (traditions), waiata (songs), and tohu or place names and landmarks that cover all parts of the land and surrounding seas.

Mana whenua is also symbolised by the many carved pou of the region, from Whatipu in the south to Te Awa Kotuku, Cascade Kauri Park, in the north.

Te Kawerau ā Maki has direct ancestral connections to all the preceding tribal groups who occupied the heritage area since human occupation began, over 800 years ago. Te Kawerau ā Maki also descend from the more ancient Turehu who once lived within the forest.

Ngāti Whātua

Ngāti Whātua is an Auckland, Kaipara and Northland-based iwi with close ancestral ties to Te Kawerau a Maki. Its people continue to maintain their traditions, work in, and contribute to all facets of Auckland.

Ngāti Whātua has resided in, and made use of, the resources of the heritage area over about 400 years and has older ancestral connections to the area.

During a period of intense warfare in the late 1600s a punitive expedition by Ngāti Whātua down the west coast against Kawerau led to seizure by the rangatira Kāwharu's taua of Waitākere pā at Ihumoana (Te Henga), Anawhata, Whakāri (Lion Rock) and Paratutai (at Whatipu). This was known as Te Raupatu Tīhore, or 'the Stripping Conquest.'

In the mid 1700s conflict between Kiwi Tāmaki – ariki of the Waiohua confederation of Tāmaki – and Te Tāoū o Ngāti Whātua ranged across the wider region. The Titirangi area was a focal point, and a major battle took place in the area between Paruroa (Big Muddy Creek) and what is now Scenic Drive, at which Ngāti Whātua were victorious.

In the early 1800s Ngāti Whātua from Kaipara were in intermittent conflict with Ngāpuhi and at times took refuge in the Waitākere Ranges. In 1835 Apihai Te Kawa (a Ngāti Whātua rangatira in Tāmaki) and his followers moved to Karangahape (Cornwallis) which is named for a prominent tohunga of the Tainui waka. They built a fortified pā and remained there until 1838. (Paterson, 2009)

Ngāti Whātua continue to make use of their traditional places and resources throughout the Auckland area today.

Deed(s) of acknowledgement

Section 29 (1) of the Act says that a deed of acknowledgement (a deed) will acknowledge the particular historical, traditional, cultural, or spiritual relationship of tangata whenua of the heritage area, namely Ngāti Whātua and Te Kawerau A Maki, with any land in the heritage area.

The purpose of a deed is to identify opportunities for contribution by mana whenua to the management of the heritage area by the Crown or council. As yet, deeds have not been agreed.

Opportunities for mana whenua to contribute to management activities continue to be identified on a case-by-case basis. The 2021 Waitākere Ranges Kauri Population Health Monitoring Survey is a good example of how monitoring systems can effectively incorporate western science and tikanga Māori.

Marae and papakāinga

In 2020 the council formally transferred land at 240A Bethells Road Te Henga to enable Te Kawerau ā Maki to construct a new marae and papakāinga (communal land).

This is a settlement of great cultural significance. Te Kawerau ā Maki has not had a formal marae and papakāinga since the mid-20th century when at which time their last remaining land at Te Henga was alienated. Negotiations for the land's transfer back to the iwi began when it was acquired by the former Waitākere City Council in 2007.

In 2022 $75,000 was awarded from council's Cultural Initiatives Fund for a feasibility report, concept design and planning. Te Kawerau Iwi Tiaki Trust's vision is to develop an eco-marae, and it continues to raise funds for this.

Under the Unitary Plan, the land at 240A Bethells Road, Te Henga is zoned as Special Purpose Zone – Māori Purpose.

Te kupu whakataki / Introduction

Seeking to understand and acknowledge an entire system, with the interconnectedness and interrelationship of all tangible and non-tangible things, is the challenge and opportunity laid down by the Act.

Structure

This is a synthesis report which summarises progress towards achieving the objectives of the Act.

Five interconnected topics summarise changes since 2017, funding, resourcing, and background[1]

Topic 1. The funding impact from activities to be undertaken to give effect to the Act

Topic 2. Kaitiakitanga, community stewardship and past and present human culture

Topic 3. Landscapes, landforms, and land use

Topic 4. The heritage area as both a wilderness area and a public place

Topic 5. State of the environment

Report conclusions and the supporting summary of changes over 2017 to 2022 should be read together.

[1] FY 2017 to FY 2022

Purpose

Section 34 of the Act requires the council to monitor at five yearly intervals:

- the state of the environment of the heritage area
- the progress made towards achieving the objectives of the Act
- the funding impact from activities to be undertaken to give effect to the Act.

This is the third report into the implementation of the Act, following reports in 2013 and 2018.

Monitoring helps to assess the ongoing impact of council's many activities in the heritage area, and may be used to inform decision-making in the context of the:

- Auckland Plan 2050
- Long Term Plan (10-year budget)
- Annual Plan (annual budget)
- Waitākere Ranges Local Board Plan (3-year strategic plan)
- Auckland Unitary Plan (AUP)
- Regional Parks Management Plan 2022 (RPMP)
- localised plans and polices, and
- other regional plans and strategies.

There are no financial implications associated with the report.

Period of the report

Unless otherwise stated, report content aligns to council's financial year/s, from 1 July 2017 to 30 June 2022.[2]

Constraints

A range of legislation, statutory plans and policy documents apply to, and guide the management of the heritage area, and this framework directly influences the ways in which activities are identified, managed and reported. Management functions and activities include environmental programmes, the built environment, community, cultural assets, and community partnerships.

Source material for this report may vary in availability and quality. The ability to draw conclusions in relation to the outcomes of the Act, and the funding implications of activities undertaken to achieve them reflect this. Where robust information has not been identified or supplied, this is acknowledged.

Research

The report has been prepared with contributions from a wide range of people and sources across council, mana whenua, Watercare, AT, DOC, and people who live in or visit the heritage area.

[2] The impact of unprecedented weather events in January and February 2023 is acknowledged but outside the 2017 to 2022 monitoring period

The report draws on technical publications, council work programmes, feedback received via public consultation, media, specialist assessments, and conversations. Some is quantitative, which means it deals with numbers and statistics, and some is qualitative, which means it deals with words and meanings.

Where identified in separate technical reports, detailed assessment and evaluation of specific pressures responses or trends are not replicated in the report, and it does not attempt to duplicate other reports or plans or re-evaluate their conclusions.

Descriptions of management and monitoring activities are included throughout, alongside case studies which contribute to a nuanced understanding of the heritage area.

A public consultation in which people shared the things that they value about the heritage area, alongside concerns and hopes for the future is discussed in Topic 1. Kaitiakitanga, community stewardship and past and present human culture.

Report conclusions and summary of changes

An extraordinary period of time

This report takes place in the context of an extraordinary period of time for the heritage area.

Flash flooding in 2018 and 2021 impacted coastal and foothill areas. Roads, homes, and buildings were destroyed. Unprecedented restrictions were put on water use in April 2019 after two of the driest summers on record, while the five heritage area dams reached a historic low.

Over 2020/2021, periods of COVID-19 pandemic lockdown impacted residents and had wider effects on council and other budgets. Many walking tracks were closed from April 2018 as part of a precautionary approach towards managing the spread of kauri dieback, and in the regional park, visitor counts taken at 491,000 in 2011/2012 had increased to 1.282 million by 2021/2022, putting pressure on the infrastructure that supports those visitors.

These events have highlighted the vulnerability of the road and water-supply network, homes, communities, and the natural environment.

Despite this, there has been positive progress towards achieving the outcomes of the Act, noting that the success or otherwise of some activities is subject to differences view, and that the achievement of one objective does not always assist in achieving other objectives.

Deeds of acknowledgement

Section 29 (1) of the Act states that 'A deed of acknowledgement (a deed) will acknowledge the particular historical, traditional, cultural, or spiritual relationship of tangata whenua of the heritage area, namely Ngāti Whātua and Te Kawerau ā Maki, with any land in the heritage area. As yet, deed(s) of acknowledgement have not been agreed.

Funding implications of activities undertaken to achieve the objectives of the Act

Council and its partners in the heritage area operate in a constrained financial environment and must choose when, where and how to apply their budgets. Activities undertaken by council to achieve the objectives of the Act are identified, funded, and delivered within region-wide (regional) programmes, or via the local programme of the Waitākere Ranges Local Board.

While this means that it is sometimes a challenge to understand expenditure within the heritage area, it does mean that council and local board decisions across the heritage area are integrated within the budgets of appropriate departments.

Living here now

Many residents are passionate about where they live, regardless of their knowledge of the Act. They appreciate the unique landscape, alongside participating in social and community stewardship activities and volunteering. Community stewardship is visible through continued advocacy, time, and labour, across

fire services, surf lifesaving and community support, weed and pest control, land management, restoration and protection, and arts and cultural heritage.

Consultation for this report indicated that some communities remain concerned about the ongoing impact of weeds and animal pests on the natural environment. Access to particular walking tracks also remains of interest. Other concerns expressed included the impact of visitors on the heritage area's infrastructure and local quality of life.

In the eastern foothills some residents commented that they had observed encroaching housing density and development.

General condition and character of landforms and landscapes

Overall, there has been minor change in the general condition and character of landforms and landscapes, indicating that planning provisions continue to be effective. Only minor or very minor negative changes were found within individual landscape units, and many examples of positive outcomes and changes were observed.

Subdivision has continued at a reducing rate. Fewer new land parcels are being created, although there is continued residential development throughout the heritage area, as both historically and recently subdivided land parcels are built upon, alongside renovation and extensions to existing dwellings.

Some concerns were identified. Development pressures, such as vegetation removal, concentrations of growth, and housing typology are in some places affecting rural character within the heritage area boundary.

Land disturbance is an emerging risk. Extreme weather events have contributed to erosion and instability in the landscape, affecting the road network and the natural environment.

The potential impact of fire (landscapes, communities, water supply, environment) is a common theme in material reviewed for this report.

The heritage area as both a wilderness area and a public place

In 2018 council closed tracks across the heritage area as part of a precautionary approach towards managing kauri dieback across the region. Track closure and subsequent upgrades to 'kauri safe' standard is a cornerstone of the precautionary response taken to manage the spread of kauri dieback.

Throughout 2020 to 2022 pressure on the track network increased as regional and national travel options were restricted during the COVID-19 pandemic response. Given the limited number of open tracks, some experienced particularly high use. Stressors at key sites included high levels of congestion at particular car parks, on tracks, and at popular destinations like coastal beaches and waterfalls, particularly at peak times.

Track upgrades subsequently increased track capacity, while safeguarding the surrounding environment, and as more tracks are opened visitors should be more dispersed (Auckland Council, 2022). The sustained long-term management approach required for managing a kauri dieback response continues to cause frustration for some communities and recreational users.

State of the Environment

The distribution of the kauri dieback pathogen is localised to areas on the periphery of the park. While these areas still present a risk of spread to other catchments, it is not as widespread as previously thought.

This supports the continuation of strategies to slow or stop the spread of kauri dieback (P. agathidicida) within the relevant parts of the heritage area.

Monitored ecosystems have demonstrated patterns of growth consistent with regeneration, and there have been a number of improvements in biodiversity.

Despite this, many heritage area ecosystems remain vulnerable. Progress relies on continued and active management.

Monitoring within Biodiversity Focus Areas (BFAs) is in development to assess whether targeted management of pest plants and animals is generating the intended biodiversity outcomes at local scales, and whether there are changes in management approaches that can be made to improve on these outcomes.

Council and DOC management programmes complement, and are complemented by, the contributions of volunteers, and strategic coordination between prominent community conservation groups has improved.

Topic 1. Kaitiakitanga, community stewardship and past and present human culture

	2017	2022
Active communities	Over 3360 has of public reserve and private land is under active community stewardship. Community organisations and volunteer groups have thrived and continue to make a vital and significant contribution to maintaining the natural, historical, cultural and recreational values of the heritage area. The opportunity exists for improved coordination and support in respect to the standards and practices of volunteers, and organisations active in the heritage area (primarily referenced in relation to environmental management).	No significant change identified. Volunteer and community organisations continue to be active and highly motivated. Community and council-led activities disrupted for a period as a result of pandemic lockdowns and restrictions. Many events, including those funded and /or delivered by council were put on hold or cancelled. Some were able to pivot, in whole or in part, online. Track closures had some impact on what activities could be carried out, and where. Coordination between some groups, and between groups and council improved, with new resources and guidance published online for people who live in the heritage area.
Population	Relatively low and stable.	Approximately 76 percent of the over 21,000 residents of the heritage area live in the foothills. Piha is the next biggest settlement area, with approximately 950 residents. About 3,200 homes are located in and around the borders of the regional park.
Business centres	N/A	Titirangi is the only area zoned ‘business – local centre’ in the heritage area, and this zoning creates greater opportunity for business and services. Piha had a relatively high proportion of self-employed workers, and there were relatively high levels of ‘mangers’ and ‘professionals’ across the heritage area.
Archaeological heritage	Archaeological field survey was in progress, with 164 of the 300 site visits completed to date (55 percent). Although results were preliminary, some key findings were available.	No further topic-specific research or formal large area survey upgrades.
Built heritage	90 ‘priority’ built heritage sites were generally well maintained, occupied, and/or used regularly. Most were in	Council’s built heritage assets are prioritised for maintenance through ongoing asset management programmes.

	excellent condition. Of these, 26 were council-owned built heritage assets.	
Local Area Plans (LAPs)	N/A	Management activities across LAPs identified through and aligned with council's regional and local work programmes. A range of activities is apparent.

Topic 2. Landforms, landscapes and land use

	2017	2022
Objectives of the act		Generally being achieved, although evidence of restoration or enhancement continues to remain patchy. Recommendation that the next report include documentation of the values of the heritage area to tangata whenua.
Landscape character	Minor changes to landscape character and heritage features.	Minor changes to landscape character consistent with overall findings from 2018. Minor or very minor negative changes found within individual landscape units, with many examples of positive outcomes and changes.
Effects of development	Vulnerability to poorly integrated development within the more open Foothills units.	Minimal overall effects. The consenting process is, by and large, resulting in appropriate development being undertaken. Subservience maintained over time through appropriate screening and regrowth of vegetation. Development relatively light in comparison to other part of Auckland but progressing at a higher density in the foothills. Foothills appear vulnerable to poorly integrated development, with the ability to integrate buildings within their setting limited by the Auckland Unitary Plan provisions. Consent applications for activities on sensitive ridgelines rose from 37 to 63 and primarily focused on the foothills around Titirangi / Laingholm, with a secondary concentration in Piha. Roading infrastructure tended to follow the ridgelines around these local centres, and 49 of those 63 were for structures not visible when viewed from a public place, limiting disruption of visual continuity.
Rural character in the foothills	Retained	Transition to rural living and sparse settlement higher in the eastern foothills largely retained by adherence to high quality design and the screening effects of vegetation growth. Resource consent applications for breaches of height and building footprint standards noticeable in the eastern foothills, mostly concentrated within and around local centres. Development pressures on the edges of the foothills are in some places affecting rural character within the boundary of the heritage area.
Sensitivity to change	The majority of changes occurring in coastal villages, particularly Piha. The character, scale and amenity of coastal villages is retained. unit	West Coast settlements, despite being popular places to live and visit, mostly retain their rural settlement patterns. Karekare, Anawhata, and Bethells all retain characteristics of remoteness from urban Auckland. Consistent with the 2017 monitoring report, the greatest sensitivity to change is within coastal units. Bush living units sensitive to inappropriate development in relation to vegetation removal.

Quietness and darkness	During this monitoring period measurements of the night sky were taken and were found to correspond to the International Dark Sky Association's Bronze Standard.	Measurements not part of 2023 assessment. The extent to which lighting is visible at night is minimised by low levels of street lighting and the size of the undeveloped parklands. This contributes to a relatively dark night sky and an impression of sparse settlement.
Infrastructure	Some examples of poor infrastructure development noted. Location, design and maintenance noted as an influence on character and heritage features.	Some of the negative changes identified result from infrastructure development, noting that new infrastructural elements such as poles, or concrete surfaces tend to stand out initially and then naturally weather over time. Some examples of poor outcomes from 2018 now less visually prominent with new vegetation growth. Several activities related to construction and alteration of structures and buildings within floodplains, on unstable land and over overland flow paths. Given the impact of recent storm events re-evaluation of the rules and standards applied in floodplains and on erosion prone topography is warranted in review of the AUP.
Subdivision use and development	Managed under the provisions of the Auckland District Plan – Operative Waitākere Section 2003 (Waitākere City District Plan).	Managed under the provisions of the Auckland Unitary Plan, operative in part since 15 November 2016.
Building consents	An even spread across the foothills landscape units with fewer in the bush living and coastal units.	Building consents are primarily for standalone residential dwellings, additions and alterations. Activity remained focused in the foothills and bush living areas including Titirangi and Laingholm.
Resource consents	A substantial and continuing decline in the number of resource consent applications for subdivision and development.	Similar number of resource consent applications for subdivision and development.

Topic 3. The heritage area as both a wilderness area and a public place

	2017	2022
Regional Parks Management Plan	Regional Parks Management Plan 2010	The Regional Parks Management Plan (2022) was reviewed over this period. A strong message from feedback was that the regional park needs to be managed in a way that protects its natural, cultural, and landscape qualities, quietness, and wilderness values, and provide for the wellbeing of distinct communities in the area, while also recognising its importance as an accessible public place.
Access	Before large scale track closures.	In 2018, council resolved to close the forested areas of the regional park, with some exceptions, to respond to the on-going spread and impacts of kauri dieback. In combination with other unforeseen events, like the COVID-19 pandemic, visitor pressure shifted onto a number of key sites. Around 50 km of closed tracks in the heritage area were prioritised in the track re-opening plan, to be upgraded in accordance with the draft national kauri dieback standards and re-opened. This represents 64 per cent of the 78 km of NETR-funded tracks included in this track re-opening programme. The remaining 20 km are

		being funded through Jobs for Nature and Renewal budgets. Following the emergency budget, the work programme increased, and budget was pushed out from FY 2020/2021 to FY 2021/2022. Delays due to COVID-19 lockdowns, disruptions to the supply chain, contractor availability, and the 2021 storm weather event in the Waitākere Ranges pushed estimated programme conclusion from 2022/2023 out to 2023/2024. The sustained long-term management approach required for managing a kauri dieback response continues to cause frustration for some communities and recreational users.
Rahui		In 2017, understanding that kauri dieback was threatening the wider ecosystem of the Waitākere Ranges, Te Kawerau ā Maki placed a rāhui on the heritage area. The intent of the rāhui remains to limit public access to the heritage area until the risk of people spreading kauri dieback is low and under control.
Visitor pressure	Concern about rising visitor pressure	Regional Park total visitor counts taken at 491,000 in 2011/12 increased to 1.282 million in 2021/2022. A similar increase had been seen in the decade before this and the trend is likely to continue. Some places in the heritage area experienced high levels of congestion at car parks, on tracks, and at popular destinations like coastal beaches and waterfalls, particularly at peak times.
Road network	Not addressed	Storm damage, including numerous slips in 2018 and 2021, caused severe damage across the road network in the heritage area, and visibly impacted residents and road users. The rugged landscape of the heritage area, and the location and geography of many of the slips posed additional technical challenges. At the same time, regional transport budgets out of which management activity in the heritage area is funded have effectively reduced year on year to approximately 60 - 70 percent of what is needed. Road renewal projects in the heritage area were assessed and prioritised within this context.
Water supply catchment		The aged Huia and Waitākere Water Treatment Plants are nearing the end of their operational life and need to be replaced, to meet increasingly challenging water treatment requirements, and the water supply needs of Auckland's rapidly growing population. The potential risk of fires within to the heritage area water catchment is an ongoing concern.

Topic 4. State of the environment

	2017	2022
Funding	Council was consulting with the public on whether additional money should be allocated to protection of the natural environment through a targeted rate.	NETR has, since 2018, been the primary means through which funding is identified for projects which help to protect the native environment, including implementation of the new Regional Pest Management Plan. Regionally funded management activities are complemented by Waitākere Ranges Local Board (local) management activities.
Ecosystem extent	The heritage area comprises around 21,200 ha of indigenous terrestrial and wetland ecosystems.	The heritage area contains one of the largest blocks of continuous indigenous vegetation remaining in the region. Since the 2018 report, there has been no significant updates to the mapping and therefore the results remain unchanged.

Landcover	Over 85 percent, or 22,000 ha, of the heritage area is covered by indigenous vegetation, including forest, scrub / shrubland and wetland classes. The remaining land cover is associated with rural production[3] (12 percent) and urbanised areas (3 percent).	Land cover classes have been relatively stable. No change recorded.
Landslides	Not addressed	Numerous landslides (more than 150) across the Waitākere Ranges Regional Park, averaged 0.1 ha, with the largest recorded at 1.8 ha. The need to identify these landslides is an important new finding, because increasing high-magnitude rainfall events induced by a changing climate (such as those in late 2021) that trigger shallow landslides in the heritage area's indigenous forests have the potential to not only cause losses to habitat and create potential risk areas for pest incursions, but also damage infrastructure and impact water supply by causing sediment inputs to freshwater environments. The effects of the 2023 weather events are still being analysed and fall outside the of the date of this report.
Canopy cover	Thousands of canopy loss events were identified on residential and rural zoned land in the heritage area. This resulted in 40 ha of canopy cover loss (which equates to <1 percent of total rural and residential land area), of which nine ha of canopy loss was on residentially zoned land and 31 ha was on rural zoned land.	No data signifying change. The most recent canopy cover estimate in the heritage area is 76 percent (derived from 2016/2017 LiDAR data). This ranges from 56 percent in general zones (such as roads) to 84 percent in the Public Open Space Zone (such as the Regional Park and reserves), while residential and rural zones have 59 percent and 69 percent canopy cover respectively.
Forest ecosystems	Forest structure and dominant tree species are largely consistent with regenerating forest.	Since 2009 changes in forest structure have mostly been consistent with regenerating forest, and today the size and distribution of trees is typical of a healthy maturing forest. There are no major changes to forest ecological integrity since the previous heritage area report. Forest plots have increased in indigenous plant species richness. The majority of species gains are non-woody seedlings entering plots for the first time.
Dune ecosystems	Monitoring not yet established.	Duneland monitoring has been established at Te Henga, Anawhata, Whites Beach, Karekare, Cowans Bay, Whakaruro Bay and Whatipū. It is too early to look for trends, but initial results are summarised below. Repeat monitoring will show how robust populations of threatened and at-risk species and population trends are.
Kauri dieback	Before large scale track closures in response to the threat of kauri dieback. All kauri forest within the heritage area considered to be at very high risk of infection. No proven method known to combat the disease or its spread.	The precautionary approach to managing the spread of kauri dieback remains, with the distribution of the pathogen limited to localised areas. The risk remains that it may spread to other catchments.
Myrtle rust	Identified as an emerging biosecurity threat in the heritage area since its	Species susceptible to Myrtle Rust make up a large proportion of the forest including kānuka, various rātā and pōhutukawa, but it is too early to tell how much they will be impacted. Species such as

[3] According to the Landcover Database, 'rural production' refers to the following land cover classes: Exotic Forest (including areas of the harvested forest), low and high production exotic grassland, short-rotation cropland, orchards, vineyards or another perennial crop

	discovery in west Auckland in November 2017.	ramarama, that is both rare and highly susceptible to Myrtle Rust, could be severely impacted.
Bird populations	Bird counts between 2009 and 2018 showed no significant changes in bird populations. A good ratio of native versus introduced birds was recorded, with similar numbers of endemic, native, and introduced birds counted as in the 2009-13 survey.	Overall, native bird species appear to be on the rise, both in the heritage area and across the region, which may reflect larger-scale environmental differences such as weather patterns. However, the health of large forest areas needs to be improved to provide space for native bird species to expand into, requiring the ongoing management of pest animals in these areas.
Pest plant control	Ongoing management programme for several pest plants	Council's approach in the heritage area is generally long-term and focused on reducing the potential for spread of the main pest plant species into the regional park. A substantial and ongoing effort continued to be made by Council, and heritage area communities, to manage the pest plant threat.
Pest animal control	Pest plants and animals a major threat to the terrestrial and aquatic ecosystems of the heritage area. Ongoing pest plant and animal control required at a level that, at a minimum, retains the biodiversity and ecosystem values of the heritage area. Community groups and landowners play a significant role in protecting and restoring the ecosystems of the heritage area through ongoing pest plant and animal control, restoration activities and programmes to manage kauri dieback disease. Monitoring pest animals in the forest plot network across the region (including the heritage area) was stopped in 2015 due to funding constraints but was intended to be reinstated during the 2018 to 2023 period.	The approach in the heritage area is generally long-term and focused on: Keeping the regional park free of goats and deer, maintaining possums and pigs down to low levels, supporting the ongoing control of rats and mice within Ark in the Park to minimise their impact. Reducing the spread of kauri dieback disease, integrated control of pest plants present within the park with a focus on Biodiversity Focus Areas (BFAs) and reducing the potential for spread of key pest plant species into the regional park from private land buffering the park. Increased pest control and targeted management of threatened species enabled by NETR is expected to have improved the long-term viability of threatened species within the heritage area, with the exception of those impacted by Myrtle Rust. A network of community organisation and volunteers for whom pest plant and pest animal control is also a priority manage and/or work with council on sites across the heritage area.
Water quality	The water quality of many coastal lagoons and beaches adjoining the heritage area is degraded and not safe for swimming; failing septic tanks identified as the main contributing source.	Average water quality results have varied over time and location (wetlands, river quality, streams, dune lakes) with some improvements. Monitored streams were in fair to excellent health. More up to date assessments are expected in late 2023. The Septic Tank Pumpout targeted rate was retained for properties in the former Waitākere City Council area. The Safe Swim website has improved public information. In water supply catchments, short-term events, such as the 2019/2020 drought appeared to affect ecological results at some sites downstream of the Waitākere reservoir, but there was no clear evidence that extreme wet weather events or the 2019/2020 drought had significantly affected long-term water quality.

Photo 0-2 Nihotupu Dam levels drop, leading into the droughts of 2019 – 2021. Photo credit: Mark Bishop

2017 to 2022: climate change and other challenges

The 2017 to 2018 monitoring period has been an extraordinary one.

Much of the heritage area is steep and prone to slips. Some residential areas are in flood plains. Narrow arterial roads traverse varied and mountainous landscapes, and remote coastal communities may expect to be isolated in times of crisis. Most foothills and coastal settlements have no reticulated sewerage or mains water supply, or formal (council) storm water management systems.

Flash flooding in 2018, 2021 and early 2023, alongside a drought in 2019/2020 in which its dams reached a historic low, highlight ongoing social, environmental, and logistical issues for the heritage area. At the same time, over 2020/2021 the Covid-19 pandemic forced restrictions on movement across the region.

Eight severe flood events have been recorded in Piha since 1995 with rainfall exceeding 50 mm. In 2022 an aerial survey of the regional park identified 150 landslides not seen in 2017. These averaged 0.1 ha in size, with the largest recorded being 1.8 ha. These were likely to have been triggered by intense rainfall in late August 2021 and may pose a risk to ecosystem health.

Climate change may also impact sea levels along the West and Manukau Harbour Coasts, water quality runoff, and effects from sediments (Council, Auckland, 2018). Fire is an ongoing risk to the heritage area,

noting for example, significant fires at Taitomo and Piha in 2017 which destroyed native vegetation on the regional park, and private land just prior to this monitoring period.

2018

On 3 February a band of rain with embedded thunderstorms stalled over the region. 150- 260mm of rain was recorded in areas around west Auckland. Between p.m. and p.m. 43mm of rain fell in the Waitākere Ranges. On 28 April, 80.5 mm of rain fell over four hours on Auckland's West Coast. The heritage area was heavily affected by flooding and/or ponding. Landslides occurred due to saturated land and run off.

On both occasions flash flooding occurred in Piha. High water depths and velocities resulted in emergency evacuations and flooding of residential properties on Glenesk, Seaview and Beach Valley Roads. Sadly, two young people lost their lives in a flash flood near Cascade Falls. Severe flooding also highlighted the vulnerability of homes in the Eastern foothills.

2019/2020

In late 2019 and early 2020, a lack of atmospheric rivers, or plumes of moisture that extend to the mid-latitudes from the tropics, limited heavy rainfall events. The drought experienced at this time was one of the most extreme for the region in modern times (NIWA, 2020). Unprecedented restrictions were put on water use in April 2019 after two of the driest summers on record. In the heritage area, water tanks were set up when residential tank water ran low.

2020/2021

In 2020/2021, COVID-19 pandemic related restrictions across the region prevented residents from freely moving about and participating in community activities, including business activities.

On August 30, Piha and Henderson Valley received 201 mm of rain in 14 hours – 149 percent of the normal monthly rainfall. Stormwater flooded homes and cut off roads across west Auckland, affecting communities across the heritage area in Ranui, Piha and Henderson Valley.

The overnight downpour was so heavy that the Upper Huia Dam was 45 percent full by p.m. on 30 August and spilling over by 6 am on 31 August. The catchments feeding into Waitākere, Upper Nihotupu and Upper Huia dams all recorded more than 200 mm of rain in just 12 hours. The deluge caused varying water quality at the Waitākere Dam, and as a result, the Waitākere Water Treatment Plant was shut down for 24 hours.

The storm caused extensive damage across the heritage area. This included multiple slips on Te Henga Road along Falls Road to Te Henga Quarry, and on Mountain Road between Hayes Road and Turanga Road (Henderson Valley). A lane collapsed on Lone Kauri Road in Karekare, and roads in Ranui, Waitākere, Huia and Henderson Valley were closed in the immediate flood response.

Topic 1. The funding impact from activities to be undertaken to give effect to the Act

The heritage area does not have an overarching budget, governance, or management programme. While this means that it is sometimes a challenge to understand expenditure within the heritage area, council and local board decisions for the heritage area are integrated within the budgets of appropriate departments. This is similar across other entities with governance, stewardship, or management responsibilities.

1.1. How budgets are allocated

Council operates in a constrained financial environment and must choose when, where and how to apply its budgets.

Departments and CCOs are allocated funding for specific purposes and agree work programmes within the context of council's wider strategic framework. Activities undertaken by council to achieve the objectives of the Act are largely identified, funded, and delivered within region-wide (regional) programmes, or via the local programme of the Waitākere Ranges Local Board.

For example, the regional park is a governing body responsibility and is funded 'regionally' and managed by 'regional' teams. The Waitākere Ranges Local Board is responsible for 'local' parks, which are funded 'locally' and managed by 'local' teams.

Teams often have responsibility for multiple functions and areas which may in whole or in part be provided in the heritage area. Additionally, some services and management activities are contracted to third parties and may also in whole or in part be provided in the heritage area. These transactions are administered using a variety of mechanisms, for example, funding agreements, grants, contracts, or tenders for service.

1.2. How management activities are reported and monitored

Progress against outcomes identified in the act is not always identified or reported in the same way across the range of council activities.

The heritage area may be visible in reports to the governing body, depending on the subject being discussed. An example is the closure of the regional park in response to the spread of kauri dieback.

Local boards receive activity-specific quarterly reports throughout each financial year. Heritage area activities appear throughout this reporting.

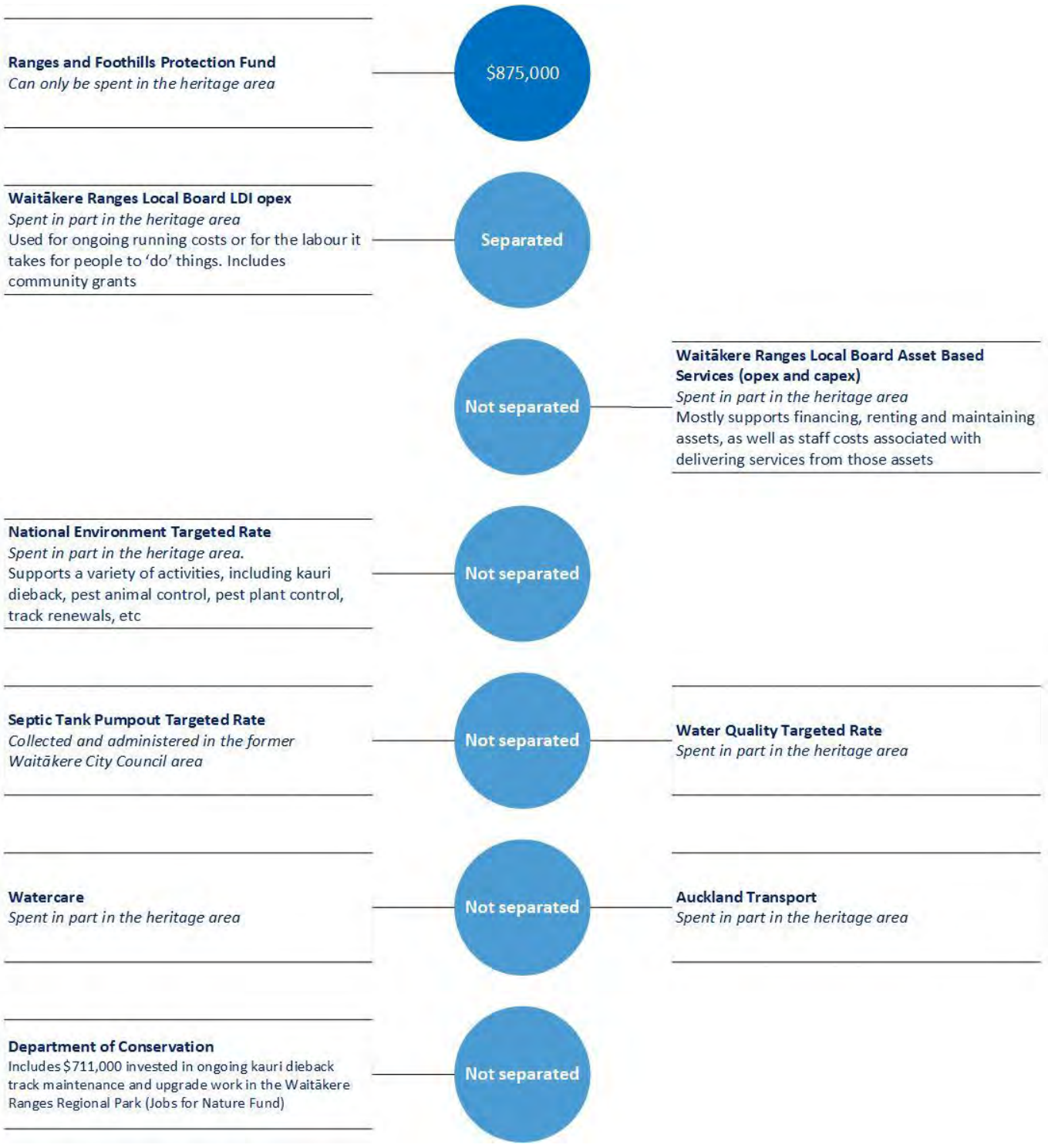
Operational departments do not, at management level, produce ringfenced or aggregated reporting on progress against, or achievement of heritage area outcomes.

Council employees who regularly work in the heritage area are generally aware of the Act and are able to reference it in relation to their work. Regular reporting occurs at an activity level and may be on a case-by-case basis.

1.3. Identified budgets

Activities which contribute to achieving the objectives of the Act draw on operational expenditure, capital expenditure and staff time. They occur across a range of budgets and statutory requirements and may be delivered by third parties. Funding levels from FY 2017 to FY 2022 cannot be separated out for all activities.

Figure 0-1 Budgets spent or spent in part in the heritage area FY 2017 to FY 2022. Not reflective of a total spend on the heritage area. View with Figure 0-2 'Management activities', below



1.4. Management activities

Operational staff who regularly work in the heritage area are generally aware of the Act and able to reference it in relation to their work. Regular reporting occurs at an activity level and may be on a case-by-case basis.

Figure 0-2 Management activities carried out in the heritage area over FY2017 to FY2022. List not exhaustive

Photo 0-3 Volunteers shuck seeds at Arataki Ranger's Station. Plants cultivated in the nursery supply revegetation projects in the regional park.

Topic 2. Kaitiakitanga, community stewardship, and past and present human culture

Relevant heritage features as set out in the Act include:

- Distinctive local communities
- Historical, traditional, and cultural relationships
- Evidence of past human activities

2.1. In this section

Themes of kaitiakitanga and stewardship run through the Act. Today, these also clearly underpin many expressions of community in the heritage area.

Local leadership is conveyed through volunteers and purpose-specific community groups who are particularly visible in relation to the environment, community services and facilities, and the arts.

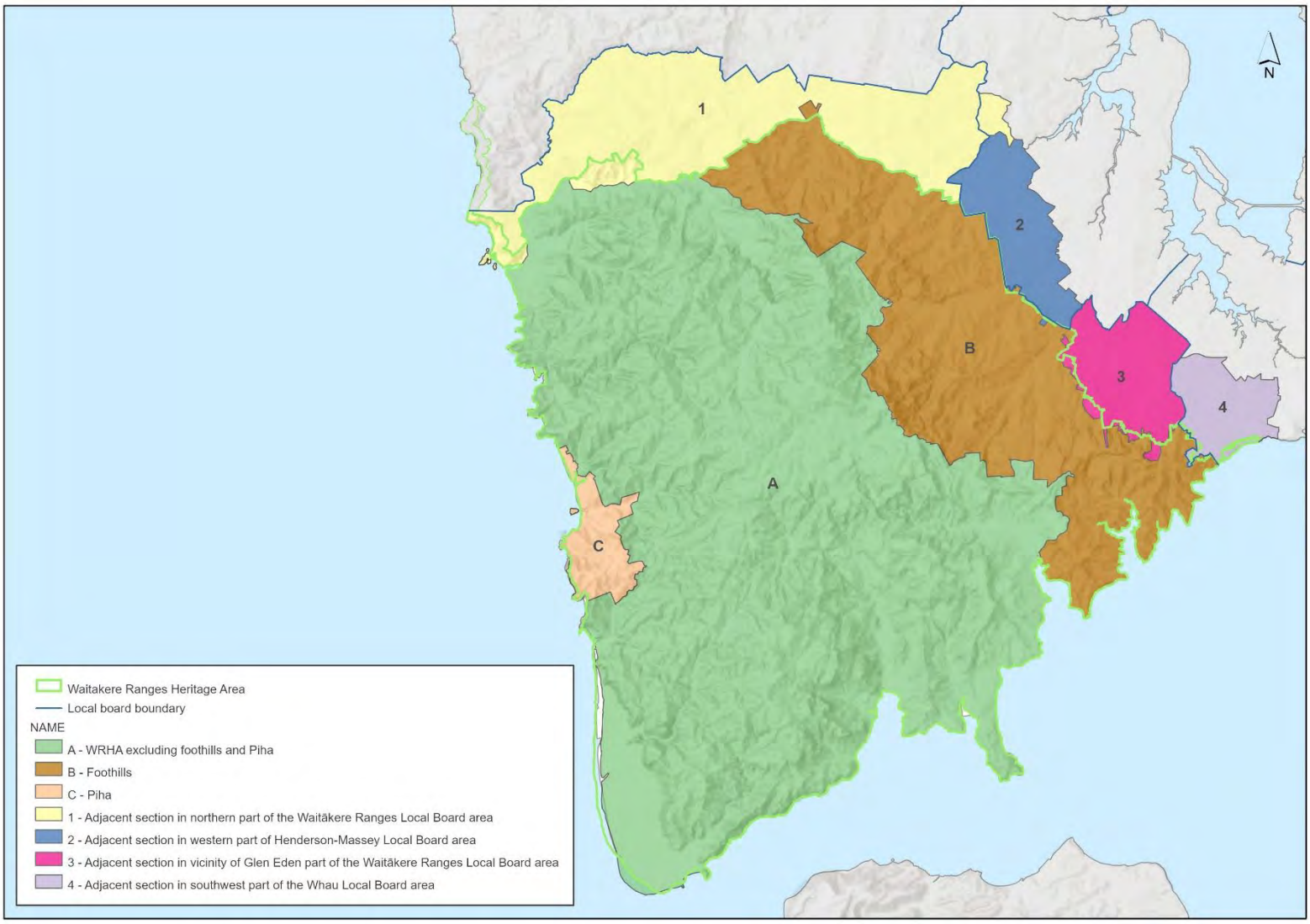
These organisations function as social and physical hubs around which many stewardship and social activities take place, while community-led approaches to local activities employ local knowledge, wisdom, and skills.

Kaitiakitanga, community stewardship, and past and present human culture is recognised through whakapapa and connection to place, alongside buildings facilities, historic heritage, and other activities.

Census data provides information on the demographic profile of the heritage area and certain aspects of community wellbeing. It does not capture more qualitative aspects of wellbeing such as the strength of community networks and the community's level of involvement. This section includes:

- A summary of the consultation results from the November 2022 consultation conducted as part of the preparation of this report
- An overview of community activities and services in the heritage area. It is not exclusive. Where "heritage' is referred to, information has been pieced together from a variety of sources.
- An overview of community facilities and services in and around heritage area settlements
- An examination of five Local Area Plans (LAPs).

Council funding for community-led activities is primary drawn from local board budgets, and is either based around facilities, for example maintenance and upgrades, or community leases, operational, for example contributions to the ongoing operational costs of a community art gallery, or activities, for example grants to support local groups to carry out predator control or to hold a festival.

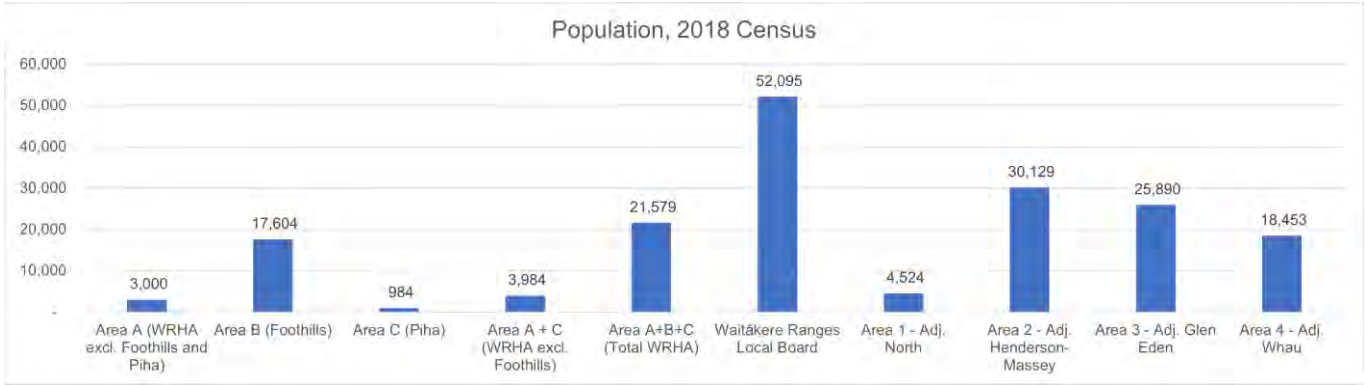


Map 0-2 Population spread across the heritage area and surrounds, based on best-fit census geography

2.2. Living in the heritage area

Auckland is growing. Relative to this, population growth in the heritage area remained low and stable. This report includes population information from areas immediately outside the heritage area boundary to illustrate any change in demographics at the boundary of the heritage area with urban Auckland4.

Approximately 76 percent of the 21,000 residents of the heritage area live in the wider foothills (B in map above). Piha is the next biggest settlement area, with approximately 950 residents (C in map above). There are about 3,200 homes throughout the heritage area, located in and around the borders of the regional park. (Auckland Council, 2022). 46 percent were aged 30-59 years, with 36 percent 0-29 years and 19 percent aged 60 or over.



[4] Taken from the 2018 census. The 2023 census information is not available at the time of this report

2.3. Public consultation

Q.1	•Do you live in the heritage area? If you don't live in the area do you visit the area for other reasons ? (96 repsonses)
Q.2	•Is there something about the heritage area that you particularly like or like doing? Please tell us what it is, and why (92 + responses)
Q.3	•Is there a particular place or thing in the heritage area that you are concerned about? If yes, please tell us where and why (92 + responses).
Q.4	If you could change one thing in the heritage area, what would it be? Please tell us where and why (88 + responses)
Q.5	Is there anything else you would like to tell us about the heritage area? (68 + responses).

A six-week public consultation over October and November 2022 asked people what they value about the heritage area.

One hundred and sixty-three respondents answered all or some of the questions below, which could be answered by someone without prior knowledge of the Act or of the heritage area itself. This feedback has informed this report.

Multiple channels were used to encourage people to respond to the consultation, including an interactive map onto which people could directly pin their comments. Responses were also received using the online form, by mail and by email.

Approximately 75 percent of those that answered Q.1. live in the heritage area. Respondents who answered 'no' indicated that they visit for leisure, personal wellbeing, volunteering and employment purposes.

Respondents liked

- Spending leisure time in the forest, at the waterfalls, and on the beaches
- Working and volunteering (e.g. surf lifesaving or in environmentally focused groups)
- Participating in local sports clubs and other activity-based groups
- Appreciating the unique landscape
- Appreciating the protection that the Act provides

Respondents were concerned about

- The impact of development on the natural environment
- Track closures and unclear reopening dates
- Lack of public infrastructure supporting large volumes of visitors
- Water quality and water related infrastructure (e.g. blocked stormwater drains)
- A lack of restrictions on pest animals (dogs, cats, and wild pigs)
- Pest Plant management

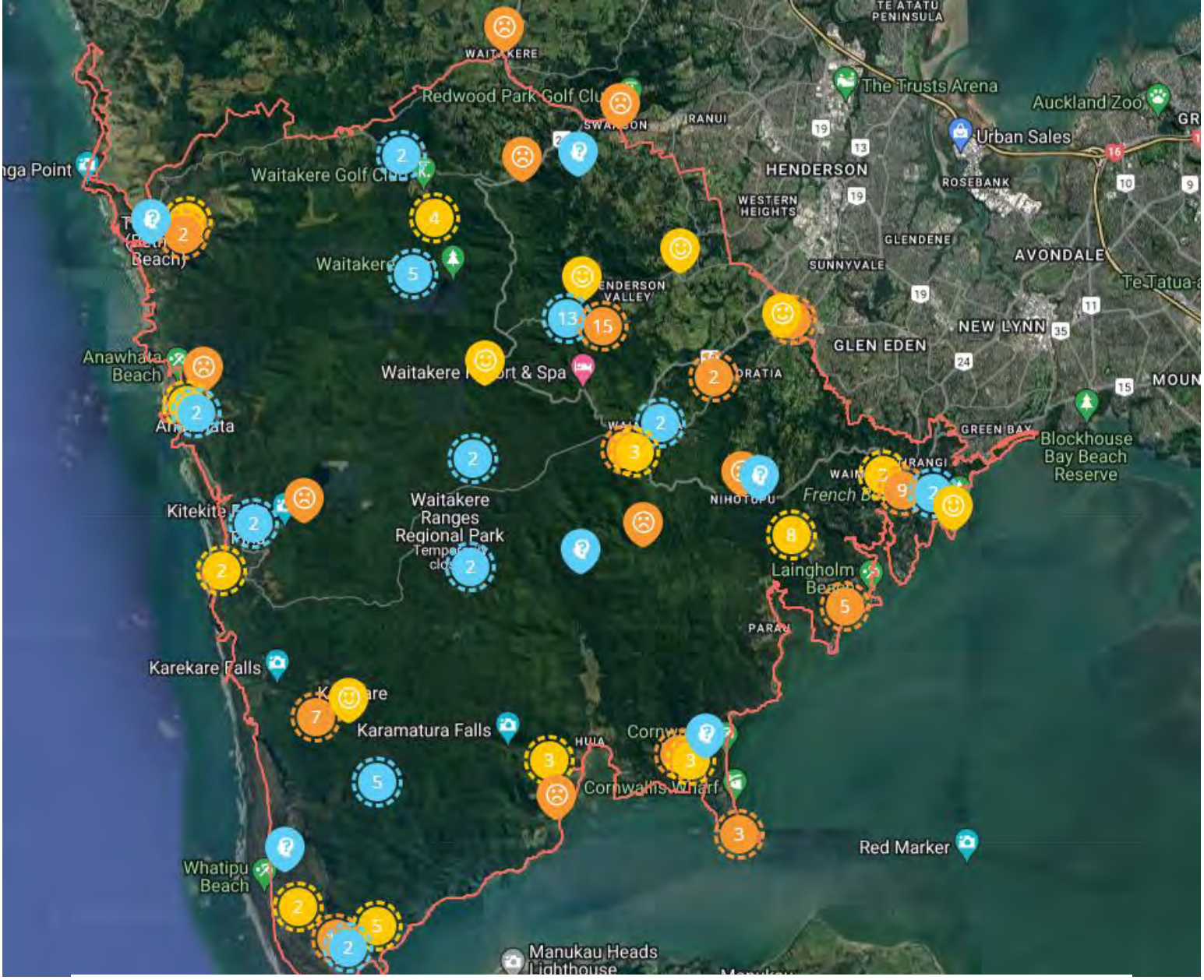
Respondents would change

- Eliminate pest animals and weeds to preserve the natural ecology
- Improve road safety (footpaths and speed bumps)
- Increase access to tracks affected and unaffected by Kauri dieback
- Increase council services throughout the area, i.e. maintenance of public facilities such as toilets

Resident's group responses

Group responses were made by Oratia Heritage Society, Henderson Valley Families, Laingholm and District Citizens Association, Oratia Residents and Ratepayer Association, the Preserve Swanson Foothills Society and the Titirangi Residents and Ratepayer Association.

These largely focused on statements expressing concern about quality of weed and pest management, requests for specific local tracks to be re-opened, the impact of visitor numbers on public facilities and resources, signage (both too much and too little), and that water quality, monitoring and testing is needed to establish freshwater and lagoon health. There were also some concerns expressed that the heritage area is inadequately funded and 'neglected'. Some commentary pointed to urban creep and development in the eastern foothills.



Map 0-3 Have Your Say' comments on the social pinpointing platform. Respondents could zoom into the map to make area-based comments and to see and respond to what others were saying

2.4. Active communities

Communities continue to play an important role in management of the heritage area. In particular this is through their advocacy and the provision of their time and labour, especially through volunteer services (for example fire, surf lifesaving, community facility support and services) as well as weed and pest control, land management, restoration and protection, and supporting the vibrant artistic and cultural heritage of the area. Council provides a wide range of activity-specific financial support and specialist expertise to community groups in the heritage area.

The arts

The arts are well represented in the heritage area. Established galleries and events are run by not-for profit organisations, and receive ongoing funding from council, primarily in support of operational costs.

Council's most significant funding relationship is with Te Uru Waitākere Contemporary Gallery Inc., enabling it to operate as a destination arts facility which develops and attracts exhibitions of local and

regional significance. The wider Lopdell Precinct also receives operating expenditure to provide spaces for community arts partners to rent, and to deliver a series of community activations.

Shadbolt House, the former home of writer Maurice Shadbolt, was in August 2022 transferred from council to the Going West Trust, and the land leased to the Trust to create a writer's retreat. At point of transfer the buildings required significant repairs for which the Going West Trust is responsible. Once the work has been completed, building ownership will transfer to the trust concurrently with the trust being granted a 10-year lease, and the house can be turned into a writer's retreat. The Going West Trust received annual funding form the local board to support the Going West readers and Writers Festival. This was one of many events impacted by Covid-19 restrictions.

The McCahon House Artists' Residency offers three residencies a year to professional artists, who live and work in the purpose-built French Bay house with an attached studio.

Open Studios Waitākere is an established event funded by the Waitākere Ranges Local Board. which showcases the local creative economy though advertising, event organisation and marketing. Artists can open their studios to the public to increase their visibility and sales. Upwards of 80 artists / 40 studios including sculptors, painters, jewellers, illustrators, ceramic artists, and photographers participated at various times, most from the heritage area. Following pandemic restrictions, the event was cancelled in 2021 and in 2022 returned for a seventh year.

Heritage

A variety of groups focus on local heritage. Some run their own small museums and events.

The West Auckland Heritage Conference, a Waitākere Ranges Local Board event, has run in Titirangi since 2016, providing a regular opportunity for local experts and iwi to share the cultural heritage of the heritage area and West Auckland. Two oral history videos funded by the local board to glean stories and images from knowledge holders and story tellers from eminent families associated with the heritage area are shared with regional park visitors and the public via videos and archive images.

Arataki Visitors Centre is the gateway to the regional park, and the wider regional park network. The 11m kauri pou welcomes visitors and depicts the ancestors of iwi Te Kawerau ā Maki and reaffirms their mana and guardianship of the 'Great Forest of Tiriwā'. The centre fulfils an educational function, with opportunities for visitors to learn about the heritage area's cultural and ecological landscapes, and well as to enjoy nature activities and art exhibitions. The Friends of Arataki fundraise for volunteer activities such as an annual kids' day.

The Waitākere Ranges Protection Society received a grant to publish a history of the Waitākere Ranges Heritage Area to mark the 10-year anniversary of the passing of the Act (April 2018).

Fire Services

A network of volunteer-run fire stations responds to a variety of local emergencies, including fire, medical emergencies, motor vehicle accidents, search and rescue, civil defence, and natural disaster responses. Only Titirangi has paid employees, and only from Monday to Friday, 7 am to 5.30 pm.

Surf lifesaving

The heritage area has four established surf clubs on its West Coast beaches, which are popular, and potentially dangerous swimming destinations. In small communities along the coast there are four surf lifesaving clubs, three of which have been planning to replace their facilities for several years.

Bethells Beach Surf Club

When the Bethells Beach Surf Club clubhouse was first constructed in 1968, there were approximately two dozen patrolling members. Today there is around 120 patrolling members and 150 children participating in junior surf activities. In an average summer, lifeguards will rescue 46 people, provide first aid treatment to a further 38 people, conduct 10 searches for missing persons, respond to 10 out of hours call outs, and provide 5,700 hours of volunteer patrol support. This is an average of 72 hours of volunteer time per member, not including training time. Beach access has over the period of this report been a concern for the club, which had begun funding for a replacement clubhouse, (Bethells Beach Surf Lifesaving Patrol, 2022) before it was undermined by the flooding Waitākere River in January 2023.

Karekare Surf Lifesaving Club

The Karekare Surf Lifesaving Club was formed in 1935. Lifeguards' range in age from 13 through to 80. A purpose-built clubhouse was opened in 2022, with funding from council ($1.3 million) (Auckland Council, 2022), the Lotteries Commission, the Waitākere and Portage Licensing Trusts, Foundation North, the Grassroots Trust and NZCT, as well as many private donations. The building is in an isolated location and only accessible by walking track. It has been well-designed to integrate into the coastal landscape setting. (Kensington, 2023)

Piha Surf Club

Piha Surf Club was established in 1934. In a typical year it protects over 250,000 beach goers and may perform up to 150 lifesaving rescues. (Piha Surf Lifesaving Club, 2023). In November 2022 the bar / restaurant was retrofitted and open to visitors.

United North Piha Lifeguard Service

The United North Piha Lifeguard Service has been operating for over 70 years and is fundraising to replace outdated facilities. The club has operated out a new surf tower since its completion in 2022, and in late 2022 was scheduled to demolish and rebuild the nearby clubhouse.

Environment

Pest plant and predator control is a unifying theme for heritage area. A valuable component of pest management in the heritage area is the high level of organised volunteer engagement. See Community Conservation.

2.5. Volunteer hours

The Pest Free Waitākere Ranges Alliance (PFWRA) is an informal alliance of networks and groups restoring biodiversity in the Waitākere Ranges Heritage Area. With council funding, the Alliance has employed a community coordinator and is making good progress on extending cooperation and coordination of community-led activities across the heritage area.

As an example of volunteer commitment in the heritage area, PFWRA surveyed volunteer hours in 2021, based on 27 groups in their volunteer directory. They found that as average, each group worked 2,130 volunteer hours per year, equating to 57,510 annual volunteer hours. If paid out at the living wage ($23.65) this would equate to $1,360,111 per annum.

Volunteers participate in a myriad of activities, including weeding, planting, trap baiting, species monitoring, fund raising, advocacy and community education.

2.6. Volunteer and community run groups / facilities / events

Long-established groups and activities are highlighted below, by broad areas of interest. Most of these groups received either one off or ongoing funding and/or support from council during the monitoring period. Some* groups work with DOC on land that they manage. List not exclusive.

Arts focus

McCahon House / McCahon House Trust

Shadbolt House/ Going West Trust

Te Uru Contemporary Art Gallery Inc.

Titirangi Music Festival Trust

Titirangi Readers and Writers Festival / Going West Trust

Open Studios Waitākere

Titirangi Potters

Titirangi Readers and Writers Festival / Going West Trust

Upstairs Art Gallery / Titirangi Community Arts Council Inc.

West Coast Gallery / West Coast Community Arts Trust

Heritage focus

Huia Settlers Museum

Oratia Folk Museum

Protect Piha Heritage Society

West Auckland Historical Society

Fire brigades

Bethells Valley, Huia, Karekare, Laingholm, Piha, Titirangi, Waiatarua

Surf Clubs

Bethells Beach Surf Lifesaving Patrol

Karekare Surf Lifesaving Club

Piha Surf Club

United North Piha Lifeguard Service

Residents' groups

Waiatarua Community Patrol

Te Henga Waitī Safety Group

Oratia Heritage Society

Henderson Valley Families

Laingholm and District Citizens Association

Oratia Residents & Ratepayer Association

Preserve Swanson Foothills Society

Titirangi Residents and Ratepayer Association

Waitākere Ranges Protection Society

Environment focus

Cornwallis Petrel Heads

Friends of Arataki

Ark in the Park

Friends of Whatipū

Habitat Te Henga

Huia Weed Warriors

Karekare Landcare pest plant control

La Trobe Forest Ecosystem Restoration Project

Little Muddy Creek/Gill Esplanade Pest plant control and native vegetation planting

Lone Kauri Forest Restoration Group

Matuku Link

Muriwai Environmental Action Community Trust*

Project Twin Streams / Opanuku Stream restoration

O'Neill Bay Petrel Project*

Oratia Native Wildlife Project

Otitori Sanctuary Project

Pest Free Piha

Piha Coast Care

Rayner Weeders

South Titirangi Neighbourhood Network

Waitākere River care

Waiatarua Weed Action Group

2.7. Te reo Māori names gifted

Most traditional placenames and cultural sites in the heritage area belong to Te Kawerau ā Maki or their ancient Tūpuna. All of the regional park was once in their customary title, with large parts held under native reserve title until these were alienated.

In 2021 Te Kawerau ā Maki gifted te reo Māori names for ten local parks in the heritage area.

The names were:

a. Pikopiko / Gill Esplanade Reserve
b. Rua-tuna / Laingholm Reserve
c. Waihanga / Laingholm Scenic Reserve
d. Kaupae/ Landing Road Walkway
e. Waituna (formerly Landing Road Reserve)
f. Wai-kumete (formerly Little Muddy Creek)
g. Kohu-nui (formerly North Piha Esplanade)
h. Waitetura (formerly North Piha Strand)
i. Waitetura (formerly Piha Esplanade Reserve)
j. Waitipu (formerly Waitākere Quarry)

2.8. Historic heritage

Historic heritage includes historic sites, structures, places and areas, archaeological sites, sites of significance to Māori (including wāhi tapu), and surroundings associated with natural and physical resources. More than 1300 sites with cultural and / or historic heritage are recorded in the heritage area. The majority are within the regional park, and the RPMP sets out management intentions for these.

This includes 30 pā sites strung along the West Coast to the Manukau Heads and clustering around the bays at Te Henga, Anawhata, Piha, Karekare, Pararaha and Whatipū. These range in size from defended positions on narrow ridges containing two or three house sites on an area no more than 20 x 12 feet, to headlands and islands capable of holding 80 to 100 people.

The Act itself specifies that heritage features include the evidence of past human activities such as timber extraction, gum-digging, flax milling, mineral extraction, quarrying, extensive farming, and water impoundment and supply.

Heritage is protected through the AUP, of which three schedules include cultural heritage sites, places and items that may also be heritage features. These schedules are:

- Historic Heritage (Schedule 14)
- Sites and Places of Significance to Mana Whenua (Schedule 12)
- Notable Trees (Schedule 10).

Council's Cultural Heritage Inventory (CHI) database also contains information on cultural heritage places and items within the heritage area. Local area plans (LAPs) do not provide formal protection of historic heritage, but they do enable the identification of 'heritage features' within an area.

2.9. Archaeological heritage

Archaeological sites with cultural and/or historic significance are predominantly located along the west coast and the northern Manukau shoreline, utilising rich forest and coastal resources.

No topic-specific research or formal large area survey upgrades has been carried out since 2018, at which point an archaeological survey had established the extent of existing site using GPS data. Information from that survey has been used to mitigate risk and inform ongoing management and maintenance practices, for example in resource consent applications where public spaces may be detrimentally affected by high recreational use. Heritage assessments are also carried at the planning stage of track upgrades to ensure a 'no effect' outcome on heritage.

A number of planned excavations were impacted by COVID-19 lockdowns and did not happen. As observed in the 2018 report, the potential for coastal erosion to impact historic heritage sites remains a threat.

2.10. Built Heritage

Built heritage sites in the heritage area include incorporated heritage buildings in private as well as public ownership. Preservation of heritage building fabric relies on quality and timely maintenance. A survey of 90 sites prior to the 2018 report concluded that they were generally well maintained, occupied, and/or used regularly. Most were in excellent condition.

Following this, the 26 council owned built heritage assets are identified and prioritised for maintenance in ongoing asset management programmes.

Community Halls

The rural halls in the heritage area are community-led, with a range of different maintenance and / or leasing arrangements with council. One example is the Waitākere Domain Hall, which has a catchment radius of Swanson, Bethells, Taupaki and Waitākere itself.

As a former school hall built by the Education Board in 1920/1921, it is a heritage listed building. The hall is Council owned and is managed by the Waitākere Residents and Ratepayers Association Incorporated.

Whatipū Lodge

In 2020, the Whatipū Lodge marked its 150th anniversary. A heritage upgrade to the lodge was carried out in association with council's Built Heritage team and the Friends of Whatipū, an incorporated group who have knowledge of, and links with, the Whatipū area and have resolved to Act as guardians of the area, helping to preserve its special character.

Piha Schoolhouse

Piha Wetland was purchased by the council from the Ministry of Education in 2017, following a request from Waitākere Ranges Local Board for the land to be purchased and used as a park the previous year. The old schoolhouse building that was on the land was retained and refurbished to operate as a community facility to hire. It opened for community use in 2021 and is run by the West Coast Gallery. The old schoolhouse was the first new council-owned community facility to open in the heritage area for over a decade.

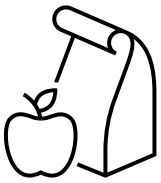
A Piha Wetland Service Outcomes Plan was adopted in late 2020 to restore the ecology of the surrounding wetland.

2.11. Local services and facilities

Employment, shopping, community services, and schools are for many residents located outside the heritage area. See table below for an overview of services and facilities in the heritage area, by settlement. List not exclusive.

Service	Bethells | Te Henga	Huia	Karekare	Laingholm	Oratia	Piha	Titirangi	Waiatarua	Waitākere
Art gallery/s			✔			✔	✔		
Beach	✔	✔	✔	✔		✔	✔		
Bus service				✔			✔		✔
Café / restaurant		✔				✔	✔	✔	✔
Campground		✔	✔			✔			
Church				✔	✔		✔	✔	
Community Hall / House		✔		✔	✔	✔	✔	✔	✔
Doctor							✔		
Fire Station	✔	✔	✔	✔		✔	✔	✔	
Library						✔	✔	✔	
Playground		✔		✔	✔	✔	✔		✔
Pharmacy							✔		
Marae									
Market		✔		✔		✔	✔		
Public toilet	✔	✔	✔			✔	✔		✔
School			✔	✔	✔		✔		✔
Preschool	✔					✔	✔	✔	
Sports field				✔		✔			✔
Surf club/s	✔		✔			✔			
Supermarket / store		✔		✔	✔	✔	✔		✔

2.12. Schools



Young people may attend a primary school either inside or outside of the heritage area. There are no intermediate or secondary schools. Te Kura Kaupapa Māori o Te Kotuku in Swanson is the closest te reo Māori immersion school.

Pandemic restrictions led to the cancellation of Waitākere Primary School centenary celebrations in 2021, and the school instead published a centennial book. The school is situated in a semi-rural environment, in walking distance of Waitākere Township and the railway station. Children attending the school come from Bethells Beach, the Waitākere Township or small farmlets around these two communities. The roll includes approximately 80 percent European and 16 percent Māori.

In Titirangi, there has been school since 1850. The current campus was built in the 1930s. The roll is primarily New Zealand / European / Pākehā, approximately five percent Māori and two percent Pacific.

Laingholm School was founded in 1950. New Zealand European/Pākehā students make up most of the roll. The next largest group is Māori. There are smaller numbers of students from other ethnicities.

Henderson Valley School celebrated its centennial in 2015. The school is located in a semi-rural setting and students are mainly NZ European/Pākehā. Approximately one-fifth of the student population identify as Māori, and small groups identify as Asian or Pacific. There are also smaller numbers of students from other cultural backgrounds.

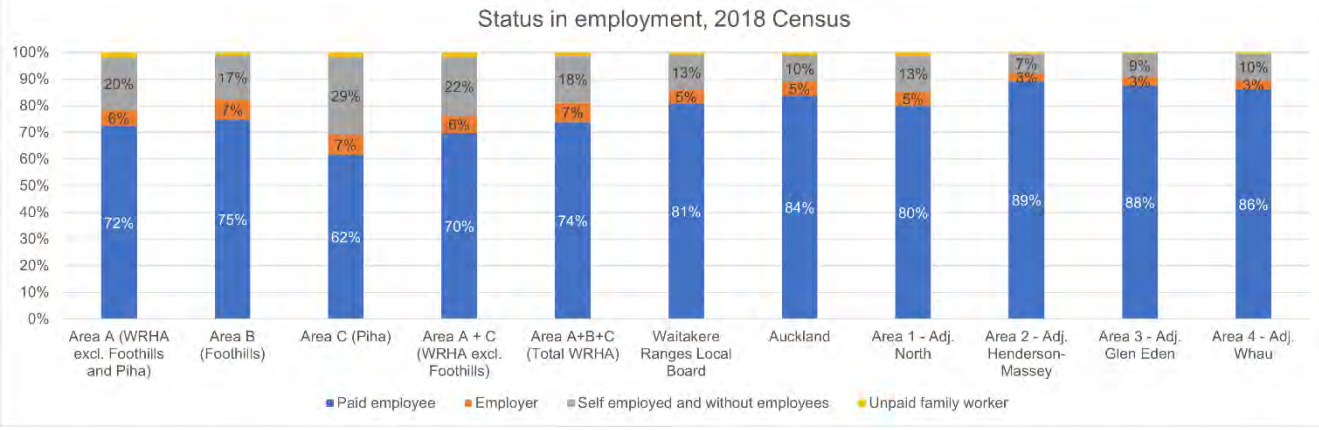
By 2022, Oratia District School had been in operation for 140 years. The school serves Oratia and a catchment area extending to the coast at Piha and Karekare. It is unique in having a small side-school next door, for which the following areas are in-zone: Karekare residents, Piha Road residents on the Karekare side of the road between Lone Kauri Road and Te Ahuahu Road and all residents on Te Ahuahu Road on the Karekare side.

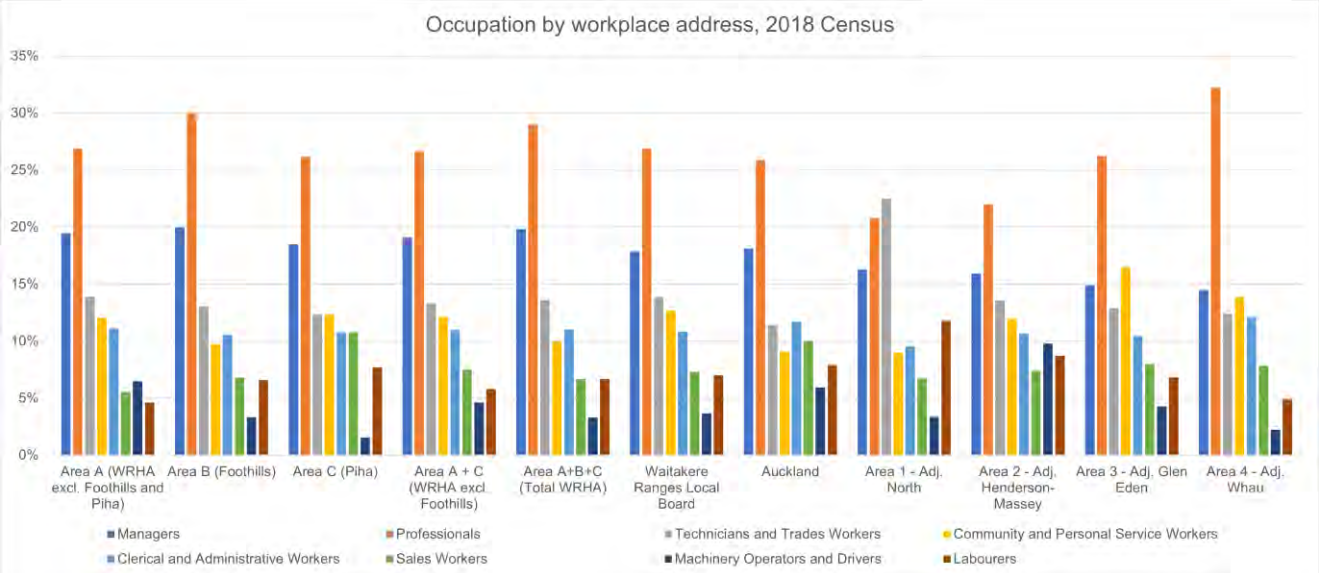
Table 0-1 Schools located in the heritage area

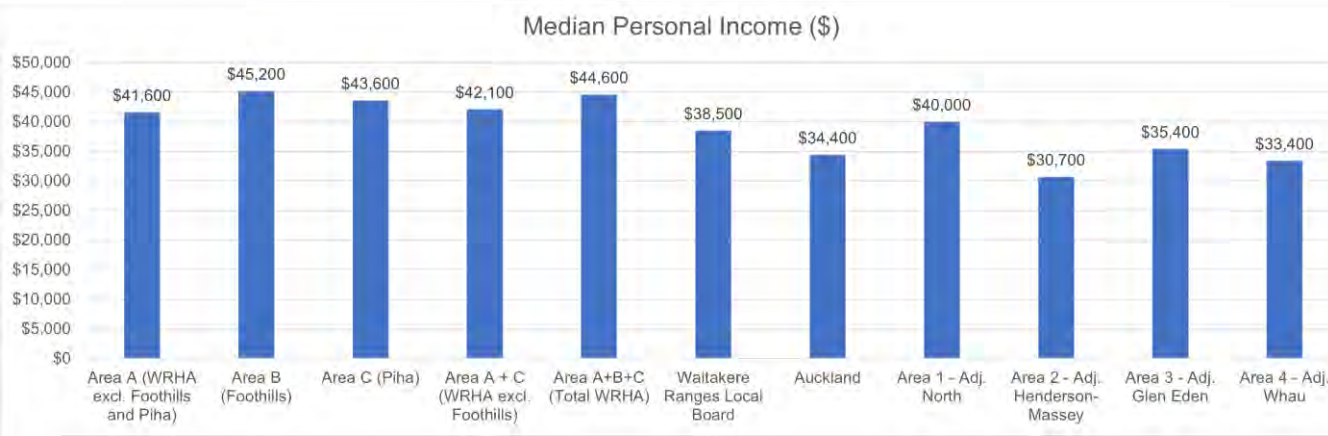
Name	Years	Area	Roll (approx.)
Henderson Valley School	1–6	Henderson Valley	335
Laingholm School	1–6	Laingholm	203
Oratia District School (with Lone Kauri School)	1–6	Oratia	469
Titirangi School	1–6	Titirangi	419
Waitākere School	1–8	Waitākere	510

2.13. Economic activity / work force status

Updated information from the census is the most reliable indicator of work force status in the heritage area[5]. Piha has a relatively high proportion of self-employed workers.







[5] Graphs include population information from areas immediately outside the heritage area boundary to illustrate the change in demographics at the boundary of the heritage area with urban Auckland.

Case study: Titirangi business / local centre zone

Proximity to the city and Manukau Harbour beaches, along with a position on the intersection of roads leading the Manukau Harbour and the West Coast, make Titirangi a popular destination. It is the only area zoned 'Business – Local Centre' in the heritage area, and this zoning creates greater opportunity for business and services.

The combination of services offered in Titirangi is unique within the heritage area. 500 South Titirangi Road is a busy site which includes Titirangi War Memorial Hall, Titirangi Library and Titirangi Playcentre. Titirangi War Memorial Community House is a council owned and community managed house. Additional facilities include a pottery studio.

For travellers looking to visit West Coast beaches, Titirangi is the last spot at which to visit the supermarket or use the toilet before entering more remote parts of the heritage area.

The interconnected Lopdell House and Te Uru Contemporary Art Gallery are some of the largest structures in the heritage area, in which their scale is unique. Along with the smaller Treasure House, originally a museum, these three structures make up the Lopdell Precinct, a substantial arts and community hub. Lopdell house, formerly Hotel Titirangi, supports several cafes, office tenancies, a small movie theatre, and local artist's displays. Te Uru features national and international displays of contemporary art, including ceramic and sculpture works.

The precinct was recognised as a Category 1 Historic Place by Heritage New Zealand in 2020.

Several new developments were consented and completed in this monitoring period. This included a mixed-use structure located at the intersection of Titirangi and Huia Road containing a food hall, offices, and retail tenancies, and on a downwards slop to the rear, a discrete carpark with capacity for up to 40. Council installed a public toilet located at 400 Titirangi Road, and an outdoor set of stairs on a steep corner site at the intersection of Huia Road.

Spending in Titirangi has been at a higher rate than the region and has followed a similar pattern, with declines during the Covid 19 lockdown periods of March to May 2020. (ATEED)

2.14. Local Area Plans

The Act says council may prepare and adopt a Local Area Plan (LAP) for localised communities. LAPs are long-term, community-led plans, that express people's aspiration for place, and promote the purpose and objectives of the Act in the area to which they relate.

In particular, LAPs:

- identify any distinctive natural, cultural, or physical qualities or characteristics contributing to the area's long-term pleasantness or aesthetic coherence, or cultural or recreational attributes
- include policy statements and objectives in relation to amenity, character, and environment
- may identify issues relating to the provision of future services
- are used to inform decision making processes relating to that area.

LAPs acknowledge that unintended threats to amenity may come from both public and private actions. For example, the protection of ecosystems (a heritage feature) might be achieved through a combination of community restoration projects, conservation covenants and monitoring.

LAPs are complementary to the Act in that they incorporate its high-level objectives and translate them into a defined geographical area. While they empower communities through a collaborative approach, they do not provide any decision-making powers.

Council may amend, revoke or replace LAPs, and although it is not required to act on them, if it makes a decision which is significantly inconsistent or is anticipated to have consequences significantly inconsistent with a LAP (essentially with the Act) it must clearly identify:

- the inconsistency
- the reasons for the inconsistency, and
- any intention to amend the LAP to accommodate the decision.

Where a resource management matter has been identified in a LAP, this has informed the AUP and related policy planning processes.

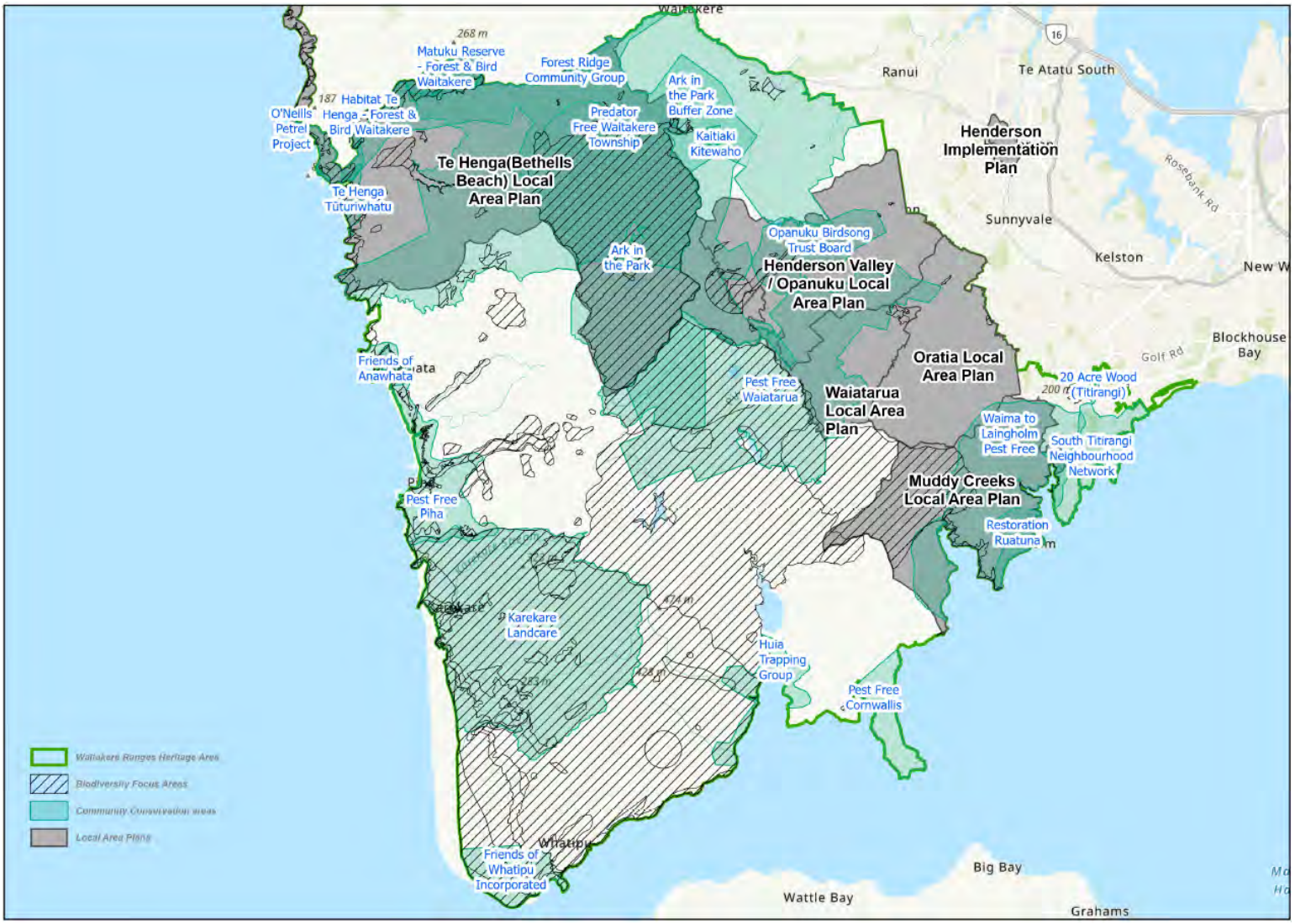
Five LAPs have been adopted: Waiatarua (2009), Henderson Valley / Opanuku (2010), Muddy Creeks (2014), Oratia (2009), Te Henga (Bethells Beach) and Waitākere River Valley (2015).

While each LAP may differ in emphasis, size and location, all address similar overarching themes.

The long-term objectives which apply across all LAPs include:

- Protect, enhance, and restore ecosystems
- Manage visitor numbers
- Improve infrastructure services
- Support community education

LAP-related activities are generally identified in larger work-programmes rather than as LAP-specific activities, and as with many activities in the heritage area, may apply across the boundaries of an individual LAP.



Map 0-4 LAP areas overlaid by community conservation projects

2.15. Focus areas common to the five LAPs

LAP focus area 1: Regeneration of terrestrial and aquatic ecosystems with prominent indigenous character

LAP areas are overlaid by a variety of community conservations projects, the main ones of which are shown in Map 0-4. above. Many small groups are visibly active on a case-by-case basis, mostly in pest plant and animal control.

Community weed bin pop-up weekends held at Waiatarua and Laingholm in 2021 are examples of community-led LAP implementation. These pop-ups provided opportunities for residents to dispose of commonly found weed pest species locally.

Both the Muddy Creeks LAP and the Waiatarua LAP have actions which relate to pest management and disposal of weeds.

LAP focus area 2. Management of local character and amenity

LAP areas rely on the AUP to assess site character and amenity in private development proposals that require resource consent. Other plans, such as the Whatipū Service Outcomes Plan, help people to understand specific locations and set criteria for how local character and amenity will be managed.

LAP focus area 3. Retaining existing landscape character

A clear theme across all heritage area LAPs relates to protecting. restoring and enhancing natural landscapes, and their importance to the local context. While each LAP may focus on a different element or aesthetic, the way in which each one is managed and protected is the same.

LAP focus area 4: Co-ordination of activities within LAP areas

In the November consultation for this report, comments were received which included requests to give effect to LAPs and enable greater funding to carry out actions at a community level.

Council responsibilities are widely spread across the heritage area as a whole. Activity within LAP areas appears within larger regional and local wok programmes and activity areas. Small grants to community groups in LAP areas were particularly visible in the Waitākere Ranges Local Board, local grant programme.

Case study: Community signage project highlighted

This project began in 2015 when the Bethells / Te Henga LAP was adopted. The community wanted a local feature that would reduce signage, provide visitors with helpful information on dog control rules, water safety and highlight the unique cultural and natural heritage of the area.

A design competition was held, an engineer contracted, and construction costs fund raised. Mana whenua were consulted on content. The local board provided some funding, and council helped the groups to work through the landowner approval and regulatory consent process.

The project aligns with a visitor management and park outcome from the LAP and more specifically contributed to a LAP action which seeks to improve visitor information at the beach and other areas. The official ribbon cutting of the information kiosk was held in May 2022.

Table 0-2 Summary of changes across common LAP themes

Common theme	2017	2022
Regeneration of terrestrial and aquatic ecosystems with prominent indigenous character	Not specifically addressed in relation to LAPs	A mix of council and community-led activities exist across the five LAPs.
Management of Local Character and Amenity	Not specifically addressed in relation to LAPs	A mix of council and community-led activities exist across the five LAPs.
Retaining Existing Landscape Character	Rural settlement pattern	Minor changes
Co-ordination of activities within LAP areas	Not specifically addressed in relation to LAPs	A mix of council and community-led activities exist across the five LAPs.

Photo 0-4 / 0-5 Changing land use in the Eastern foothills – Holdens Road, Oratia 2017 to 2022. (KPLC, 2022)

Topic 3. Landforms, landscapes, and land use

Relevant heritage features as set out in the Act include:

- Connected and characterful landscapes
- Coastal areas
- Eastern foothills
- Subservience of the built environment to the area's natural and rural landscape
- Quietness and darkness
- Dramatic visual backdrop to metropolitan Auckland,
- The public water catchment and supply, and
- Terrestrial and aquatic ecosystems of prominent indigenous character that have landscape qualities of regional and national significance and natural scenic beauty.

3.1. In this section

Landscape embodies the relationship between people and place. It is the character of an area, how the area is experienced and perceived, and the meanings associated with it (Kensington, 2023). How people develop their homes, how this affects the visual landscape, the nature of industrial and service infrastructure and the extent of development, are all things which have an impact on landscape character.

This section considers the overall impact of changes in the built environment on the distinctive landscape character of the heritage area, referring to:

- The AUP
- the findings of the 2022[6] Landscape Assessment, and
- resource consent figures and information to capture the extent and scope of new consents in the area and to note any trends.

Potential effects of development on the landforms, elements, characteristics, patterns, and processes of the heritage area may include:

- earthworks that modify landforms, cause erosion, or remove or modify the primarily indigenous vegetation
- the introduction and location of structures, roads, and driveways
- a reduction in the visual integrity of landforms, or
- anything that disrupts or detracts from the landscape elements, patterns, processes, and visual values of these features.

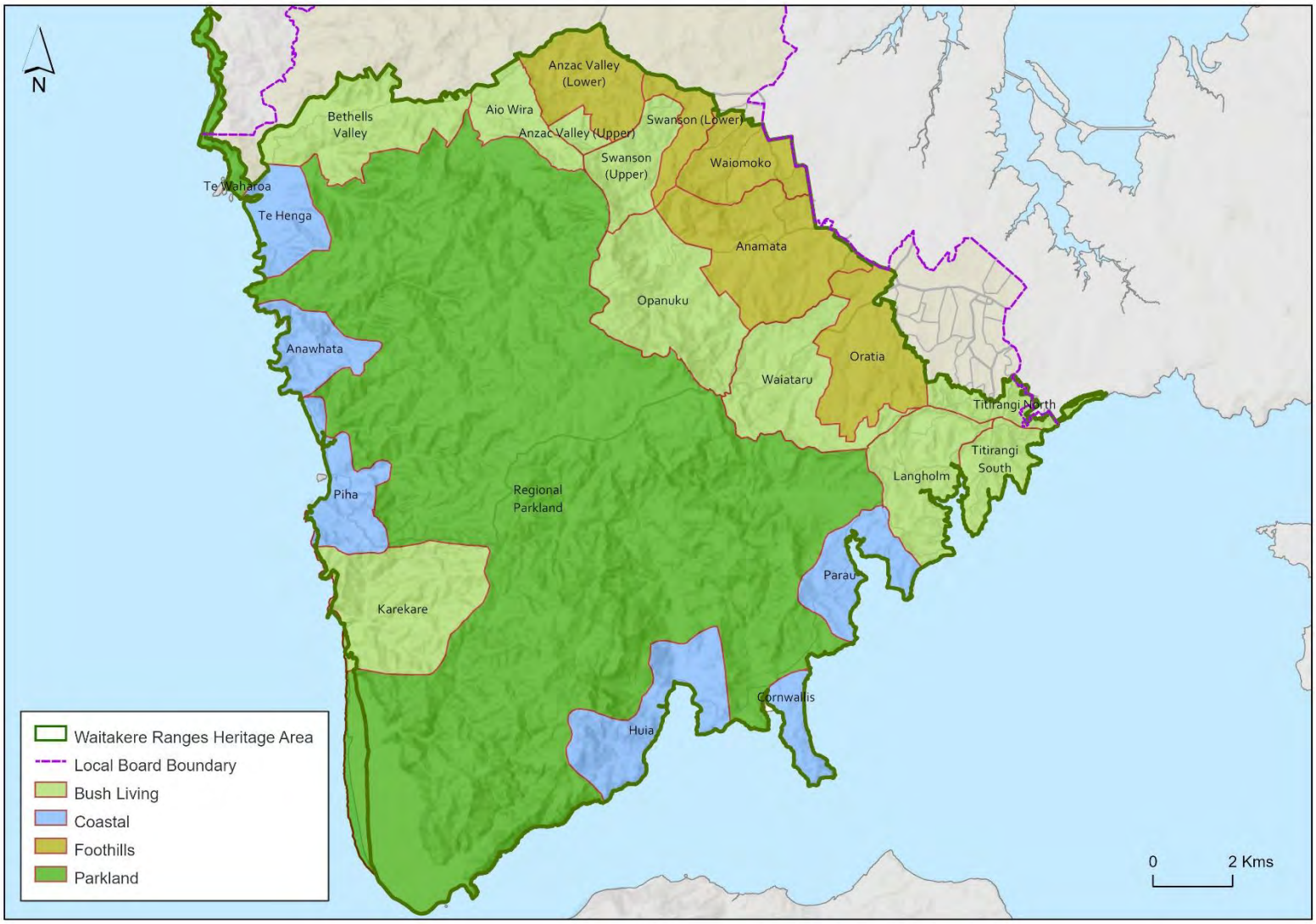
The elements, characteristics, patterns, and processes of the heritage areas landforms have been used to think about how different geographic areas relate to each other.

Resource consents have been examined to look for patterns of change across the landscape zones identified in the Auckland Unitary Plan (AUP).

There has been no activity to align Te Ao Māori and Te Ao Pākehā streams of landscape assessment. This should be taken up before the 2028 monitoring report.

See *Appendix B: Strategic and policy framework* to understand the wider strategic framework.

[6] Noting that all fieldwork and preliminary assessment that informed this report was undertaken prior to the adverse weather conditions which struck the region in late January 2023 and again in early February 2023. The Landscape Assessment Report 2023 will be available online at a later date.



Map 0-5 Heritage area 'zones' are referred to throughout this chapter

3.2. The Act, the AUP and the RMA

The AUP uses a variety of methods to manage effects on Auckland's features and land use. 'Zones' (shown above), 'controls' and 'overlays are all planning tools which guide land-use in a particular area. Some land use zones, controls, and overlays are unique to the heritage area, or to parts of it. Others apply across Auckland, as appropriate.

In general, the way that land is zoned reflects how it is used and what sort of activities happen there. For example, an area with a special overlay usually has more restrictive controls over what can be developed in that area than the regional 'zone' with which it is identified. Zoning can also identify how land use is expected to change in the future.

Resource consents are needed for new buildings, changes in land use, to subdivide or change property boundaries. The Act does not in itself generate any requirements for resource consent but relies on the AUP to determine whether a consent is required.

When making a decision on a resource consent application, council must consider the purpose and relevant objectives of the Act. If a conflict arises between the Act and the Resource Management Act 1991 (the RMA), then the RMA prevails.

3.4. Resource consents and building consents

Table 0-3 The main differences between resource consents and building consents

Resource Consent	Building Consent
A resource consent is written approval from council to carry out a project that has an impact on the environment or could affect other people. A resource consent may come with conditions that help manage the effects of a project. For example, if you remove trees or vegetation to build your house, you may have a resource consent condition that requires you to plant some native trees after building is finished.	A building consent is written approval from council to carry out specific building work on a specific site, which must comply with current regulations. It ensures that the proposed work is safe, durable and doesn't endanger the health and safety of anyone using the building. A building consent is granted if council is satisfied on reasonable grounds that the building code provisions would be met if the work is properly completed in accordance with the plans and specifications in the application.
A resource consent is concerned with what activities are occurring or are proposed to occur on the land.	A building consent is concerned with structures on the land, as well as any supporting infrastructure.
A resource consent is issued in accordance with the Resource Management Act 1991	A building consent is issued in accordance with the Building Act 2004
Needed where the proposed activity breaches a provision in the AUP. The Act relies on the AUP to determine whether a resource consent is required. If a conflict arises between the Act and the Resource Management Act 1991, then the Resource Management Act prevails.	There are certain activities that do not require a building consent, provided that they comply with the Building Code and all other relevant legislation. These activities are listed under Schedule 1 of the Building Act. Some examples include, general alterations, plumbing and drainage works, support structures, windows, doors, and walls.
Section 13 of the RMA states that in relation to discretionary and non-complying resource consent applications in the Heritage Area, a consent authority must have particular regard to the purpose of the heritage area and any relevant objectives, as well as any relevant provisions of any National Policy Statement or New Zealand Coastal Policy Statement. In relation to applications for controlled or restricted discretionary activities, consent authorities must consider the purpose of the heritage area and any relevant objectives as if they were matters specified in the plan or proposed plan over which the local authority has reserved its control or has restricted the exercise of its discretion.	

3.5. Resource consent figures capture the extent of land use activity

A comparatively minor reduction in resource consents between this and the previous monitoring period illustrates that the AUP's planning instruments continue to be applied consistently. Common resource consenting requirements include activities that require earthwork, vegetation clearance or infringements to standards (building coverage, impervious surfaces and/or yard standards).

Knowing where building consents are happening and what they are for helps to understand the scale and location in which development in commercial and private markets is occurring. Internal and backyard additions to structures are not easily captured in a landscape assessment, but knowing they are happening provides an indication of the values of property owners and the level of investment in existing building stock.

Comparatively few building consents have required a resource consent. This indicates that most building consents were for activities that could be carried out without a resource consent. Common types of building consents were for deck installations, garages, and swimming pools. Most were for additions and alterations to existing structures and to install solid wood heating and fireplaces. What activity these were for varied between residential, commercial, and religious activities.

The location of building consent activity reflects the locations of land use consents for new dwellings, in that Titirangi/Laingholm, Piha and Oratia are the most popular centres of activity, followed by activity in the Residential - Large Lot Zone which extends south from Titirangi to the coast.

Building consents covering areas around Piha, Huia, Bethells, and Te Henga, were almost entirely for residential activity.

3.6. Land use consents for enabling works

Land use consents for enabling works indicate where new structures are to be located and what activities are being triggered by development plans.

At the same time, the number of land use consents applied for and granted decreased, the total number of consents applied for and granted declined, and the number of lapsed, withdrawn, or closed consents decreased significantly.

This indicates that while the current planning framework is supporting the purpose of the Act, it is less restrictive and prohibitive to development than the previous plan, with more opportunities for communities to provide for economic, social, cultural wellbeing.

Most land use consent applications were for new structures in Titirangi / Laingholm, Piha and Oratia. They:

- Were commonly triggered by vegetation clearance, activities which required earthworks, and additions and alterations to existing structures
- Were less commonly triggered by consents for retaining walls, works within overland flow paths, and works within floodplains
- Continued to decrease for new structures, additions and alterations
- Showed a pronounced decrease for vegetation removal.

Table 0-4 1 Number of consent activities for subservience related standards, by zone

Zones	Total located in zone	Total which trigger zone related activities	% building height standards	% yard dimension standards	% building coverage standards	% maximum impervious area, residential only	% dwelling and property standards, rural only
H1 – residential - large lot	135	91	27% (25)	67% (61)	9% (8)	15% (14)	NA
H2 – residential - rural and coastal settlement zone	83	30	20% (6)	27% (8)	30% (9)	6% (2)	NA
H20 – Rural – Waitākere Foothills Zone	102	61	7% (4)	34% (21)	58% (35) *Note the two levels	NA	25% (15)
H21 – rural – Waitākere Ranges zone	117	55	15% (8)	71% (39) *Note the two levels	51% (28)	NA	16% (9)

*Percentages are a measurement of the total amount of consents which trigger a zone activity, relevant to this table or not. Percentages do not equal 100 percent as the table does not include other activities not related to subservience, and many consents contain multiple activities from different standards.

Much of the west coast, outside of established development areas, is subject to Outstanding Natural Landforms, Outstanding Natural Landscapes, Outstanding Natural Character, and High Natural Character Overlays. The extent of these overlays varies, and they aren't always all present, but they cover most of the West Coast area.

There was a significant increase in applications for new dwellings in the Waitākere Ranges and Waitākere Foothills Zones. This, in turn, contributed to an overall increase in land use consents for new buildings.

The main reason for consent was for building coverage exceeding the permitted percentage of a total site. Building coverage is decided as a percentage of total site area and impervious surface area. When this goes over the standard, it may indicate smaller lots sizes or larger houses. The prevalence of the activity also suggests development is progressing at a higher density in the foothills.

In the Rural and Coastal Settlement Zone, which applies to several separate areas along the coastline, there was also a small increase in land use consents for new structures. This zone, which controls activity in the settlements along the western and southern coast of the heritage area, is non-specific to the heritage area.

3.7. Minor housing units

A perceived increase in the number of minor housing units was identified as an area of concern in the engagement and consultation for this report. Minor housing units are a popular way to increase the habitable capacity of properties that have larger lot sizes and remote conditions in the ranges. At the same time, they may be contributing to an increase in population density and imposing urban characteristics.

It is not possible to draw any strong conclusions. This is because most minor housing units are not likely to exceed zoning standards. Some do not need a building consent and will not be recorded by council.

The availability of prebuilt minor housing units, and personal conversions of existing structures, further complicates an understanding of the true number of minor housing units in the heritage area. While anecdotal evidence suggests they are likely to be more common, there were only 31 new landowner consents approved in the heritage area. The way in which they were distributed didn't indicate that they were clustered in any particular location.

3.8. Infrastructure

There were a total of 35 consents for infrastructure works. These were predominantly for retaining walls and landslide / slip repairs. A small number were for upgrades of service utilities like power poles and stormwater drainage.

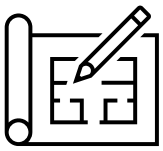
There were 45 consents for 'transport', which primarily related to private applications and were associated with new garages or parking spaces. A limited number of applications were to upgrade the capacity of, or to build, new carparks. These consents mostly related to popular visitor destinations or were in Titirangi centre.

Disruption to the road network following landslides is an ongoing concern for residents, as landslides at times have isolated West Coast communities by blocking the only available road connection. Several activities related to construction and alteration of structures and buildings within floodplains, on unstable land, and over overland flow paths. When slips do happen, reparative work entails clearing debris, strengthening the landscape, and installing stormwater infrastructure to prevent further erosion.

There were several upgrades to popular walking tracks, mainly around centres and on the coast, for example the Opanuku Pipeline (a new connection to mountain road), the Zig Zag Track (upgrading and revegetation), the Mercer Bay Loop Track (a new track section), Kara Matura Falls (a new toilet).

One global consent was issued to upgrade 35 tracks up to dry track standards so they could be reopened following closures and restrictions introduced as part of the precautionary response to kauri dieback. The resulting pathways were designed to be provide the least impact on the sensitive ecological conditions in the area. The works for these consents included raised boardwalk pathways, footbridge structures and boxed steps. The work was planned to take place out of birding season, to not introduce new soil to the trail environments and to avoid removal of mature vegetation.

The positive or negative impact of the new tracks on the heritage area is subject to differences in view.



3.9. Commercial consents

Consents for commercial and public activities were primarily located through the southern and eastern foothills, with a continued concentration of activity in Titirangi/Laingholm and Oratia. Only a few commercial and public consenting activities were present along the Northern boundary of the heritage area and West Coast settlements. Commercial activity was primarily focused on hospitality, service, and accommodation activities.

Most commercial and public consents were for upgrading or refurbishing existing facilities rather than applying to build new structures.

Consents for educational activities show that local schools are providing additional capacity for students through new classrooms and facilities. A handful related to farming, industrial, or factory activities, and were for constructing new barns, sheds, and greenhouses for processing and storing materials.

The lack of consents for new structures indicates the willingness of businesses, civic, and social organisations in the ranges to invest in and upgrade existing facilities.

3.10. Consent patterns

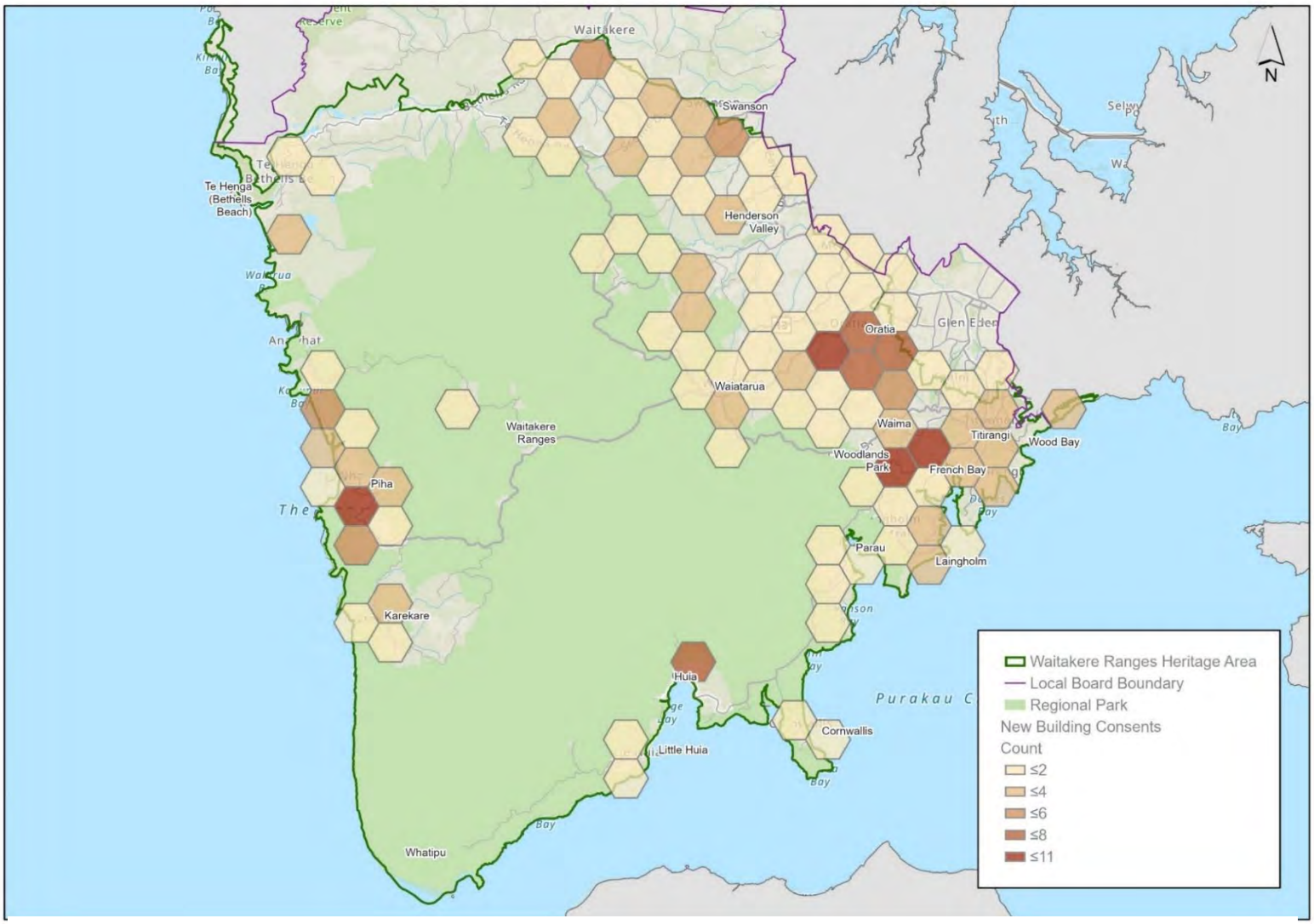
See Maps 7 -11 below for an overview of the main areas in which new building consents clustered.

Resource consent applications for breaches of height and building footprint standards were noticeable in the eastern foothills, mostly concentrated within and around local centres. The transition to rural living and sparse settlement higher in the eastern foothills was largely retained by adherence to high quality design and the screening effects of vegetation growth.

West Coast settlements, despite being popular places to live and visit, mostly retain their rural settlement patterns. Karekare, Anawhata, and Bethells all retain characteristics of remoteness from urban Auckland.

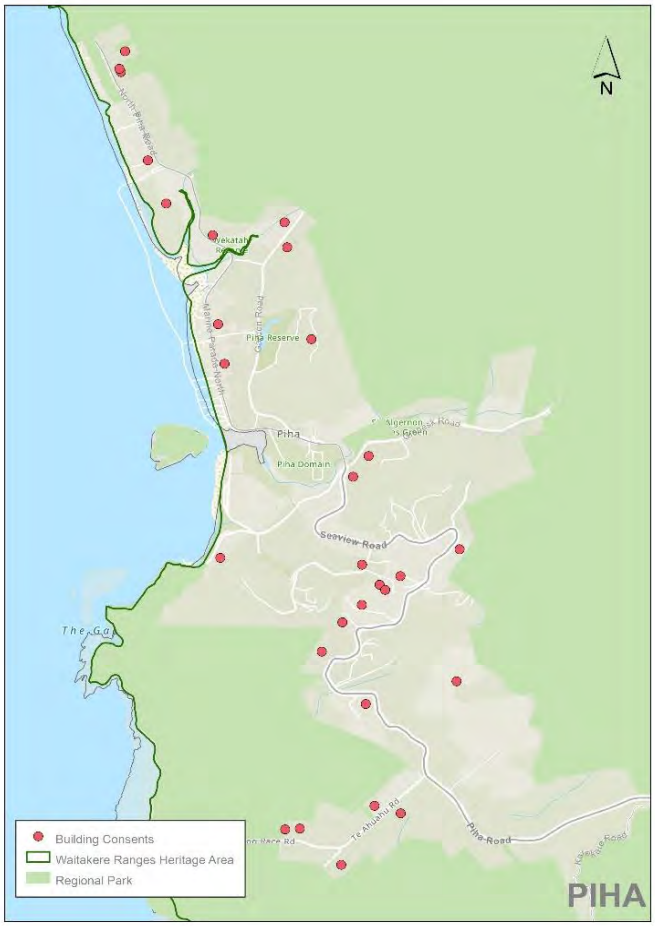
The number of consent applications for activities on sensitive ridgelines rose to 63, from 37 in the last monitoring period. These were primarily focused on the foothills around Titirangi / Laingholm, with a secondary concentration in Piha. Roading infrastructure tends to follow ridgelines around these local centres, and 49 of the 63 resource consents are for structures not visible when viewed from a public place, limiting the disruption of visual continuity of the heritage area’s landscapes and landforms.

See Maps 3- 7 below for an overview of the main areas in which new building consents have clustered.

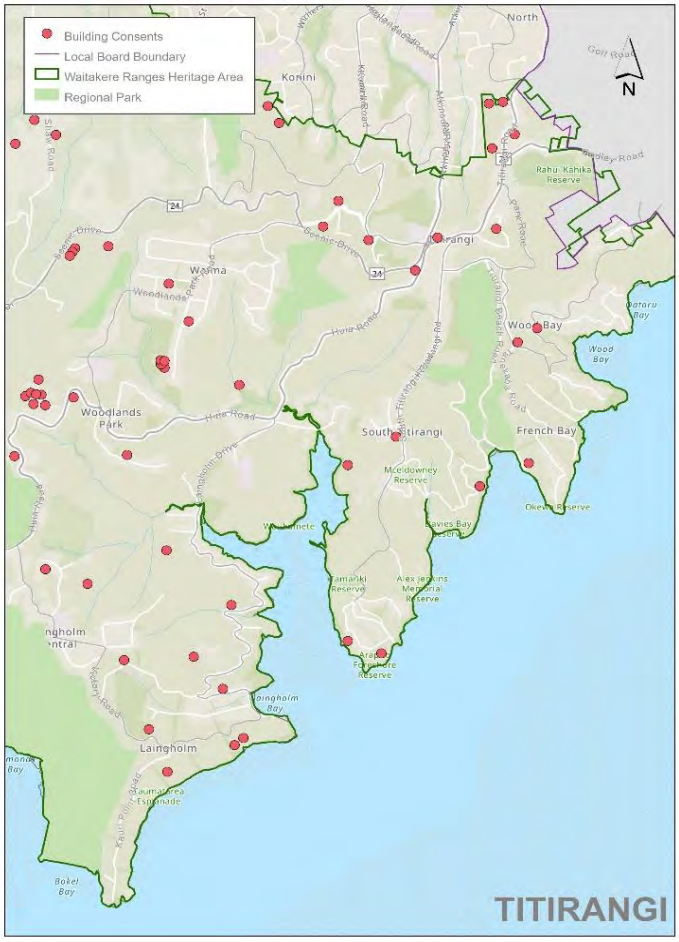


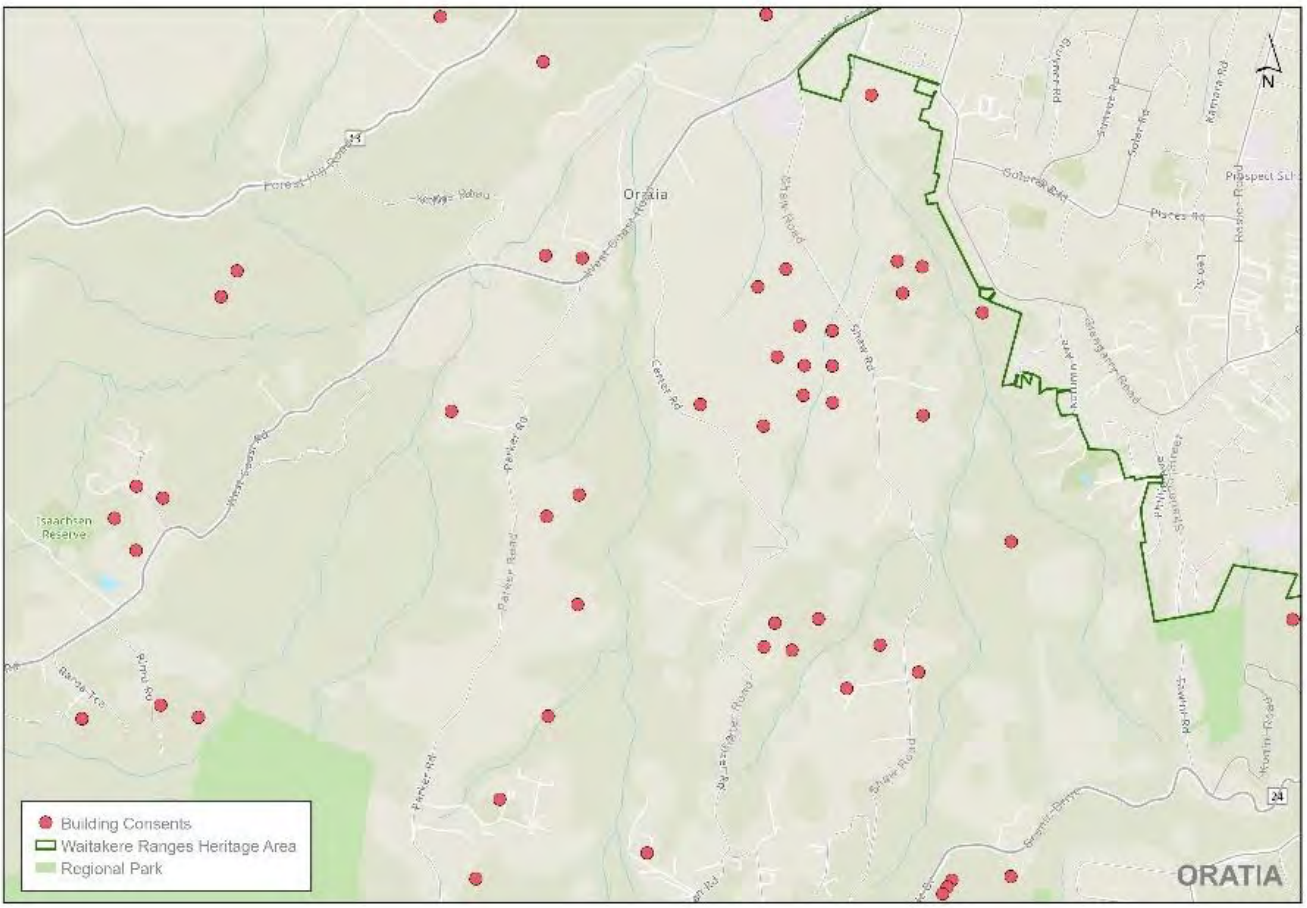
Map 0-6 New building consents during the monitoring period demonstrate the intensity of development

Map 0-7 New building consent cluster in Piha, below



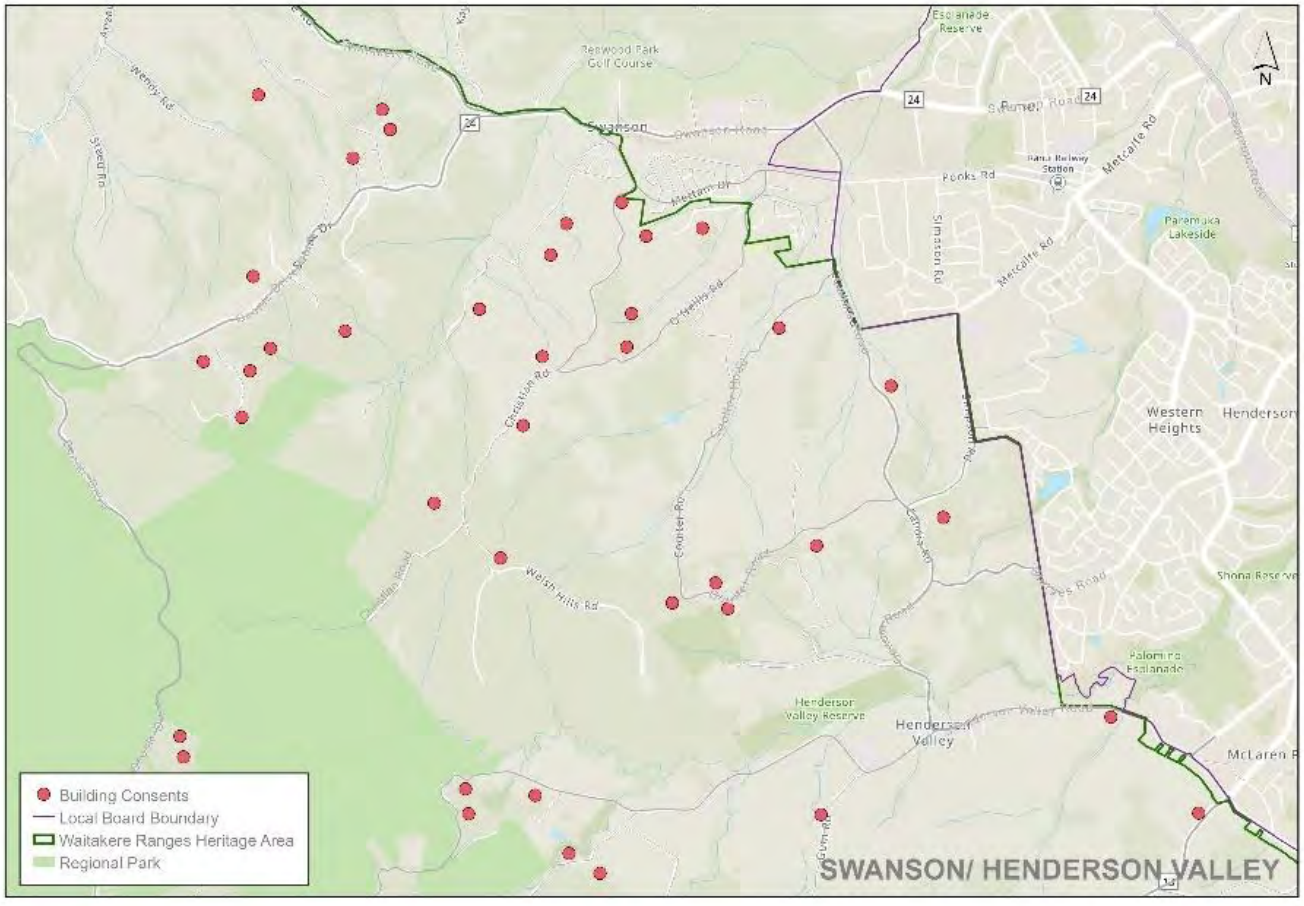
Map 0-8 New building consent cluster in Titirangi, below

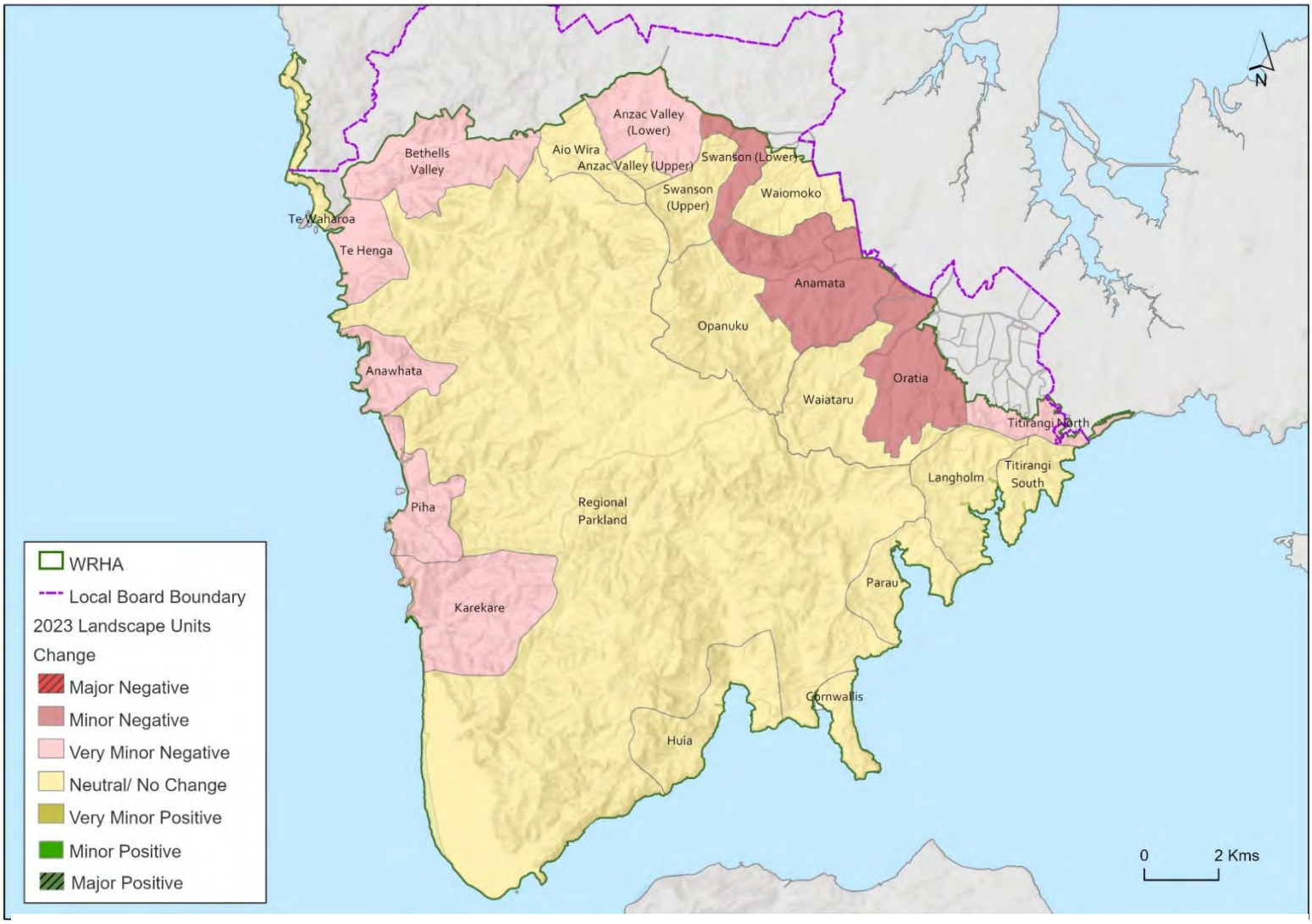




Map 0-9 New building consent cluster in Swanson / Henderson Valley

Map 11. New building consent cluster in Oratia





Map 12. Extent of change in landscape character

3.11. Landscape character

There has been limited change in landscape character over time within the heritage area as a whole. Minor or very minor negative changes were found within individual landscape units and many examples of positive outcomes and changes were observed.

'Landscape units' are what council uses to think about how the different types of geography found in the heritage area relates to each other.

The planning provisions applied over this period have generally been successful in maintaining:

- the natural landforms and landscapes which give the heritage area its distinctive character
- the subservience of the built environment to the heritage area's natural and rural landscape
- the identity, scale and character of the coastal villages
- the low-density residential and urban areas in forest settings, and
- the rural character of the foothills.

Some areas of concern were identified:

a. The rural character of the foothills appears vulnerable to poorly integrated development, particularly in its more open parts. Standout areas of change include the new subdivision in Swanson at the corner of Christian and Tram Valley Roads and subdivision / development within Oratia on Shaw Road.

b. The edges of the foothills landscape units of Anamata and Oratia, where these meet the Rural Urban Boundary under the AUP(OP) are also starting to exhibit a change in landscape character, where previous rural land use and activity does not appear to be continuing and the land being managed as mown grass or being left unmanaged.

c. The popularity of beach locations in close proximity to Auckland has led to some unfortunate developments in the past, particularly at Piha.

d. The potential for further development remains high in vacant sites and those with modest older houses (Kensington, 2023)

The landscape assessment identified a number of examples which test the 'rural' or 'coastal' nature of the landscape. These included:

a. Road upgrades in which large sections of the street have been painted in a bright colour. The result is one of visual disruption when travelling through the ranges

b. Fire stations, which have been painted white as part of a national rebranding

c. Service infrastructure in remote, West Coast regions of the ranges, which is more noticeable in outstanding landscape settings. A new cell tower close to the Bethels beach carpark is an example. The tower is the tallest object in the area and lacks screening from the road. The structure is poorly integrated into the landscape and visible to all visitors arriving at Bethells Beach.

It also identified areas of positive activity:

a. A 'lived in' quality among many residential properties is evidence of residents taking pride in and celebrating the landscape, flora, and fauna of their surroundings.

b. Many older dwellings retain expressive elements of design, and the art which adorns those properties is indicative of the attention and care paid to those buildings by residents. The sense of place is unique within Auckland and comparable to more rural communities around Aotearoa New Zealand.

c. Several prominent dwellings are concentrated in outstanding natural landscapes. Karekare Beach, Anawhata, and Piha all had new residential structures occupying beachfront and ridgeline viewpoints. While noticeable, these dwellings were considered indicative of the high-quality design standards necessary for consenting approval in valued heritage locations.

These dwellings, and much of the new development in the heritage area have been the result of careful design. Use of dark and natural construction materials illustrates the ability of modern construction techniques to maintain the heritage characteristics which make the built environment of the heritage area unique. Over time it is expected that new developments will 'bed-in' as they age. (Kensington, 2023)

3.12. The screening effects of vegetation

The screening effects of vegetation plays an important role in maintaining the visual landscape. Vegetation growth since 2017 is now masking some of the initial visual impact of buildings that were new at the time (Kensington, 2023). See view of Piha over time, below.

Several areas in the eastern foothills have been cleared of vegetation but do not support rural production; activities and some sizeable tracts of land have been left barren without apparent use or revegetation efforts. See an example from Oratia on the next page, where accumulating development in a cleared area is taking on suburban ranch home typologies and lacks evidence of revegetation efforts.

The type of regrowth is important. The prevalence of invasive pest plants / weeds throughout the regional parkland and on private properties, will, if left unmanaged, adversely impact landscape values. (Kensington, 2023)

Photo 0-6 The screening effects of vegetation growth over time, as viewed from Piha Domain in 2007, 2012, 2017 and 2022

KPLC, 2022)

3.13. Subservience of the built environment

Subservience' refers to the extent to which settlements nestle into their surrounding environment, rather than appearing superimposed upon it.

In the heritage area, subservience is particularly evident in the bush clad areas of Laingholm, Titirangi and the upper eastern foothills. Steep slopes and unstable land require a particular style of housing. In the lower foothills, the rural character is provided by the pattern of properties on spacious lots, farms, orchards, vineyards, uncultivated areas and native bush.

Photo 0.7 View of Te Pae surf tower

Case study: Subservience tested

Within Auckland's planning context, 'subservience' is a concept unique to the Act. In a coastal village environment this is further defined in section 7(i)(i) of the Act '...as reflected in 'the individual identity and character of the coastal villages and their distinctive scale, containment, intensity, and amenity'.

The consenting and landowner approval process surrounding Te Pae, a robust brutalist surf tower in the dunes of North Piha, focused on the nature of 'subservience' to the natural and rural landscape. The architects briefly discussed whether the design would recede into or dominate the visual landscape, and this informed the consenting process.

Te Pae is on the same site, and is of approximately the same height, as a wooden tower which had been in place since 1976 and had become unsafe, was non-compliant, and had obstructed views of the beach. The need for the tower to be replaced was not disputed, but the new design drew forth conflicting views as whether it would be appropriate for the coastal environment (Stuff, 2021).

Before granting landowner approval for the tower to be built, the Waitākere Ranges Local Board publicly consulted on its design. 133 pieces of feedback were received, both for and against the design, before approval was granted in August 2020.

The simple and bold form of the exterior might not be as expected. However, it represents a contemporary design response to the localised sense of place and will likely 'bed in' over time (Kensington, 2023)

3.14. Dramatic visual backdrop

The Waitākere Ranges forms a striking natural backdrop to the western skyline of the city. The ridgelines are relatively undeveloped, and buildings generally have a low profile. Houses that stand out from the bush are overly prominent on the ridgelines because of their size and colour and the removal of vegetation.

3.15. Quietness and darkness

The majority of the heritage has very sparse settlement scattered along roadways and in small clusters such as at Waiatarua and Parau. Titirangi, Laingholm, Piha and parts of the eastern foothills have rather denser settlement patterns, but even here, built elements are generally subservient to bush and coastal landscapes and there are low levels of street lighting.

Other than Titirangi and the heritage area's eastern boundary there are comparatively low levels of street lighting. Houses are generally nestled into the bush which minimises the extent to which lighting is visible at night. These factors, along with the size of the undeveloped parklands, contribute to a relatively dark night sky and an impression of sparse settlement.

Activities that might impact upon the darkness of the area include increased development and a decrease in vegetation so that house lights are not screened, increased street lighting and brightly lit activities.

The Regional Parks Management Plan aims to support proposals that seek appropriate dark sky heritage status for areas within the park where the dark sky can be enjoyed, and the Waitākere Ranges Local Board Plan 2020 is supportive of this for parts of the heritage area.

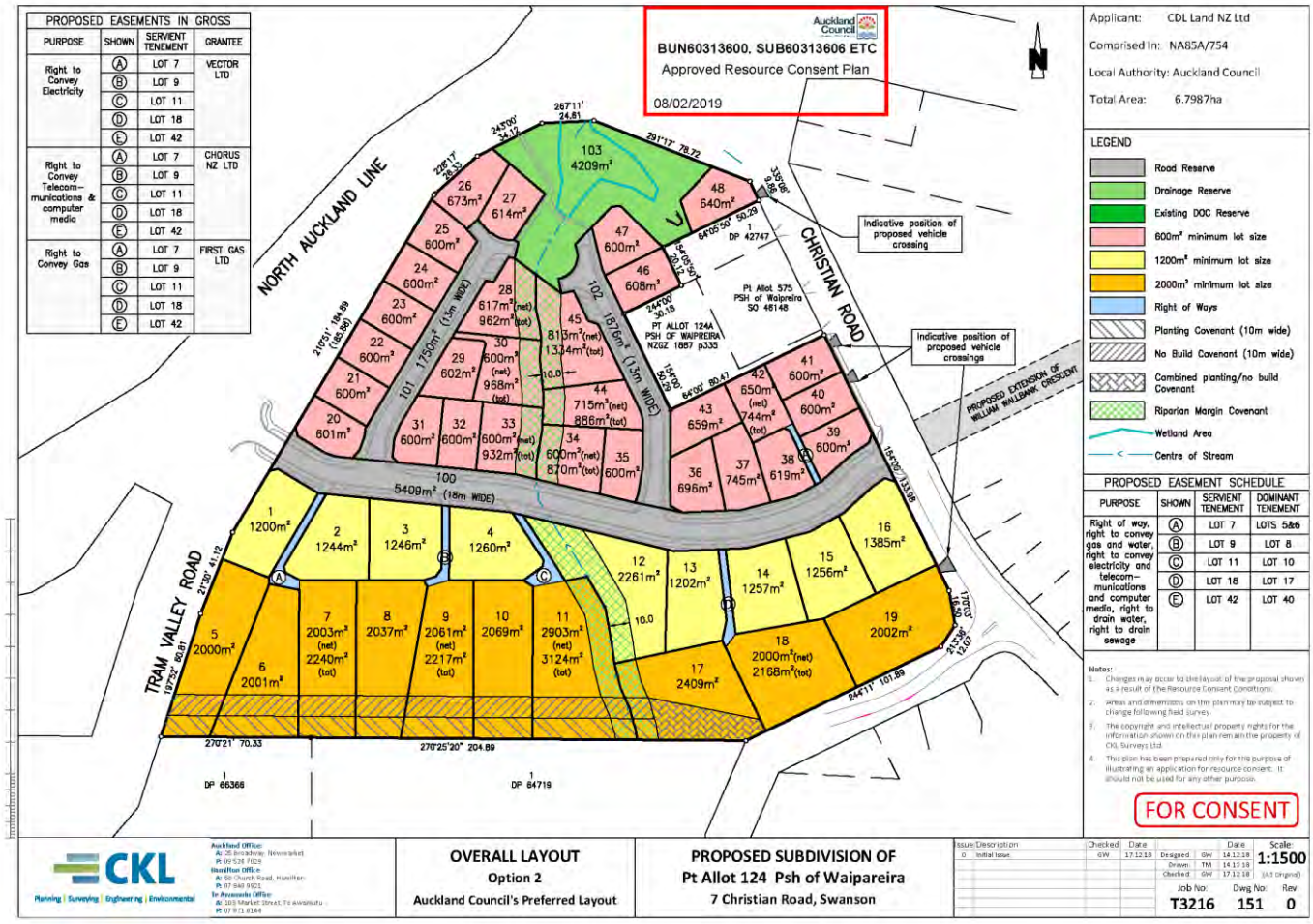
Case study: Christian Road Subdivision - an atypical development

Located on the urban edge of Swanson near the Swanson Rail Station, the Christian Road case study is a special case among scheduled subdivisions and is not a typical example of the type of development that is sought through the foothills of the heritage area.

The subdivision site is bounded by Christian Road to the east and south and Tram Valley Road to the north and west. In the past the land was used for market gardening and open pasture. It contained several buildings along with a residential dwelling. An intermittent stream runs through the centre of the site, terminating at a small wetland.

The site was originally identified in the southern part of the Swanson Structure Plan under the former Waitākere City District Plan and proposed to be in the Swanson South Sub-Precinct in the AUP. However, it was eventually incorporated into the heritage area as a scheduled subdivision site with a specific set of provisions which determined the status of any subdivision activity.

Following hearings in 2018, a resource consent for 48 new residential lots, internal roads, and a drainage reserve was approved. The subdivision complied with several of the provisions for the heritage area including general density and layout but was not in accordance with some others.



Council's initial position was that the consent be declined as the identified non-complying activities would have a more than minor effect on the receiving environment. However, at the hearing, submissions from

various experts for the applicant reassured council planners that the effects of stormwater on the environment and alignment of subdivision with the AUP were less adverse than what was previously understood.

The consent was publicly notified at the request of the applicant. A total of 8 submissions were received, with 1 submission in support and 7 submissions in opposition. The hearing primarily focused on the reserve area provided in the development plan for the stream and the effects of stormwater and flooding on the environment. These concerns, along with the appropriateness of subdivision and urban development on the site given its location, were the main issues in contention.

The commissioners found that the scale of development on the site was appropriate because it was located within the Rural Urban Boundary and zoned for Residential – Large Lot development in accordance with its proximity to Swanson Train Station.

The heritage area overlay was used to apply specific provisions to the site in line with the former Swanson Structure Plan. The commissioners were concerned about the downstream management system for stormwater. However, they found that the mitigation techniques that will be used onsite, along with the risk of flooding, was acceptable.

The commissioners agreed with Council that the small wetland to the north of site was to be vested for stormwater management and some lots to the south of site would require planting covenants. Several other particulars of suburban form, including footpath layout, lot size and height standards, fencing and road access, were accepted

At the time of writing, the lot has been cleared and roads constructed. Arrangement of barriers around the stream can be seen in the photo below.

Photo 0-8 Looking North Over the Christian Road Site (KPLC, 2022)

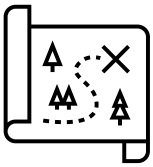
Photo 0-9 The screening effects of vegetation on views of the upper foothill (Jess Romhany

Photo 0-10. Whatipū is a 22-ha former quarry. It has a high health and safety risk and is closed to the public. Despite this, it is known to be regularly accessed. Credit: Liz Oldfield

Topic 4: The heritage area as both a wilderness area and a public place

Relevant heritage features as set out in the Act include:

- the Waitākere Ranges Regional Park and its importance as an accessible public place with significant natural, historical, cultural, and recreational resources
- the opportunities that the area provides for wilderness experiences, recreation, and relaxation in close proximity to metropolitan Auckland
- the water catchment and supply system



4.1. In this section

The threat of kauri dieback was a prominent feature of the 2018 monitoring report. This monitoring period focuses on the precautionary response taken to mange that threat, and the closure, and gradual reopening, of much of forested areas of the heritage area.

This monitoring period has coincided with the release in 2022 of a new Regional Parks Management Plan. This was extensively consulted on and provides detailed context for the heritage area as both a public and a private place.

Watercare has a designation over approximately 6619 ha that provides for the water catchment, and leases specific areas related to the water catchment and supply system which supplies approximately 20 percent of the regional water supply. A few parcels in the park are subject to QEII National Trust management agreement, conservation, or open space covenants.

The regional park is dissected by roads which connect the city to coastal and inland communities, and those communities to each other.

4.2. Environment vs access?

Heritage features are not prioritised in the act, which means that legislatively they all have equal value. However, in some instances, actions taken to manage one may have an effect on another. At that point, the focus must be on mitigating that effect, assuming it is a negative one. The Act anticipates that in some instances this may be necessary for a period of time.

Viewed together, a precautionary response to containing the spread of kauri dieback, related track closures and openings, the rāhui placed on the heritage area by Te Kawerau ā Maki, and changes in visitor behaviour following regional and national restrictions on movement over 2020 to 2022, demonstrate a process of interconnected and complex decision making, as well as cause and effect.

The threat in 2018

All kauri forest within the heritage area was considered to be at very high risk of infection by kauri dieback disease, with the highest risk of spread considered to be soil disturbance associated with human activity.

In the heritage area, kauri (Agathis australis) is a keystone species. A keystone species is a plant or an animal that has a special and important role in the way an ecosystem works. Without this species, the ecosystem would be very different or may not even exist (LEARNZ, 2022). In the heritage area, at least 17 other species rely on kauri to survive. Some species are found only in association with kauri, such as the kauri greenhood orchid (Pterostylis agathicola).

Kauri is a culturally significant taonga species to Māori, and highly valued by New Zealanders across its natural range from the Far North to the southern ‘kauri limit’ in the Waikato. A mature kauri typically reaches around thirty meters in height, with a trunk diameter of up to three m. Very large trees of up to sixty m tall and a trunk diameter of up to seven meters are known, and some live longer than one thousand years.

The approach

Track closure and subsequent upgrades to ‘kauri safe’ standard is a cornerstone of the precautionary response taken to manage the spread of kauri dieback.

In December 2017, understanding that kauri dieback was threatening the wider ecosystem of the Waitākere Ranges, Te Kawerau a Maki placed a rāhui on the heritage area. The intent of the rāhui remains to limit public access to the area until the risk of people spreading kauri dieback is low and under control.

Council closed the entire forested area of the regional park to the public in May 2018, except for 34 tracks which remained open or partially open. The tracks that remained open were, and are, subject to a Controlled Area Notice under the Biosecurity Act. In 2019, tracks were temporarily closed in high priority local parks to ensure protection until those tracks could be upgraded to kauri safe standards.

For a period, messaging about what was open or closed was not clear. There was public confusion about whether and how the rāhui and council actions connected, and where they applied. It also appeared that there was a general lack of understanding as to the nature and intent of a rāhui. Many residents made it known that they did not agree with closing tracks or even with the science behind the decision.

Council and Te Kawerau ā Maki subsequently agreed a memorandum of understanding for a kauri protection programme across the regional park. A Waitākere Ranges Regional Park track reopening plan was completed in June 2019 following a formal consultation process with the community.

The kauri dieback programme concentrated on surveillance and monitoring to understand where efforts were best focused to protect healthy trees and prevent the spread of disease from a site, treatment of infected trees and research on the disease and improved treatments, and an ambassador programme helping educate visitors to parks.

Reopening the tracks

The Environment and Community Committee decision anticipated the re-opening of tracks once they were brought to kauri safe standards. Track and park closures were implemented from 1 May 2018, at the same time as a Controlled Area Notice was placed over the regional park by the Ministry for Primary Industries. (Council, Auckland, 2019)

The Waitākere Ranges track reopening plan acknowledged feedback from the public around the need for more public access. Priority was given to:

a. recreating coastal connectivity, providing for multi-day walking opportunities and kauri-safe access to identified iconic destinations

b. avoiding high-value, non-symptomatic kauri ecosystems

c. tracks that provide a range of recreational opportunities and where possible are concentrated to the forest edge, and

d. opening tracks once they are of a standard to protect and support forest health.

Council adopted the highest standards for re-opening kauri-safe tracks. Upgrades on DOC manged land were planned to a lower standard. All track upgrades include assessment of hygiene station requirements and, where necessary, installation of new stations.

Over this monitoring period, the track reopening programme largely progressed as planned. 49.5 km of closed tracks were prioritised in the track re-opening plan to be upgraded in accordance with the draft national kauri dieback standards so they can be re-opened. This represents 64 per cent of the 78km of NETR-funded tracks included in the Waitākere Ranges track re-opening programme. The remaining 20km are being funded through Jobs for Nature and Renewal budgets. All track upgrades include assessment of hygiene station requirements and, where necessary, new stations are being installed.

Pressure on sites was recognised in the Regional Parks Management Plan 2020, and staff have engaged in a regional planning process to identify recreational areas which are being most impacted and may require additional investment in infrastructure or a higher level of maintenance.

43 km of track had re-opened by December 2022. 45 km of track had been completed but two tracks (Auckland City Walk and Houghton) were waiting for related projects prior to opening. A further 33.6 km of track were under construction or about to start construction. Most of this work is now nearing completion with exception of Zion Hill, Upper Kauri Track and Maungaroa Ridge whose construction schedules were impacted by the storm events and will now span into next financial year as well. 22 km of track remained in the pipeline as part of the initial programme of work.[7]

The table below is included to give an indication of the physical and financial scale of track upgrades.

[7] Note, some of the tracks that had re-opened are now temporarily closed due to storm damage from the Auckland Anniversary floods and Cyclone Gabrielle

Table 0-5 Tracks in the heritage area upgraded through FY 2021/2022 (Regional and Local Parks Kauri Dieback Upgrade Programme)

	Track name	Length of track (km)*	Actual Expenditure ($) FY 2021	Actual Expenditure ($) FY 2021	Actual Expenditure ($) Project	Upgrade status	Track status
Regional Park	Pararaha Valley Track	1.1	$X			Upgrade to kauri safe standards completed FY 2021/2022	Open
Regional Park	Fenceline Track	4.4	$X			Complete: Will open in conjunction with Long Road Track and Upper Kauri Track	Pending
Regional Park	Auckland City Walk	1.6	$X			Complete: Opening pending completion of carpark facilities and toilets	Pending
Local Park	Paturoa Way	0.294	$95,058	$211,907	$306,964	Upgrade to kauri safe standards completed FY 2021/2022	Open
Local Park	Opou Reserve	0.165	$880	$155,866	$156,746	Upgrade to kauri safe standards completed FY 2021/2022	Open

**Note: track to track per/ linear m comparisons cannot be easily made as each track has its own unique set of specifications, levels of complexity and conditions. Some tracks have a higher proportion of structures, or their gradient specifies the use of boxed steps.*

Cause and effect

In restricting access to some parts of the heritage area, others have become more popular.

Throughout 2020 to 2022 pressure on the heritage area's track network increased as regional and national travel options were restricted during the COVID-19 pandemic response. Given the limited number of open tracks, some experienced particularly high use.

Other reasons for track upgrades include to make them more resilient to weather events, to protect the forest, and to provide for people with low mobility, although in practice, the geography of the heritage area precludes universality of access in every situation. Track upgrades subsequently increased track capacity, while safeguarding the surrounding environment, and as more tracks are opened visitors should be more dispersed (Auckland Council, 2022)

Case study: Rāhui

A rāhui is a form of environmental management utilised by rangatira (leaders) to modify human behaviour and engagement for the purpose of protecting people and taonga, and to allow nature time to re-establish 'balance', or its natural or desired state.

Kauri are regarded as rakau rangatira (chiefly trees) and living tipuna (spiritual conduits to the past and future. Mātauranga Māori (the Māori world view) holds that environment health is an integrated system that must be managed holistically. People and the environment co-exist, and all things (biotic and abiotic) are part of an interconnected system which harmonises tapu and mana to create 'balance'.

When this system comes under stress or pressure a shift occurs, resulting in nature and/or people moving towards a state of disease and disharmony. Rangatira, exercising their right as mana whenua and kaitiaki consider the impacts and employ appropriate measures, like rāhui, to restrict human behaviour and activity. This restriction allows nature time to re-establish balance, or its natural or desired state (The Spinoff, 2018)

The power of a rāhui comes from the mana of the person or group that impose it. For that reason, rāhui can only exist under the mantle of the mana whenua, whose cultural authority as rangatira and kaitiaki affords them power over place and people, and the authority to restrict access in the protection of people, place and nature, until such time that balance is reached, or the risks have been mitigated (The Spinoff, 2018).

The heritage area was identified as the maximum approximate boundary of the rāhui as:

a. the Waitākere forest can largely be captured within its this boundary, and
b. the heritage area provides legislative support for the protection objectives of the rāhui.

The placement of a rāhui in this situation was focused on the forest (kauri ecology) and was not limited or constrained by infrastructure or property boundaries. The distribution of the forest and the complexities of how land is used in the heritage area was acknowledged in the following ways:

a. within the rāhui area (the forest) public access to parks was completely prohibited
b. the rāhui did not limit access to beaches (nor open spaces adjacent to beaches), the Arataki Visitors Centre, public roads, or private property (Te Kawerau ā Maki, 2017)

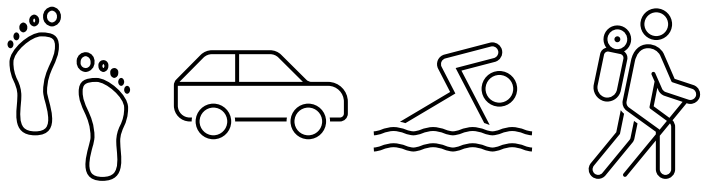
4.3. Filming and organised activities

The heritage area contains many sought-after locations and the regional and local parks have become increasingly popular for tourism operators, screen production companies and sporting events, all of which require approval to operate on those parks. Commercial activity in the regional park has been high relative to other regional parks, though somewhat reduced with the impact of track closures and COVID-19.

Requests to provide landowner approval for productions wanting to film on council parks are manged by Screen Auckland. The heritage area / Waitākere Ranges is one of the top three filming areas in Auckland. In the monitoring period 120 applications for filming were received, 100 permits were issued, and there were 154 days of filming within the Waitākere Ranges Local Board area, most of which took place within the heritage area.

Regional Parks has taken a precautionary approach to approving organised activities, recognising that these should be assessed on their impacts. It noticed that higher informal use of a more limited number of open tracks has reduced the ability of these tracks to support large-scale sporting events due to the potential conflict with informal users. It works with promoters and organisers to ensure there is no more than a short-term impact on the park of an event.

The local board has supported filming in the heritage area as a generally appropriate economic activity that can also benefit residents, landowners and companies, while seeking that it demonstrates respect for natural and ecological values and realities.



4.4. Visitor pressure

Some places in the heritage area experienced high levels of congestion at car parks, on tracks, and at popular destinations like coastal beaches and waterfalls, particularly at peak times.

In the regional park, total visitor counts taken at 491,000 in 2011/12 and increased to 1.282 million in 2021/2022. A similar increase had been seen in the decade before this and the trend is likely to continue (Auckland Council, 2022)

Of the 244 respondents to a 2019 survey (Auckland Council, 2019) of Waitākere Ranges Local Board residents, 73 percent had visited a ‘destination’ park in Auckland in the last 12 months. This included Piha Beach (42 percent) and Titirangi Beach (41 percent).

72 percent of those visiting a local park that is also classified as a destination park (Titirangi Beach) visited for 30 minutes to 3 hours. 91 respondents took 20 minutes or longer to drive to: Te Henga Walkway, Piha Domain, French Bay Reserve, Huia Domain, Armour Bay Reserve, Titirangi Beach, Henderson Valley Scenic Reserve, Laingholm Reserve, Robert Knox Memorial Park, Tangiwai Reserve, (Ceramco Park, Harold Moody Reserve, Kowhai Reserve, Parrs Park, Swanson Station Park (not in heritage area).

These parks may have been seen as a destination park for these respondents. Descriptions of some popular sites, and local ‘destination’ parks are included below to give a sense of variety and of what ‘more’ looks like.

Arataki Visitors Centre

Arataki Visitor Centre contains the regional park administration headquarters, interpretation displays and services, an education centre for school groups, the main works depot, a plant nursery for the park and entrances to the track network.

Arataki provides recreational opportunities and supports activities such as school education programmes. It caters for visitors wishing to obtain an experience of the Waitākere Ranges.

The Beveridge Track which links Arataki to Titirangi along Exhibition Drive provides the only cycling track in the park and is very popular with families. Several loop tracks can be accessed from the centre including the Nature Trail. As of December 2022, longer connections into the ranges remained closed due to kauri dieback. The Parau Track is due to be upgraded and will be part of a rerouted Te Ara Te Hūra / the Hillary Trail.

Cornwallis

Visitor numbers to Cornwallis increased fivefold in the decade before the COVID-19 pandemic and are high compared to other areas, catering for a record 435,000 visitors in the 2021/2022 year. Cornwallis is a major beach destination with swimming and extensive picnicking areas that are popular with families and large groups.

Cascades Kauri

Cascades Kauri provides varied experiences, including golf and frisbee golf, camp sites, bush walks, and a working farm. It is also the base for Arc in the Park, a significant conservation project led by volunteers. Kauri dieback has resulted in significant swathes of this park being closed to the public over the monitoring period.

Te Henga (Bethells Beach)

Highly utilised by city visitors. Swimming and sunbathing in the summer are the core activities, along with picnicking and walks/hiking. Dog walking is popular, although can sometimes conflict with conservation outcomes at the site. The film industry has significant interest in the beach. There are issues with capacity during the summer, with parking, littering and overcrowding all concerns.

Lake Wainamu

This lake and associated sand dunes provide a different experience to the usual regional or local park. While there is limited infrastructure in place, it is popular with walkers and as a location for swimming. Dogs are not permitted on the site, although anecdotally this rule does not appear to be followed. A lack of parking infrastructure here makes capacity an issue in summer.

Fairy Falls and Spragg Bush

Fairy Falls has been one of the most popular waterfalls to visit in Auckland and is managed as a high use site. It, and a small lot within Spragg Bush are held under the Reserves Act and classified as scenic reserves. The tramping tracks leading through mature native forest with significant kauri and kauri podocarp stands to the scenic Fairy Falls have been closed since 2018. The Fairy Falls Walk is in the five-year track reopening programme and was upgraded in 2022.

Fairy Falls Walk includes track platforms and stairs to facilitate safe visitor access. A toilet and a small parking area on Scenic Drive support access to the Fall's tracks. Due to the topography of the site, there is no opportunity to expand the arrival zone. Spragg Bush along Scenic Drive provides an entrance to easy bush loop walks recently upgraded and a historic cemetery. Spragg Bush Track was reopened in 2022.

Waitākere Valley

Provision of formal play facilities and wheeled play (such as biking) have both been identified to be lacking in the Waitākere Valley in the Waitākere Ranges Recreation Assessment (2020).

Case study: Managing safety issues occurring at entry points to Te Henga

Te Henga Waiti Safety Group (the group) established themselves in 2020 in response to the safety issues that they saw occurring at the entry points to Te Henga. These included traffic congestion, blind corners, berm parking, defecation and littering, visitors displaying anti-social activities and the lack of telecommunications in this part of the heritage area.

The group worked with council to identify options that would support improved visitor, community, and environmental safety.

A trial of safety improvements took place during the peak visitor season. Volunteers met visitors with information every weekend from New Year's Day to Easter 2020/2021. Information shared with visitors included re-enforcing dog rules, the location of the toilet, and directions and cell phone coverage.

In September 2022 the group provided an update to the Waitākere Ranges Local Board. This discussed the positive effects of these actions and the temporary reduction in safety issues. The group's activities help to reduce traffic congestion, and members have also assisted in emergency situations.

Case study: Plans for Waitipu (formerly Waitākere Quarry)

Waitipu, previously known as the Waitākere or Te Henga Quarry, is a large parcel of land located within the Waitākere Valley. The approximately 22-ha site represents an opportunity to improve the parks network, as well as to reduce loading on other sites in the Waitākere Valley over the summer. With parking, littering and overcrowding all concerns, development at the quarry is expected to reduce impact on the coastal community by providing a viable alternative destination.

Waitipu been managed as a local park since 2017. The park was an active quarry from 1947 until 2015. The wider site includes the Waitākere Quarry Scenic Reserve (Lot 2 DP 193044), which has been amalgamated into the regional park. It was acquired in 1916 by the then Waitemata County Council.

When it closed, the quarry had been operated by Perry Resources Limited (Perry). The company had to recontour and revegetate the site before handing over to Auckland Council Property Limited (now Panuku). Council took over its management in 2017.

Although closed to the public due to health and safety concerns, Waitipu is known to be regularly accessed. A Service Outcomes Plan was prepared for the Quarry in 2022 and will be used to guide future investment.

4.5. The road network

Storm damage, including numerous slips in 2018 and 2021, caused severe damage across the road network in the heritage area. Auckland Transport had to assess renewal projects in the heritage area within this context, while the location and geography of many of the slips posed additional technical challenges.

At the same time, regional transport budgets have effectively reduced year on year. Following the 2021 to 2024 Regional Land Transport Plan budget, and COVID-19 pandemic related budget reductions in 2022, the regional renewal budget reduced to approximately 60 - 70 percent of what is needed (Auckland Transport, 2021).

Landslides and slips

The heritage area's varied and complex terrain is subject to landslides and slips.

Land disturbance, including vegetation removal and earthworks, and extreme weather events can contribute to increased erosion and instability in the landscape. These events often affect roadways and can damage houses on or close to the hillsides. Because of severe flooding at times over the monitoring period. landslides or slips have damaged property and disrupted road travel. Existing instability can also cause landslides to occur unexpectedly. Land disturbance, such as vegetation removal and earthworks, can also contribute to increased erosion and instability in the landscape.

The complex geotechnical assessment and remediation works, which are often demanded by the nature of the landscape in the heritage area, mean that landslides and road damage can require extensive work and time to repair. Often the instability caused by a landslip can affect surrounding structures and infrastructure, complicating the repair process. Preventative works are planned when instability is recorded, and infrastructure consents show that slip repairs and preventative infrastructure work, mainly retaining walls, is a common type of work undertaken by AT in the heritage area.

In addition to planning standards, slip repair must contend with the effect on public and private assets and surrounding topography. See Bethells road slip case study and other descriptions of works, below.

Photo 0-11. Bethells Road Slip RP 2.922-2.942, Geotechnical Assessment Report (BECA for Auckland transport)

Case study: Bethells Road slip – a complex site

This slip occurred on July 12th, 2022. It is example of a complex road repair in the heritage area. The photograph above shows the variety of influences on this site.

This slip was located below the westbound lane on Bethells Road, Waitākere. Bethells Road is a 12 km long two-lane two-way road connecting Waitākere to Bethells Beach. The slip was bounded by number 85 Bethells Road, 150m east of the slip, and the Steam Hauler Track, about 100 m south of the slip, and occurred within an embankment that crosses a steeply incised gully, with slopes of up to 35 degrees. A stream in the gully flows through a 500 mm diameter culvert under the road into an unnamed tributary of the Waitākere River.

The site is generally covered by regenerating native vegetation, presumably establishing itself since the construction of the embankment. Occasional sandstone boulders and refuse debris were observed. The slip scarp (face) was approximately 18 meters long in length parallel to the road, and about 2.5 meters high at approximately 60 degrees. Cracks were also visible extending up to 5m beyond the slip scarp in both directions. Debris was observed up to 30 m downhill from the road.

Historical aerial photography indicates the road was already established prior to 1940 at a different alignment until 1968 when it shows was straightened. Nearby houses first appear around 1988

Other examples of slips / challenges to road maintenance and repair, in the heritage area road network include:

Tanekaha Road, 2019

A new two-part 36.2m long retaining wall was consented for construction on Tanekaha Road in response to a burst pipe causing instability in the roadway. Works on this retaining wall had to contend with steep slopes on either side the road, power infrastructure, private driveways, and sharp curves in the road layout in the construction zone.

South Titirangi Road, 2018

When existing retaining walls become dated or show signs of failure they are also replaced. In 2018 a 40m rock wall along was consented for replacement with a retaining wall. Installation of this new retaining wall required the removal of the current wall and its base at the roadside, stabilisation of soils, and recreation of the structure of the existing wall with additional structural support. To reduce the chance of further instability work periods were restricted to dry summer periods.

Huia Road

In another instance two retaining walls downslope of Huia Road had been shifted from their initial location by destabilised soil. Replacement of the 20m and 26m long walls required engineers to support the existing footpath and roadway which relied on the walls while construction was ongoing.

4.6. Water catchment and supply functions

The Waitākere Ranges water supply catchment and reservoirs are a vital part of Auckland's drinking water system. The Upper Huia, Lower Huia, Upper Nihotupu, Lower Nihotupu and Waitākere Reservoirs together can supply over 25 percent of Auckland's drinking water demand, and typically supply approximately 20 percent of Auckland's demand.

Watercare ensures that treated water meets the required drinking water standards. Catchment and climate changes that affect waterquality are concerns. The prevalence and influence of cyanobacteria and algae in reservoirs is increasing and water treatment facilities will need to be able to meet the future foreseeable water treatment challenges and regulatory requirements that these present.

Several monitored programmes are undertaken by Watercare to ensure that the dams do not result in the loss of downstream water quality or ecological values..

Council and Watercare are also developing a weed and pest management plan and programme for land owned or leased by Watercare.

4.7. Reservoirs and the water treatment plants

The Waitākere Ranges system's main structures are the dams which are still in use today:

- the Waitākere Dam (completed 1910),
- the Upper Nihotupu Dam (completed 1923)
- the Upper Huia Dam (completed 1929)
- the Lower Nihotupu (completed 1948)
- the Huia Dam (completed 1971).

The reservoirs are iconic features of the heritage area and contribute to its scenic beauty, and the catchments within the regional park have high ecosystem and recreational values.

- Huia Filter Station building is part of the Huia Water Treatment Plant site and produces up to 117 mega-litres a day (MLD).
- The Waitākere Filter Station building is part of the Waitākere Water Treatment Plant site. It produces up to 24 MLD.
- The Nihotupu Filter Station has been unused since the 1990s and is currently boarded up.

The Upper Huia, Lower Huia, Upper Nihotupu, Lower Nihotupu Reservoirs supply water to the Huia water treatment plant. The Waitākere Reservoir supplies the Waitākere water treatment plant. Both of these facilities treat water from Waitākere Ranges reservoirs to produce safe drinking water that meets the requirements of Drinking Water Standards for New Zealand.

A small water treatment plant was developed adjacent to the Lower Huia reservoir pump station to supply the Huia village township. It treats water from the Upper and Lower Huia dams to supply this community.

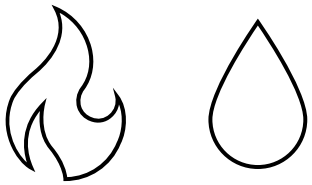
The first three are concrete gravity dams, while the latter are earth dams. The Waitākere Dam was among the first large scale concrete dams in New Zealand, and the Lower Nihotupu was the country's first earth dam. These five dams were constructed to create drinking water supply reservoirs, which each dam being named after the area or the stream that feeds it.

Network needs

The aged Huia and Waitākere Water Treatment Plants are nearing the end of their operational life and need to be replaced, to meet increasingly challenging water treatment requirements, and the water supply needs of Auckland's rapidly growing population.

The Huia Water Treatment Plant will be replaced within the next 5 years. New reservoirs will increase the volume of water stored locally, improving the resilience of the wider water network and accommodating daily demand fluctuations. As with the existing plant, the new plant will treat water from four dams in the heritage area and the water produced by the plant will feed into Auckland's metropolitan water supply network.

Proposals of the construction site were of high community interest during the monitoring period. The existing treatment plant site will now be extended, and planning for this is underway. The Waitākere Water Treatment Plant is likely to be replaced within the next 10 to 15 years.



Risks posed by the expected impacts of climate change

The impacts of a changing climate will bring significant direct and indirect changes and challenges to Watercare and the services that are provided in water supply and wastewater treatment. The growing frequency and intensity of extreme weather events, more prolonged dry periods and potential for wildfires are all considerations for the heritage area.

Watercare's climate projections include:

- Total rainfall is projected to increase only marginally, however more seasonality is expected with decreased rainfall in spring and an increase in autumn
- The 1 to-2 wettest days each year are expected to increase in magnitude by 15 to 25 percent in the heritage area by 2110
- Dry days, those with less than 1 mm of rain are expected to increase by between six and 21 days. There are currently 237 recorded (Auckland Airport).

The most significant climate change related impacts on water supply catchments include decreasing land stability due to prolonged periods of heavy rainfall or extended dry periods being immediately followed by larger magnitude, extreme rainfall events. Losses of current native vegetation could also occur due to enhanced wildfire risk. All the above projected changes could impact on dam stability and safety.

Projected higher magnitude rainfall events would bring a heightened vulnerability to treatment plants from on-site flooding and damages to critical third-party infrastructure, such as roading, communications, and power supply, during storm events. This may affect supply chains (e.g. chemicals), and the ability to provide 24/7 staffing during extreme events.

The expected number of very high and extreme fire danger days is expected to increase with climate change. Water supply catchment land is vulnerable to the effects of wildfire. The impacts of a wildfire on the water quality within a catchment are severe. Coordinated effort with Watercare and Fire and Emergency NZ will be needed to reduce the risk of fire affecting the water supply catchment areas.

.

Photo 0-12 Collecting data from the stable sand dunes close to the cliffs at Whatipū (Credit RIMU)

Topic 5. State of the environment

Relevant heritage features include terrestrial and aquatic ecosystems of prominent indigenous character that:

- include large continuous areas of primary and regenerating lowland and coastal rainforest, wetland, and dune systems with intact ecological sequences
- have intrinsic value
- provide a diversity of habitats for indigenous flora and fauna
- collect, store, and produce high quality water
- provide opportunities for ecological conservation and restoration
- are of cultural, scientific, or educational interest
- have landscape qualities of regional and national significance, and
- have natural scenic beauty.

The heritage area is a refuge for indigenous biodiversity. Heritage area environments are valuable for their beauty, intrinsic value, and size, as well as the number and extent of complete and diverse native[8] ecosystems.

The heritage area contains one of the two largest blocks of continuous vegetation in the region (c.1,000 ha) and includes connected areas of indigenous vegetation stretching from the coast, into the inland hills and up into the Waitākere mountain range. Small areas of Te Wao Nui a Tiriwa (The Great Forest of Tiriwa) remain as unmodified, or untouched, native forest.

The size of the heritage area, alongside the level of environmental protection required, brings challenges of scale. The extent to which the spread of pest plants and pest animals are controlled, the natural environment restored, waterways cared for, and to which communities actively engage in environmental stewardship, all contribute to long-term biodiversity outcomes.

Most of the forested area is regenerating through natural processes. Vegetation is characterised by a diverse mix of different native ecosystems. Almost 80 percent of the combined forest, scrub, and wetlands have statutory protections which prevent or limit habitat clearance.

Heritage area streams have intrinsic value, and also provide important ecological functions.

Oratia, Opanuku and Swanson streams are some of the few remaining natural watercourses in the heritage area. Others have long been dammed for water supply purposes. These streams originate in the depths of the regional park and flow down the eastern foothills into the Waitematā Harbour.

Vegetated margins prevent contaminants from entering the streams, alleviate flooding and contribute to the amenity of the urban areas. They are identified as contributing positively to downstream urban character, stormwater management, and flood protection.

The heritage area is surrounded by the sea on two sides. What happens along its coast affects water quality, biodiversity, ecological and coastal processes. The Manukau Harbour is a large, productive, and important body of water for the heritage area, and is itself surrounded by urban coastlines.

The types of land use and activities that occur within the catchment surrounding the Manukau are the driving force behind the harbour's health, affecting water quality, biodiversity, and ecological processes.

[8] *The terms 'native' and 'introduced' have been used throughout this chapter. Native species or ecosystems are the same as indigenous and introduced species or ecosystems are the same as exotic.*

5.1. In this section

The state of the environment reflects the outcomes of controls and activities applied to protect heritage area ecosystems, both before and since 2008.

Council's terrestrial biodiversity monitoring programme includes a network of sites across the heritage area. This section discusses, and gives context to:

- what is monitored
- how it is monitored
- what monitoring has found.

See Appendix B: Strategic and policy framework, to understand the wider strategic framework.

Management activities in the heritage area are primarily funded through the Waitākere Ranges Local Board and the Natural Environment Targeted Rate (NETR) (since FY 2021/2022).

Priority animal and plant pests are identified in the Regional Pest Management Plan 2020-2030, which also states the rules that must be complied with under the Biosecurity Act 1993. A new Regional Pest Management Plan came into effect in 2020.

Activities and projects which contribute to environmental outcomes are delivered (not exclusively) through the following council services:

- pest plant and pest animal management
- local, and regional parks management
- community facilities maintenance contracts
- biodiversity and biosecurity management
- research programmes.

Activity descriptions along with a corresponding allocation of budget appears in annual work programmes.

Generally long-term in approach, management activities in the heritage area are largely focused on reducing the potential for spread of the main pest plant species into the regional park. While a link can reasonably be assumed between these activities and improved biodiversity outcomes, there is no direct evidence to connect these in this report.

Business as usual functions include programme and project planning and management, mana-whenua engagement, data-collection, ecosystem restoration (employee or contractor-led) and species management, as well as community conservation support and facilitation, kauri dieback management, quality assurance, specialist advice (including onto regulatory processes,) behaviour change and incursion response management.

The council has taken over management of weeds on footpaths, berms and the curb and channel in the road corridor from AT. These areas are managed for statutory asset protection, amenity, and health and safety outcomes.

Management activities may also be delivered in whole or in part by third parties, such as Ecomatters Environment Trust and Pest-free Waitākere. This happens on a case-by-case basis where there is a shared purpose and may appear as 1–3-year operating agreements or be separately tendered.

Local groups can request herbicides, tools, traps, weed disposal resources directly from council. Financial support for community pest plant and predator control activities is also a feature of Waitākere Ranges Local Board's community grants programme over 2017 to 2022.

Progress on the local board work programmes is reported to the local board every three months and is publicly visible on the agenda of relevant business meetings.

NETR was introduced in 2018 and has been incorporated into residential property rates across the region.

Projects funded through NETR help protect the natural environment and tackle the pests, weeds and diseases that threaten native species. NETR is anticipated to raise $311 million over 10 years, and activities in the heritage area are funded out of this. In the heritage area, three main areas of activity are funded through NETR.

These are:

- Plant pathogen pest management, including kauri dieback, and myrtle rust
- Protection of mainland ecosystem by enhancing protection for native habitats, futureproofing against emerging pests, reducing spread of freshwater pests and use of biocontrol

Expanding community action Increasing connections between different natural habitats in rural and urban landscapes using ecological corridors, managing priority sites on private land and working with private landowners, community groups and community group networks, to protect and restore high value biodiversity, providing specialist advice, funding, tools and resources. (Auckland Council, 2022).

5.2. Vegetation cover

Over 85 percent, or 22,000 ha of the heritage area is covered by indigenous vegetation, including forest, scrub / shrubland and wetland classes. The remaining land cover is associated with rural production[9] (12 percent) and urbanised areas (3 percent). These land cover classes have been relatively stable.

The distribution of vegetation cover in the heritage area, and changes to it, are described using various datasets. Each dataset varies in scale, either spatial (relating to position, area and size) or temporal (relating to time), and purpose and therefore provides different information about the vegetation in the heritage area and how it is changing.

This includes, but not limited to:

- Ecosystem Extent data

  This describes indigenous terrestrial and wetland ecosystems across the region through fine-scale surveys and analysis of aerial imagery. It provides detailed information on ecosystem types, but as it is not repeated regularly cannot be used to measure change.

- The New Zealand Landcover Database (LCDB)

  The LCDB provides information on vegetation cover through time using nationally consistent methods and categories. The mapping is based on satellite imagery and is useful for broad-scale change analysis.

- Light Detection and Rader (LiDAR)

  Council also collects LiDAR data for elevation mapping, and this has been used for fine-scale analysis of vegetation canopy. Repeat surveys enable it to be used to identify and measure change. It does not describe vegetation types and ecosystems.

5.3. Ecosystem extent

The heritage area comprises around 21,200 ha of indigenous terrestrial and wetland ecosystems. This is one of the largest blocks of continuous indigenous vegetation remaining in the region. Since the 2018 report, there have been no significant updates to the mapping and therefore the results remain unchanged.

Four dominant ecosystems comprise more than 87 percent of all the native ecosystems within the heritage area, namely:

- 45 percent kauri-podocarp-broadleaf forest
- 17 percent mānuka-kānuka scrub
- 13 percent broadleaf scrub and forest
- 12 percent kānuka scrub and forest.

Six native ecosystems that include more uncommon forest types, dune land and cliff ecosystems, comprise 1-3 percent of the total area of native habitat. A mix of rare forest types and wetland ecosystems comprise less than 1 percent of the total area.

[9] *According to the Landcover Database, 'rural production' refers to the following land cover classes: Exotic Forest (including areas of the harvested forest), low and high production exotic grassland, short-rotation cropland, orchards, vineyards or another perennial crop.*

5.4. Landslides / slips

More recent changes to vegetation cover were identified in a desktop analysis of landslides visible in the latest aerial imagery flown in early 2022. These landslides were not visible in imagery from 2017 and were likely to have been triggered by intense rainfall in late August 2021. This analysis detected numerous landslides (more than 150) across the regional park, averaging 0.1 ha, with the largest recorded at 1.8 ha.

Although further research and monitoring will be necessary to determine the exact causes of overall biodiversity impacts from the landslides, the resultant loss of vegetation was significant. An estimated 17.6 ha of forest has been lost, the majority of which was mature kauri, podocarp, broadleaved forest (75 percent), equating to 0.1 percent of the total forest in the heritage area.

More landslides have occurred following the storm events in early 2023. The extent and effects of these have not yet been assessed.

The identification of these landslides is important new findings, because increasing high-magnitude rainfall events induced by a changing climate (such as those in late 2021) that trigger shallow landslides in the Heritage Area's indigenous forests have the potential to not only cause losses to habitat and create potential risk areas for pest incursions, but also damage infrastructure and impact water supply and cause sediment inputs to freshwater environments.

The extent and effects of slips within the forested areas following the storm events in early 2023 are still being assessed and fall outside of the reporting period for this report.

5.5. Landcover

Vegetation change in the heritage area is described using the NZLD. At this scale, over 85 percent, or 22,000 ha of the heritage area is covered by indigenous vegetation (including forest, scrub/shrubland, and wetland classes). The remaining land cover is associated with rural production (12 percent) and urbanised areas (3 percent). These land cover classes have been relatively stable.

In the six-year period between 2012 to 2018, no change was detected in indigenous forest and exotic grassland classes. Indigenous scrub/shrubland remained largely unchanged, although a small area of manuka / kanuka shrubland (0.6 ha) had been converted to urban area because of property development in the eastern foothills.[10]

5.6. Canopy cover

The most recent canopy cover estimate in the heritage area is 76 percent (derived from 2016/2017 LiDAR data). This ranges from 56 percent in general zones (such as roads) to 84 percent in Public Open Space (such as the Regional Park and reserves), while Residential and Rural zones have 59 percent and 69 percent canopy cover respectively.

Analysis to quantify canopy cover and changes in the heritage area was undertaken using LiDAR-derived vegetation extent data.

A targeted analysis of tree canopy loss was undertaken by comparing a subset of combined 2013 and 2016/2017 LiDAR. Only losses were investigated as gains typically result in small vertical changes and expansion on the canopy margins that could not be isolated from error (as was done for losses). Only vegetation losses in rural and residential zones are described in this section, these zones collectively

[10] LCDB maps landcover at a broad scale and the recorded conversion from shrubland to urban between 2013 to 2018.

represent almost a third of the total land area in the Heritage Area. Losses in Regional Park land, zoned as public open space and making up the remaining two-thirds of the heritage area, are typically associated with natural disturbances and area covered in the biodiversity monitoring technical report (insert number when we have it).

Although gains were not measured, it is worth noting that from 2013 to 2016/2017 significant gains are visible in recent aerial imagery across the heritage area because of planting efforts and vegetative growth.

Vegetation losses described here are characterised as complete canopy loss to ground level. This includes loss of part of the tree, whole tree, and groups of trees in the open landscapes or closed canopy settings.

Between 2013 and 2016/2017 thousands of canopy loss events were identified on residential and rural zoned land in the heritage area. This resulted in 40 ha of canopy cover loss. This equates to <1 percent of total rural and residential land area. Nine ha of canopy loss was on residentially zoned land and 31 ha was on rural zoned land.

Typical examples of canopy loss in residential zones are associated with developments and property maintenance (landscaping, powerline maintenance etc), whereas losses in rural zones are associated with harvesting plantation forests, removal of dead or dying trees, removal of shelter belts, and various other maintenance activities.

5.7. Forest ecosystems

The heritage area includes a large continuous tract of forest that is increasingly valuable for forest conservation. The forest supports more indigenous plant species, more at risk and threatened species and fewer weed species than forest regionally.[11] Since 2009 changes in forest structure have mostly been consistent with regenerating forest, and today the size and distribution of trees is typical of a healthy maturing forest. There are no major changes to forest ecological integrity since the previous heritage area report.

Council's Terrestrial Biodiversity Monitoring Programme monitors biodiversity in forests, wetlands and dunes across the region using permanent vegetation plots and a grid-based system sampling system. In the heritage area there are 26 permanent vegetation plots that have been sampled every five years from 2009.

The data is used to monitor the state and trends in forest composition and structure and draw inferences about the forest ecological integrity.

Prior to human arrival the heritage area was covered in forest, dominated by kauri-podocarp-broadleaved forest types. Since human arrival, there has been widespread disturbance from logging, burning and clearance for farming which probably peaked in the 1940s. In addition to forest disturbance, humans brought hunting, pest animals, pathogens, exotic plants and climate change. Since the 1940s, reforestation and forest regeneration across the heritage area has occurred from different levels of disturbance and within a novel environment.

[11] This is based on the plots - so a plot in the heritage area has less weeds, on average, than a plot elsewhere in the region.

Photo 0.13 The 'A" corner of forest plots located in regenerating forest and in kauri-podocarp-broadleaf forest (Credit Georgianne Griffiths)

The heritage area is now covered in 45 percent kauri-podocarp-broadleaved forest and 42 percent regenerating forest (e.g. Mānuka, kānuka scrub). The kauri-podocarp-broadleaved forest is highly heterogeneous, supporting a wide range of conifer and canopy broadleaved tree species including rewarewa, tawa, rimu, kohekohe, kauri, white maire, tōtara, kahikatea, northern rātā, pōhutukawa and miro.

Regenerating forest lacks the structural complexity of kauri-podocarp-broadleaved forest but has high native plant diversity. Both regenerating and kauri-podocarp-broadleaved forest appear to be regenerating following expected successional pathways.

Kauri-podocarp-broadleaved forest has more mature conifer and canopy broadleaved species and fewer young sub-canopy broadleaved species (e.g. mānuka, horoeka). Regenerating forest has few conifer and canopy broadleaved species, but good canopy closure and a high tree density, especially of sub-canopy broadleaved species typical of mid-successional regenerating forest. Conifer and canopy broadleaved species occupy all size-classes in both kauri-podocarp-broadleaved and regenerating forest indicating that these species are regenerating.

In addition, the abundance of conifers and canopy broadleaved species is increasing over time consistent with a maturing forest.

The ecological integrity of forest in the heritage area compares well against forest regionally, reflecting its large size and management, but there are areas of concern. Pest animals continue to impact its plant composition and structure. For example, northern rātā was once abundant in the heritage area prior to logging but is now infrequent and shows poor regeneration. Northern rātā is a preferred food of possum and has been used as an indicator of possum control. Current possum control may be insufficient for northern rātā to persist long-term.

Several iconic and abundant tree species in the heritage area are vulnerable to the plant pathogens causing kauri dieback and myrtle rust. It is too early to gauge the future impact of these plant pathogens, but it is clear they have the potential to severely impact the forest.

Forest deep in the heritage area, away from residential areas, roads, and tracks, has high indigenous dominance. Most of the exotic species recorded were weeds, with the capacity to spread and have adverse

effects of the environment. It is possible that increased frequency and severity of landslides and droughts resulting from climate change will give many exotic plants and weeds both a site for colonisation and a competitive advantage.

Forty-two percent of forest in the heritage area is in regenerating forest that typically has a higher fire risk than kauri-podocarp-broadleaved forest. Regeneration processes will diminish this risk while also supporting greater carbon capture.

5.8. Dune ecosystems

In 2017 council established a duneland monitoring programme at Te Henga, Anawhata, Whites Beach, Karekare, Cowans Bay, Whakaruro Bay and Whatipū. It is too early to look for trends, but initial results are summarised below. Repeat monitoring will show how robust populations of threatened and at-risk species and population trends.

Dunes are highly dynamic, formed by wind-blown sand that is trapped, to varying extents, by different plant species. They are vulnerable to erosion from wind and wave action. Their form and function are determined by sediment supply, wind, wave energy, the geomorphology of the offshore and beach environment, plant and animal communities and human activities.

While sediment availability currently appears to have a larger impact than sea-level rise or storm surge on changes in dune extent on the seaward side, all dunelands remain vulnerable to these climate-change effects.

Biodiversity monitoring shows that heritage area dunes are largely composed of indigenous species typical of these ecosystems. Council's dune biodiversity monitoring measures plant species cover using systematically placed plots from the seaward side of the dune to the inland margin.

The dunelands are largely composed of indigenous species typical of these ecosystems.

- 177 plant species have been recorded, of which eighteen are listed on the national and regional species threat lists as threatened or at risk (Simpson et al 2022, de Lange et al 2017) and twenty-five are weeds listed in the Auckland Council Regional Pest Management Plan (2020)
- At all seven monitored sites, indigenous plant species typical of dunelands such as spinifex (kōwhangatara, Spinifex sericeus), knobby club rush (wiwi, Ficinia nodosa) and small-leaved pōhuehue (Muelenbeckia complexa) were among the most widespread species
- Multiple populations of the nationally threatened K. robusta and regionally at-risk tauhinu are persisting at all six Waitākere sites. There is some concern about the low frequency and limited distribution of pīngao at Whatipū, Cowans Bay and Karekare
- Mobile dunelands are the only habitat for pīngao (Ficinia spiralis) but this species had only limited distribution and low abundance in heritage area dunelands (it was found in only 2 percent of the 595 plots sampled).
- While all sites have retained at least 50 percent of their original indigenous plant cover, exotic species are widespread. Whakaruro Bay had the lowest proportion of indigenous species cover at 51 percent, and Whatipū had the highest proportion of indigenous species cover at 72 percent.

Case study: How weeds can affect dune ecosystems

The most widespread weed found in the dunes was tree lupin (*Lupinus arboreus*), in 26 percent of plots. As a nitrogen-fixing species, this alters the nutrient profile of the dune's typically nutrient-poor sand substrates which potentially facilitates more weeds.

Since the late 1980s, periodic dieback of tree lupin due to the fungal pathogen *Colletotrichum gloeosporioides* may limit some of the detrimental impacts of tree lupin spread (Dick 1994). At all the monitored sites, there was clear evidence of both tree lupin dieback (the dead remains of large plants) and also regrowth (many new healthy seedlings and young plants).

Of the 177 exotic plant species recorded in the dunes, 25 are weeds listed in the Auckland Council Regional Pest Management Plan (2020).

The monitoring methods used may underestimate the prevalence of weed species that are less dispersed but locally abundant. One such species may be pampas (*Cortaderia selloana*), which only occurred in 0.5 percent of plots in the heritage dunelands but can form dense stands where it does grow.

Marram grass was only recorded in two percent of monitored plots. This may underestimate its presence and potential impact in active sand dune plots where it appears to have a competitive advantage. Marram grass is sand binding species and can spread rapidly in active sand dune ecosystems. It has been known to displace native species such as pīngao, spinifex and sand tussock, and to alter dune morphology.

Bird biodiversity monitoring was introduced in the dunes in 2021 and is discussed in *Bird Monitoring* below.

5.9. Bird populations

Native bird species appear to be on the rise in the heritage area and across the region, which may reflect larger-scale environmental differences such as weather patterns. The health of large forest areas, like those in the heritage area needs to be improved to provide space for native bird species to expand into, requiring the ongoing management of pest animals in these areas.

The extent to which native animals and birds flourish is a useful means by which to evaluate biodiversity. Monitoring can also tell interesting stories about how different areas are changing in response to focused conservation approaches.

Bird counts are usually carried out by an observer standing at a point recording all the birds heard and seen during a set time period of 5 -10 minutes, providing a relative measure of abundance. Council scientists are trailing new methods in the heritage area to improve the effectiveness and efficiency of information collected.

While bird communities are known to vary across the landscape, the most ‘natural’ areas with high proportions of native and less introduced species tend to be concentrated in more highly managed areas and where large native forests exist.

Significantly less introduced bird species were counted in the heritage area (2-3 species) in comparison to regional averages, which tended to count four to five introduced species in surveys. The numbers, or ‘abundance’ of individual introduced birds counted also tended to be lower in the heritage area (3-4 vs ~7 individuals). This is likely related to the high-quality forest habitat.

The number of native bird species, or ‘richness’, has been relatively stable over the last 15 years, and similar to regional averages, with about five bird native species counted in surveys. These trends were consistent throughout the last 15 years.

In contrast, the numbers of native individual birds counted has increased over the last 15 years (from about 8 to 13 individual birds per count). This trend is consistent in both the heritage area and in regional averages.

Studies highlight the significance of council-led initiatives such as Pest free Auckland 2050, which aims to eliminate pest animals and plants to help native species flourish. This is partly funded by NETR.

Over a five-year period, council carries out bird surveys at forest monitoring sites in the heritage area. Three surveys have been completed since reporting on the heritage area began.

Results from the 2018 to 2023 survey found that:

- 75 percent of bird species recorded were native species. Approximately 50 percent of all birds counted were endemic (**native and restricted to a certain place)** New Zealand species
- The most common native species, which includes the ‘top 4’ most abundant species, were tauhou silvereye (most commonly counted), riririro (grey warbler; 2nd), tūī (3rd), pīwakawaka (New Zealand fantail; 4th). Kōtare (the sacred kingfisher, was 9th

- There were increases in the abundance of tauhou, riririro, and pīwakawaka, which all were approximately twice as abundant in comparison to surveys in 2014 and 2018
- Korimako (bellbird), although relatively uncommon, is another species which appears to be increasing.

The most common introduced species were the Eurasian blackbird (5th most common), Chaffinch (6th), Eastern rosella (7th), the common myna (8th), and the house sparrow (10th).

These introduced species were counted at similar levels as in the 2014 to 2018 survey, with one notable outlier – the house sparrow – which was almost six times more abundant.

5.10. Forest bird monitoring following possum control

The changes observed in bird populations mainly resulted from a significant reduction in the numbers of possums competing with indigenous forest birds for foliage, nectar and fruit, and reduced levels of nest predation by possums on species such as Kererū and Tūī.

Overall, both monitoring and the longitudinal study indicates that native bird species appear to be on the rise in the heritage area and across the region, which may reflect larger-scale environmental differences such as weather patterns.

A longitudinal study[12], focused on monitoring forest bird populations in the heritage area following possum control action was undertaken over a 22-year period between 1997 and 2019. The study consisted of five-minute bird counts at 135 count stations on nine public walking tracks. It noted a significant increase in mean detections for all bird species between 1997/98 – 2018/2019, with the mean number of birds detected per count increasing by 58 percent and a 75 percent increase in the total number of birds detected.

Key observations included a significant increase in mean detections of native bird species (particularly from 1997-2005), notably for species such as the Silvereye, Tūī, Grey Warbler and Welcome Swallow. Detections of other species such as the Kererū, Kingfisher and Fantail increased slightly, but not significantly over the study period. Overall, there were no significant changes in mean exotic bird detections.

The current level of pest control, which mainly targets possums, may not allow significant further gains in indigenous bird abundance and diversity. The health of large forest areas, such as those found in the heritage area still needs to be improved to provide space for native bird species to expand into and reach resilient populations sizes, requiring the ongoing management of pest animals in these areas.

Both studies also highlight the significance of council-led initiatives such as Pestfree Auckland 2050, which aims to eliminate pest animals and plants to help native species flourish. *Pestfree Auckland is partly funded by the Natural Environment Targeted Rate ('NETR'), which was introduced in July 2018*[1].

[12] *Lovegrove, T. and Parker, K. (in prep.) Forest bird monitoring in the Waitākere Ranges following possum control. Auckland Council.*

5.11. Seabirds

Surveys have been identifying new grey-faced petrel breeding areas, including within Te Henga, Anawhata, Piha, Karekare, Whatipū, Cornwallis and even coastline areas near Titirangi. Piha has continued to stand out as a grey-faced petrel hub, with more nest burrows being identified in recent surveys.

With a long coastline backed by high quality coastal ecosystems, and proximity to productive foraging waters, a suite of seabird species is found here.

Centuries ago, seabirds would have been heard clearly calling at night along any part of the coast. Their numbers have diminished primarily because of the introduction of invasive mammalian predators, and the reduction of nesting habitat from human-induced land use changes. Additionally, there are other pressures on seabirds, such as from fisheries and climate change related changes.

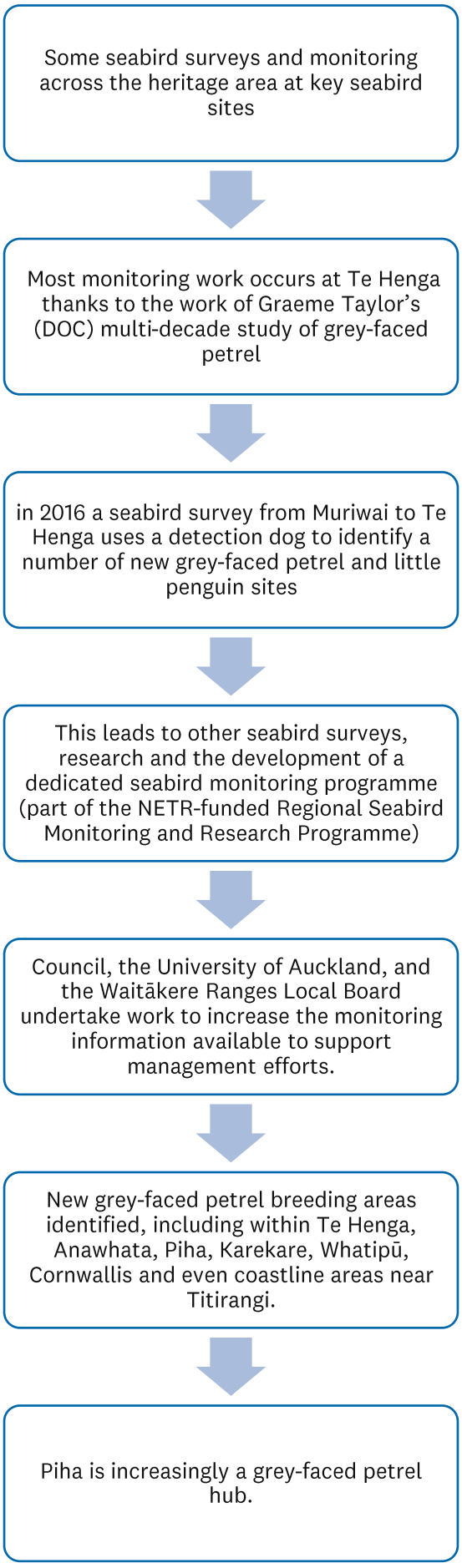
As one of the region's most significant mainland seabird sites, with the continued presence of a variety of seabird species, the heritage area is noteworthy for having five burrowing seabirds (grey-faced petrel, sooty and flesh-footed shearwaters, diving petrel and the little penguin), breeding in one mainland location at Te Henga.

There have been a variety of efforts by iwi, council, DOC, and community to protect and restore seabirds and other important indigenous biodiversity occurring in the heritage area, mainly focused on pest management. Some seabird surveys and monitoring have been occurring across the heritage area at key seabird sites, with the most work occurring at Te Henga thanks to the work of Graeme Taylor's (DOC) multi-decade study of grey-faced petrel.

More recently, council, the University of Auckland, and the Waitākere Ranges Local Board have been undertaking work to increase monitoring information available to support management efforts.

Council has partnered with the University of Auckland on a project that has helped greatly expand the grey-faced petrel monitoring network to get a more representative understanding of the population health of these seabirds in the heritage area.

Part of this project includes researching how pest animal densities are affecting the breeding success of these seabirds. This was also identified as an issue in a recent



Muriwai study which showed a wide variety of mammalian predators were interacting with grey-faced nest burrows.

The project is following up all the major, grey-faced petrel sites identified in our detection dog surveys, where an extensive pest animal monitoring network has been set up. The results of this study should help to identify the critical levels of pest management needed to secure these seabirds populations on the mainland.

The following additional seabird projects are currently occurring in the greater Waitākere area:

- Community-based (citizen science) monitoring of breeding Muriwai gannets/tākapu (Morus serrator)
- White-fronted tern/ tara (Sterna striata) monitoring at Muriwai
- Little penguin/ kororā (Eudyptula minor iredalei) surveys on the east and west coast
- Seabird stress tool development, using conservation physiology to assess colony stress levels (University of Auckland collaboration)
- Shag surveys across the region assessing population health.

Photo 0-14 Council staff and detection dogs undertaking seabird surveying

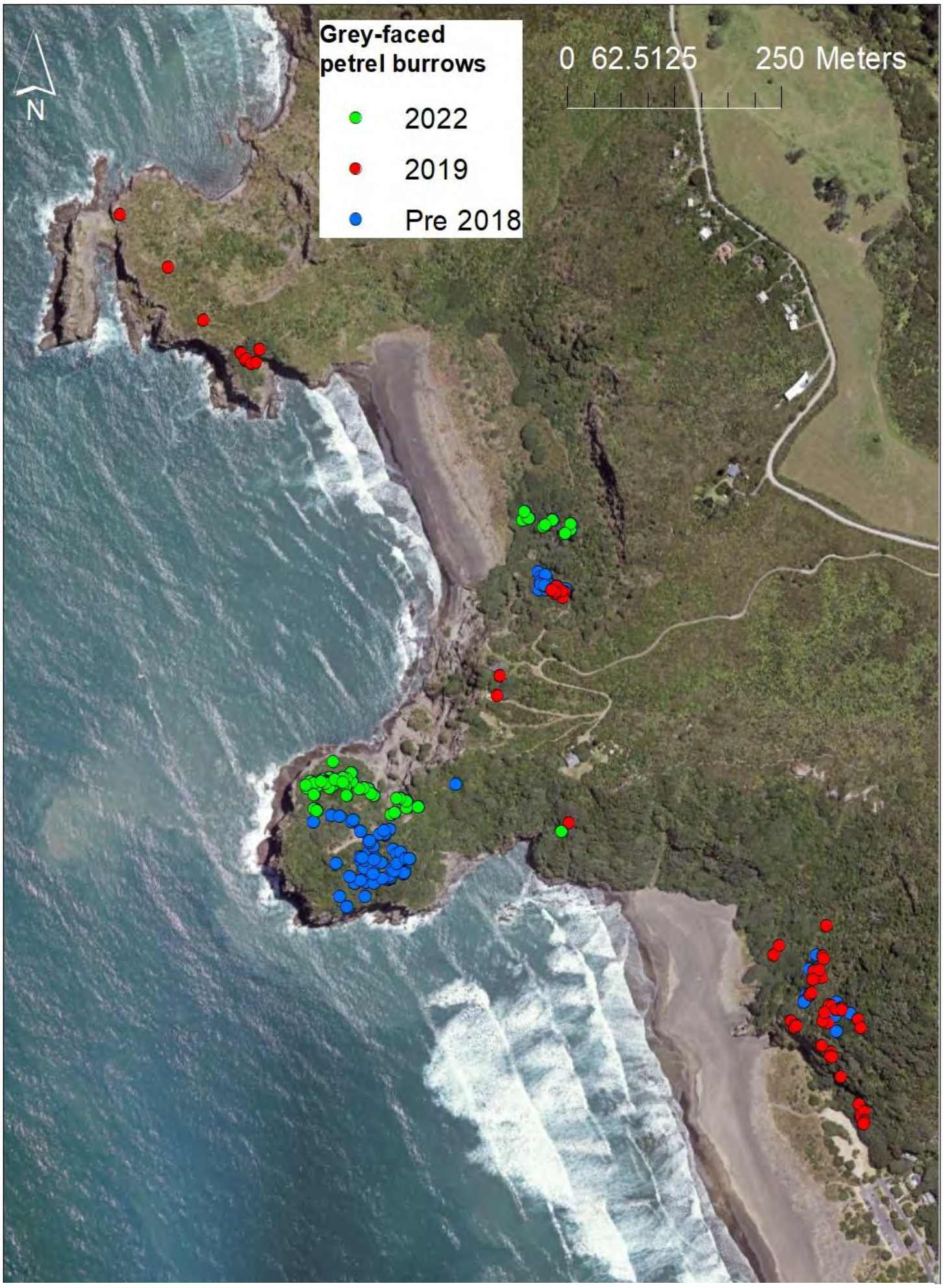


Photo 14. Results of seabird surveys in northern Piha/Whites Beach area using a seabird detection dog, showing the increasing number of burrows being located over time. (RIMU)

5.12.Rare and threatened l species

The Hochstetter's Frog and the Long-Tailed Bat are two prominent threated species that have habitats within the heritage area. In the heritage area council's biodiversity operations programmes are managing 27 animal species and 12 plant species with a threatened or at-risk conservation status.

Threatened species survey and monitoring has been undertaken for several species to identify potential species BFAs, including the Mokopiriakau granulatus Forest gecko and Naultinus elegans elegant gecko, and wetland birds at Whatipū.

Case study: Hochstetter's Frog

Hochstetter's frog (*Leiopelma hochstetteri*) is New Zealand's only semi-aquatic frog, and one of only three native frogs in New Zealand. The frogs are still classified as an 'At Risk – Declining' species. Their conservation is therefore of both national and international importance.

The frogs are threatened by habitat loss, habitat modification and climate change.

They are also affected by many introduced predators, including rats, stoats, mice, possums, hedgehogs, feral pigs and cats.

Hochstetter's frogs live in or near small, cobbled, or rocky streams, tributaries, and seepages within shaded forest (Bell 2010; Worthy 1987). During rain events they often move away from streams but much about their movements remains unknown. The frogs lay eggs in wet substrate under rocks and vegetation and require clean water in catchments with mature forest and shaded stream margins. They can live for at least 20 years and are slow breeders, laying only 10-22 eggs per clutch (Bell 2010).

Council has been supporting monitoring of Hochstetter's frog in the Waitākere and Hunua Ranges by EcoQuest.

EcoQuest has been running a long-term frog monitoring program since 2007 and transects(lines) across habitats run through Ark in the Park and Huia. Results from the monitoring in November 2020 indicated a declining trajectory for these frogs, due to the lack of juveniles and sub-adults detected (Longson 2021).

In response to these findings, council has established a pest control network across a 390ha area in the Upper Huia catchment. The project area follows, as much as it can, the spurs and ridges around high value streams that feed into the Upper Huia Reservoir.

Results from pest monitoring alongside frog numbers will help inform adaptive management for these frogs in the future and improve outcomes for frogs in the region.

Case study: Pekapeka-tou-roa / Long-tailed bat

Over 2018/2019, research into the long-tailed bat was enabled by a funding grant given to the Community Waitākere Charitable Trust.

Radio tracking technology was used to identify bat roosting sites and track bat movements within and around the heritage area, specifically areas around the Waitākere River, Swanson Stream and Opanuku Stream.

A pilot study undertaken by AECOM on behalf of the council in 2018/2019 confirmed that long tailed bat has multiple habitats and roosting sites within the heritage area.

It concluded that community involvement in bat conservation and monitoring would help raise awareness around the sensitivity of the species and answer further questions relating to movements and roosting patterns.

No further surveying has taken place since 2019. The focus has been on community education and engagement. Barriers to undertaking further research include kauri dieback, sourcing equipment and funding, as well as the challenges of surveying for a very small and highly mobile nocturnal species.

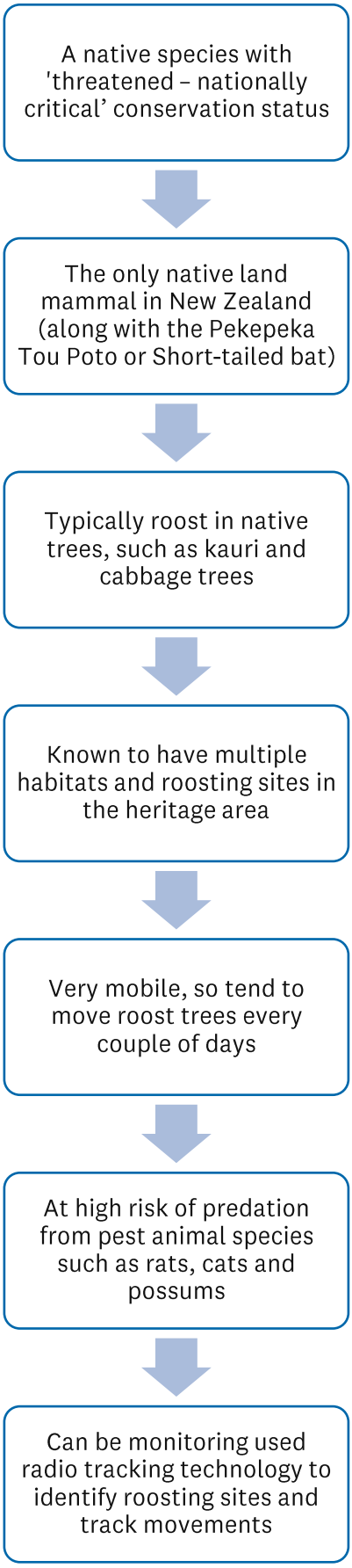
The local community have taken on a key role in protecting and advocating for the long-tailed bat population in the Waitākere Ranges

The Auckland Pekapeka Alliance was formed between Community Waitākere, DOC, council, consultants, and community groups.

Community Waitākere organised opportunities for training, education, and volunteering. Volunteer groups such as Opanuku Birdsong, Matuku Link and Ark in the Park were taught how to deliver their own ‘bat walks’ along the Lower Opanuku Pipeline Track.

Bat walks take groups of people on a journey to learn about the long-tailed bat and provide opportunities to see and hear the bat using handheld detectors.

Educational flyers have been provided to residents to educate and raise awareness around the presence of long-tailed bats in their area.



Case study: Soundscapes are being trailed to monitor the success of management activities

The council's Research and Evaluation Unit (RIMU) partnered with the University of Auckland, Manaaki Whenua Landcare Research, and Queensland University of Technology to trial an innovative acoustic analysis technique using soundscapes to monitor biodiversity.

'Passive acoustics' can be used to listen for animal sounds, which are easily collected using readily available, acoustic sensors (field recorders). They can be analyzed to quantify what species are most prevalent and how these patterns may be changing over time.

In 2022 sounds were recorded in two nearby forest sites with different management regimes, with the aim of identifying potential pest level differences between:

Ark in the Park (high pest control since 2002) and

Fairy Falls (relatively low-level pest control).

Lured chew cards, which rats, possums, and mice like to bite were also used to identify which predators were present, to provide a relative measure.

The recordings, and earlier recordings from 2016 and 2017 were analysed as one large dataset, and the results used to identify the sounds in each recording that made it unique. The soundscape analysis found significant differences between the two sites, with the greatest differences found in autumn and between 9 p.m. and midnight (Campos et al 2022).

One of the most interesting and unanticipated outcomes of the study was that the main sounds responsible for the differences between the two sites were those of invasive mammals.

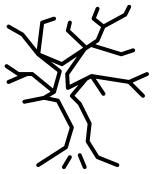
Ark in the Park was relatively quiet. Many more mammal sounds were heard at Fairy Falls. Chew card findings supported this. Virtually all Ark in the Park cards were not marked by any mammals, while most Fairy Falls cards were marked by a variety of invasive mammals such as rats, possums, and mice.

Bird song differences were more subtle between the two sites. An interesting finding was that the largest differences were in spring during the dawn chorus hours. This may reflect an increase in bird activity when many birds are breeding.

Significant bird sound differences were not detected between the two sites, although surveys by volunteers on relatively close sites have indicated higher abundances of birds in Ark in the Park.

This study has shown that soundscapes may be a useful acoustic analysis method, identifying the important sound differences during the evening, which many studies that traditionally focus on high bird song activity times at dawn and dusk would miss (Holmes et al 2014; Venier et al 2012).

The results identify low levels of invasive mammals present in Ark in the Park compared to Fairy Falls, reflecting the large effort of community volunteers in the area.



5.13.Changes in the spread of plant pathogens

Kauri ora

The 2021 Waitākere Ranges Kauri Population Health Monitoring Survey (Auckland Council et al., 2022) revealed the areas where the kauri dieback pathogen has been detected are localised and are on the periphery of the park. While these areas still present a risk of spread to other catchments, it is not as widespread as previously thought. This supports the continuation of strategies to slow or stop the spread of kauri dieback within the Waitākere Ranges.

This was the first long-term monitoring survey of kauri health, co-designed and delivered in partnership with Te Kawerau ā Maki. New remote sensing technology and epidemiological modelling was used to understand the health of the kauri population.

Kauri (Agathis australis) is a culturally significant taonga species which historically covered much of the Auckland region including the Waitākere Ranges. At the time the previous report was drafted, all kauri forest within the heritage area was considered at very high risk of infection by kauri dieback disease, with the highest risk of spread considered to be soil disturbance associated with human activity.

This had serious implications, not only for kauri. As a keystone species, kauri plays a central role within the heritage area's unique, distinct and highly biodiverse ecosystems. Many species rely on it to survive, and some, such as the kauri greenhood orchid, are found only in association with the tree. This understanding informed a rāhui placed on the area by Te Kawerau Maki and shortly after, closure of walking tracks throughout impacted areas the heritage area. The aim of these actions was to contain the disease, isolate pockets of unaffected trees, focus on protecting heathy trees, and prevent the spread of disease from infected sites.

The disease still presents the risk of spreading to other areas, but the survey showed that the pathogen is slower moving than first believed, that large stands remain unaffected and there is hope for the next generation of kauri. A consistent cohort of monitored kauri can now be measured repeatedly to understand change in disease and pathogen prevalence over time. The results are informing ongoing and adaptive management of kauri dieback across the heritage area and Tāmaki Makaurau / Auckland.

Myrtle Rust

Myrtle Rust is a wind-borne fungal disease. It emerged as a biosecurity threat following its discovery in west Auckland in November 2017 and incidence has increased since then. The presence of myrtle rust continues to present a future threat to species including kānuka and mānuka, pōhutukawa and is already having a severe effect on more susceptible species such as ramarama (Lophomyrtus bullata).

5.14. Management activities

Pest plants and pest animals threaten native biodiversity and beyond this have a negative impact on the recreational and economic values associated with the heritage area, and in particular the regional park.

The Regional Parks Management Plan recognises that the heritage area is a priority mainland ecosystem, and that it is particularly susceptible to biosecurity challenges because of its proximity to urban environments and human activity.

As a result, some programmes detailed provide an elevated level of protection in comparison to other areas in the Auckland region.

Watercare works with council to manage weeds on both leased and owned land. Council also has agreements with DOC to manage some sites which DOC holds under the RMA, and with Auckland Transport to control weeds in road corridors through its facility contracts.

Council's aims for the heritage area include:

- To increase and improve management of priority native habitats
- To futureproof against emerging pests
- To reduce the human spread of freshwater pests, and
- To use biocontrol (control of pests via natural predators) and enforcement around the nursery and pet trades.

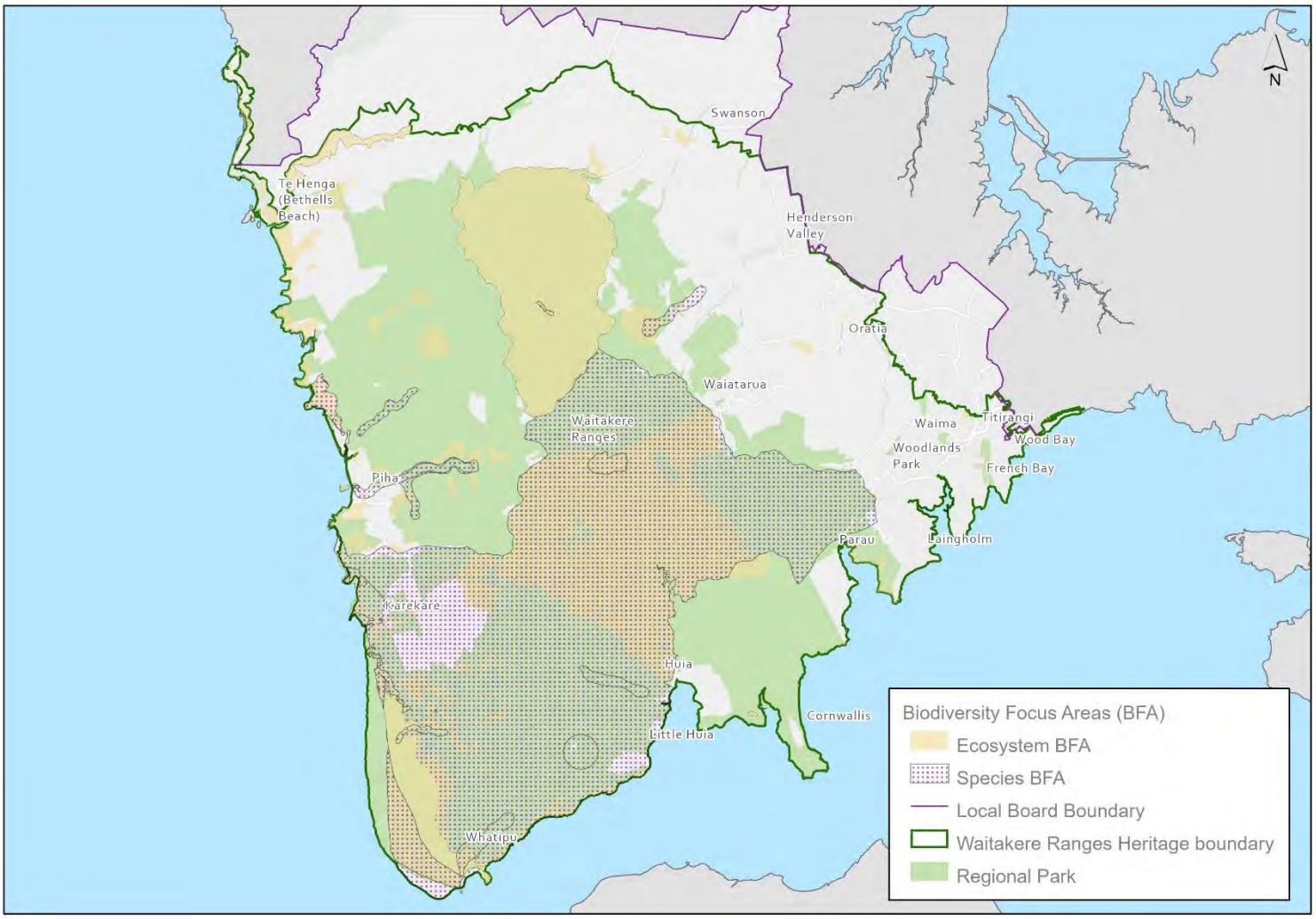
Conservation objectives also cover a range of initiatives designed to engage and empower communities to protect and restore the environment. These are visible in heritage area management programmes and supported by regional educational initiatives.

These include:

- increasing connections between different natural habitats in rural and urban landscapes using ecological corridors
- managing priority sites on private land and working with private landowners to protect and restore high value biodiversity
- providing tools, resources, and funding support to community conservation groups
- increasing private sector and business participation in conservation activities.

New online resources available for heritage area communities include:

- Tiaki Tāmaki Makaurau / Conservation Auckland Comprehensive information about Biodiversity Focus Areas in the area, information about pests in Auckland and responsible pet ownership, how-to guides and a resource library for community conversation and opportunities to get involved.
- https://www.livingintheranges.nz This a collaboration of Te Kawerau ā Maki, the Waitākere Ranges Local Board and the Pest Free Waitākere Ranges Alliance.
- Ark in the Park – Restoring the Waitākere Ranges Ark in the Park is a collaborative project between Forest & Bird and council and supported by Te Kawerau ā Maki. Its purpose is to enhance indigenous biodiversity and ecosystem functioning within the project area.



Map 13. Biodiversity Focus Areas (BFAs) are used to guide delivery of conservation activity.

5.15.Biodiversity focus areas and what they are used for

Biodiversity Focus Areas (BFAs) are a non-regulatory tool used by council to identify areas for the conservation of indigenous biodiversity. BFAs include a representative range of indigenous ecosystems and species sites that help guide and prioritise the planning and delivery of council's conservation activities.

(Species) BFAs represent a minimum set of habitat requirements for threatened or at-risk species to remain viable. They are selected based on species threat status and regional population trends, where known, the habitat requirements needed to support the complete life cycle of each species, indigenous species diversity and abundance at a site, current condition and level of risk posed to a site, and management feasibility and clustering of sites for management efficiency.

BFAs are used to:

- protect a representative range of ecosystems and species in the region
- guide delivery of biodiversity management across both council and private land,
- inform and prioritise management interventions such as pest animal and plant control.

Case study: Testing monitoring methods in Whatipū biodiversity monitoring area (BFA)

In 2022 the Whatipū BFA / Species BFA was established as a pilot, and several different monitoring methods currently used in New Zealand for vegetation and birds were tested.

Describing the ecology in BFA areas more fully and tracking any changes in ecological integrity from management activities such as weed or predator control, will help to judge how effective management interventions are. This will help to improve the long-term viability of threatened species and ecosystems.

Whatpiū BFA was chosen because of its extremely high biodiversity and species value. A remote coastal environment, it extends from Karekare Point to Whatipū at the mouth of the Manukau Harbour, and a scientific reserve; gazetted in 2002 and set aside for scientific study, research, and education.

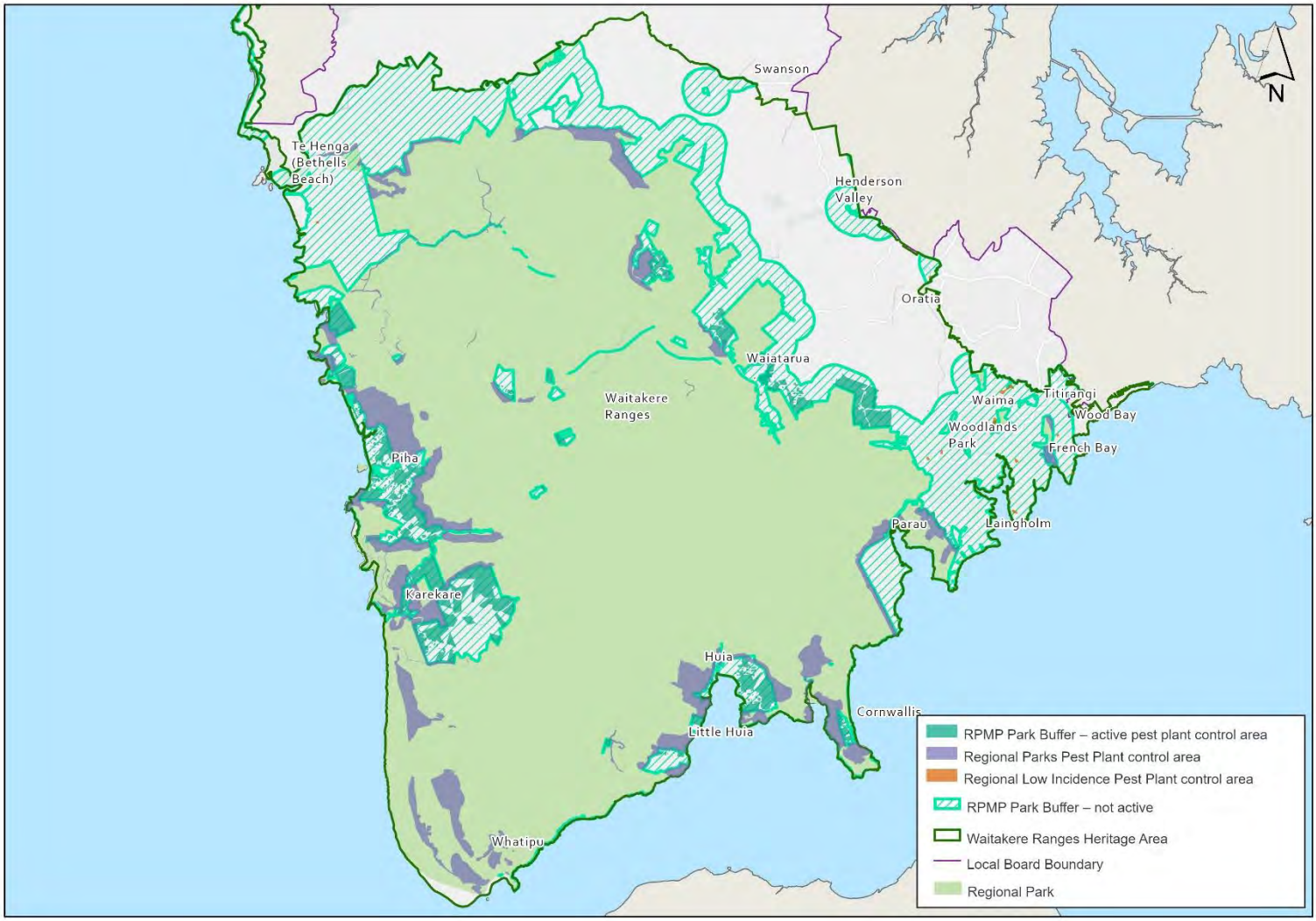
The landscape here has changed considerably since the 1930s, when the high tide mark was nearly two km further inland than it is today. Accreted sand dunes have formed as sand has accumulated over time. Today, these are unique in Auckland, and are identified as an Outstanding Natural Feature in the Auckland Unitary Plan.

The dunes and associated lakes and wetlands contain threatened plants such as pīngao and sand spike sedge and are a habitat for at least 11 threatened and at-risk bird species, such as the Australasian bittern (nationally critical), spotless crake (at risk-declining) and fernbird (at risk-declining).

Whatipū BFA is the only breeding site of banded dotterel in the Auckland region. Its ecosystems include:

- extensive areas of pīngao and spinifex dominated vegetation on the active dunes, closest to the sea where there is an abundant supply of wind-blown sand
- oioi, knobby clubrush sedgeland and herbfields on the dune plains inland of the active dunes
- wetland vegetation surrounding a series of permanent and ephemeral dune lakes (including large areas of *Machaerina* sedgeland with abundant kuta and jointed twig rush, raupō reedland and occasional patches of flaxland)
- small patches of native treeland scattered along the base of the cliffs.

Over the next three to five years additional outcome monitoring plots will be established across heritage area forest and wetland ecosystems. These will be measured every three to five years.



Map 14. Pest plant control areas are where management activities are focused

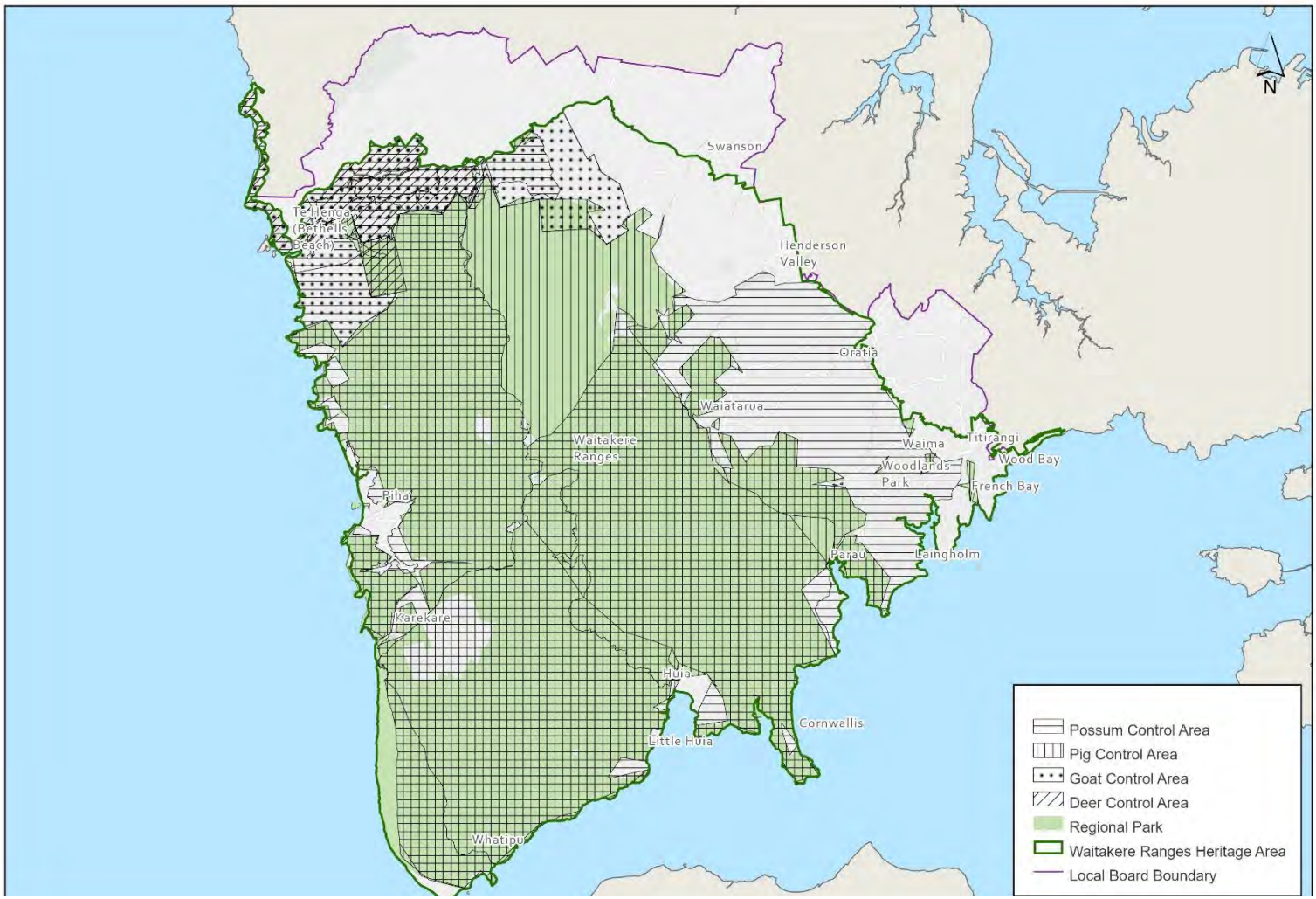
5.16.Pest plant control areas

The extent to which pest plants can be controlled is an ongoing challenge for council and heritage area communities.

Pest plants are seeded by the movement of wind, birds, people and machines around and through the heritage area's natural areas, scattered settlements, private gardens and roads. Invasive weeds are a clear and recognised threat to indigenous ecosystems.

The RPMP 2020-2030 sets out the objectives and rules for managing pest plants, and 'buffer zones' are identified as priority areas for pest plant control. Priority buffer species for which pest plant management activities are carried out are climbing asparagus, bushy asparagus, wild ginger, moth plant, woolly nightshade and rhamnus. (Auckland Council, 2020). A variety of management activities target pest plants and made progress on reducing weed density on private property in residential buffer areas along the West Coast and Manukau Harbour.

Additional work is also underway to eradicate Low Incidence Pest Plants (LIPP) such as Cathedral Bells (*Cobaea scandens*). There are currently twenty-five locations being managed within the heritage area, with fourteen sites under active control and an additional eleven being monitored. Pest plant management activities were at times affected by the kauri dieback response. In some cases, access to particular sites was restricted. Where possible, work continued on a case-by-case basis in consultation with Te Kawerau ā Maki. Kauri dieback controls also set higher standards for weed disposal and imposed new costs, which lessened the reach of some activities such as council-provided community weed bins.



Map 15. Pest animal management control areas in which management activities are focused

5.17. Pest animal control areas

Pest animal management activities target the main pest animal species, which are possums, feral pigs, feral deer, feral goat, rats, mustelids, rabbits, and feral cats. All pose risks to native vegetation and animal species that exist within the Regional Park and the wider heritage area.

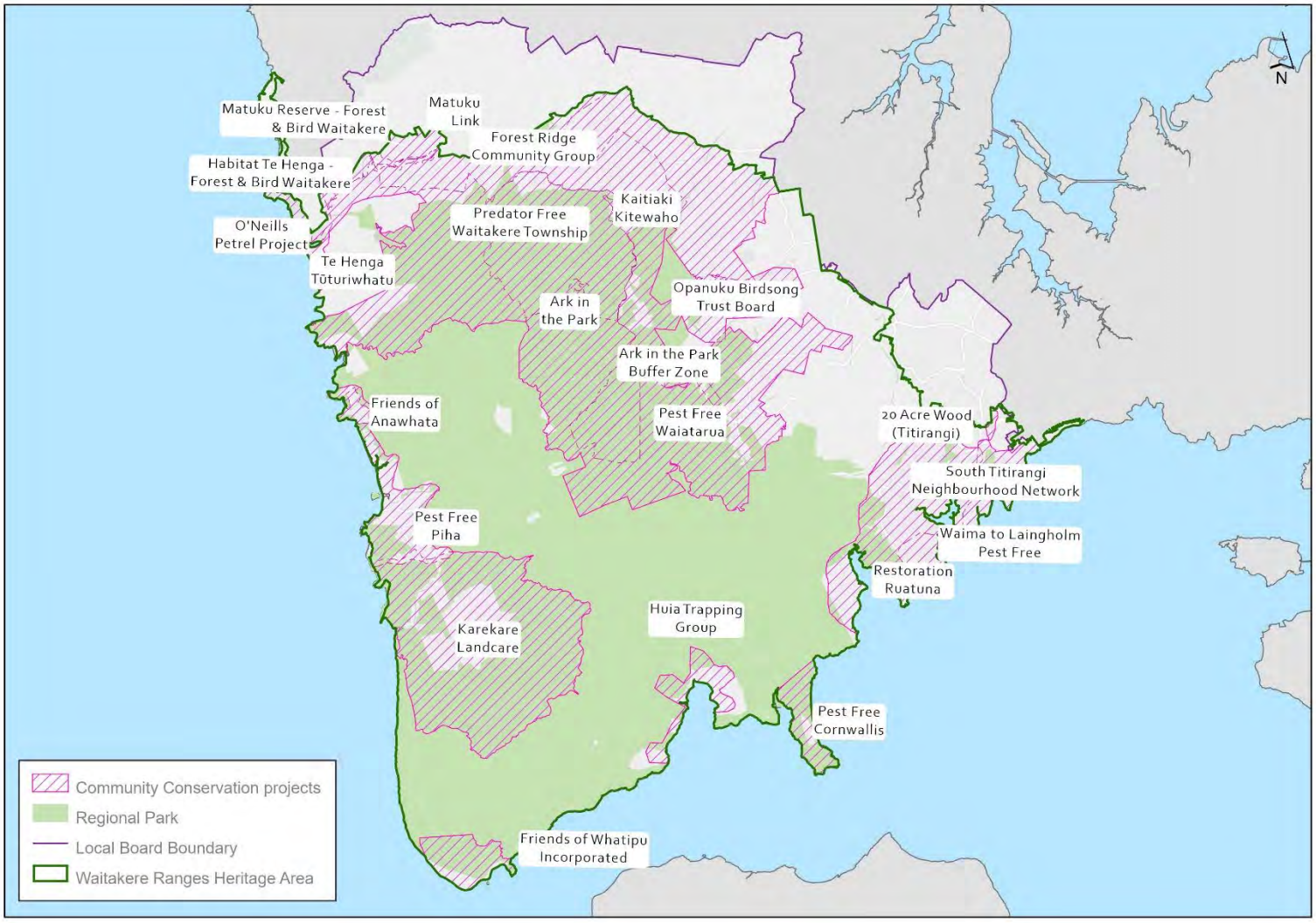
Levels of investment during the previous monitoring period (2013 to 2018) and earlier meant that a large proportion of native species and ecosystems were facing on-going decline due to pest impacts. The establishment of the NETR and increased funding since 2018 has assisted with the increased management of pest animal species.

An elevated level of protection is also afforded to the Waitākere Ranges through the RPMP. For widely established pest animals, such as possums and pigs, the RPMP includes integrated control of key pest pressures on parkland in the Waitākere Ranges, supported by enforcement to ensure surrounding land occupiers undertake pest plant control to prevent (re-)invasion of the parkland. Desexing and microchipping campaigns as well as other behaviour change initiatives have been implemented alongside on-park cat control, to protect threatened species from cat impacts.

For other pests that are not already established in the ranges (e.g. feral deer and goats), the priority is to keep them out of the area. New programmes regulating the trade of pest pets such as exotic parrot species, and invasive ornamental plants such as bangalow palm and Japanese cherry also serve to protect the heritage area from future invasions.

Table 0-6 Council's pest control objectives in the heritage area.

Possums	Possums continue to be one of the most devastating pest animals in the heritage area and are the target of the largest pest animal management programmes. Residual Trap Catch (RTC) levels are a useful indicator for monitoring animal pest management in the heritage area. A RTC of 3 percent or less has been met for possum control in the heritage area, with ground-based control initiatives continuing to aim for a 2 percent RTC (i.e. less than 2 possums caught for every 100 trap-nights).
Feral Deer	There are no feral deer within the regional park. Both feral deer and goat are actively managed. management activities intend to contain and prevent further establishment of these animals with control initiatives concentrated on protecting BFAs. Feral deer control has been focused on preventing feral deer becoming established. Control has been concentrated in areas surrounding Te Henga / Bethells Beach. Additional funding is being sought for a more intensive survey of the regional park.
Feral Goats	Feral goat control aims to progressively contain feral goats within the Auckland region and control has recently been focused on the northern region of the heritage area, spanning from Te Henga in the west towards Swanson in the east.
Pigs	Feral pig control aims to achieve zero density of pigs, to prevent adverse effects on economic well-being, the environment, human health, and enjoyment of the natural environment. Pigs remain present in the heritage area in small numbers and are being controlled across 18,000 ha. of parkland. Additional funding is being sought to analyse monitoring data and investigate new control methods.
Rats, Mustelids, Rabbits, Feral Cats	Smaller pest animal control for species such as rats, mustelids, rabbits, and feral cats is ongoing, with control prioritised around Biodiversity Focus Areas, or in defendable or strategic geographic locations. Following monitoring work undertaken in 2020, the Huia BFA has become a particular focus area for control of these pest species, to protect the current population of Hochstetter's Frog. Additional funding is sought for greater mustelid and feral cat control around Whatipū. On-park control of feral cats has been supported by council funding for free desexing and microchipping of companion cats within the heritage area and other responsible pet ownership initiatives.
Cockatoo	Cockatoo have emerged as a potential threat, with small populations found in the heritage area. They are known to impact native plant species such as Kauri and Rimu, through bark stripping, beak-inflicted damage and consumption of growing tips, seeds, flowers, and fruit. They may also spread Psittacine Beak and Feather Disease to native parrots and cause damage to nuts, fruit, and cereal crops (Auckland Council, 2023). In relation to cockatoos, the RPMP identifies that the objective over the next 10-year period is to progressively control naturalised populations of sulphur-crested cockatoos within the region, with priority given to protection of the Waitākere Ranges and other Biodiversity Focus Areas. Some funding has been allocated to monitor these populations and the design of a control programme. Other pest bird species, such as Indian Ringneck Parakeet and Rainbow Lorikeets are not yet established in the wild. Inspections of breeders and pet shops helps prevent these future pests invade the ranges.



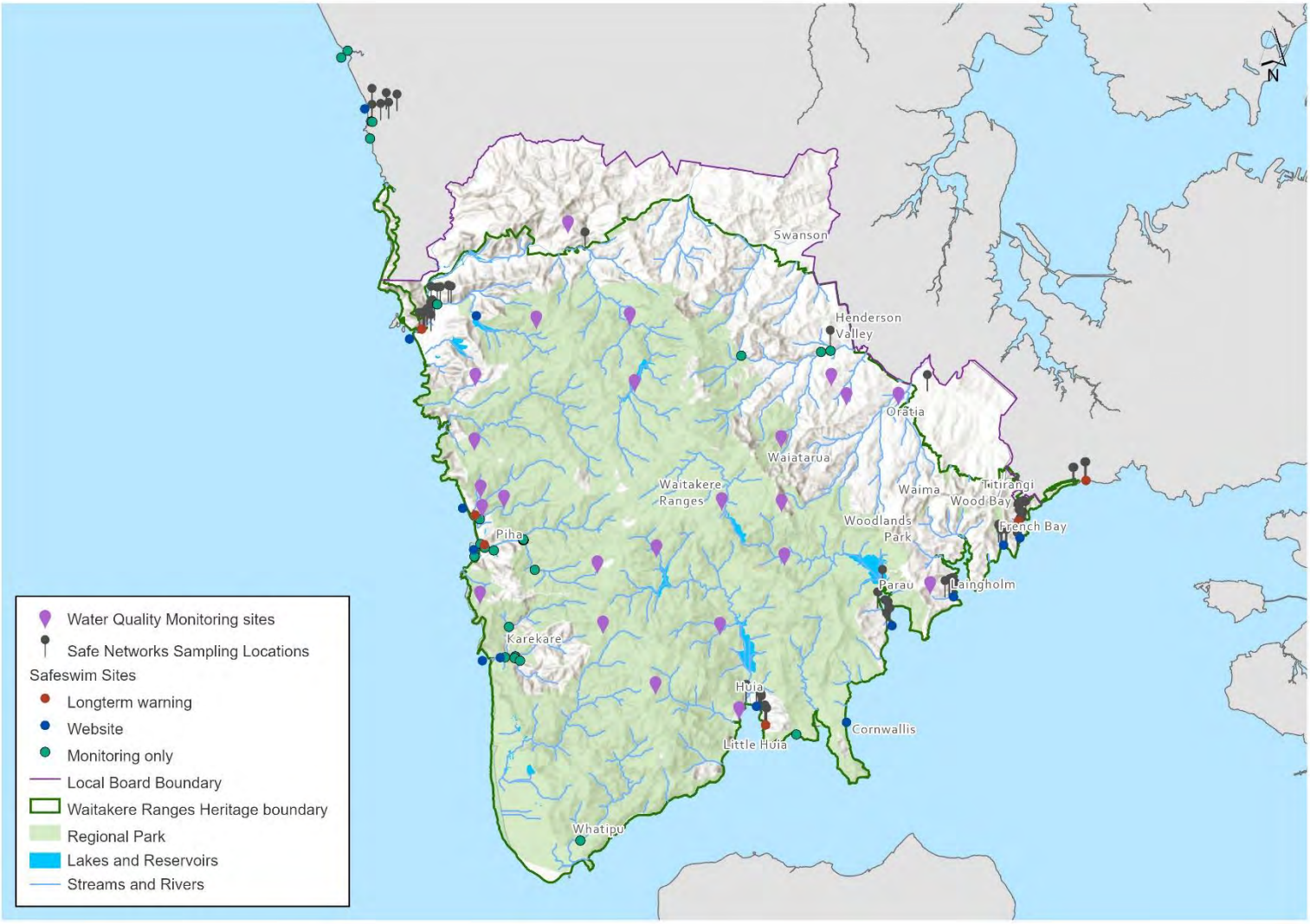
Map 16. There is a wide range of community conservation activities in the heritage area

5.18.Community conservation

A valuable component of pest management in the heritage area is the high level of organised volunteer engagement. Pest plant and predator control is a unifying theme for local communities. See map 15. above for primary community project areas.

Case study: A spike in the rat population

In 2019 there was a boom in rat numbers following a record "mega-mast" in which trees produced large amounts of seeds upon which rats feed. Within Ark in the Park, winter tracking results showed 32 percent of their tunnels recording rat footprints, up from the last mast season in 2014, and the highest since Ark in the Park was established in 2002. The tracking levels were well above the 5 percent that allowed birds to survive and breed, and far higher than the 1 percent needed for all kōkako chicks to be safe from rats. A Forest & Bird spokesperson said climate change was adding to the problem, with masts becoming more frequent, meaning that more rats are able to breed during mild winters. (NZ Herald, 2019)



Map 17. The network of water quality monitoring and sampling sites

5.19.Water quality and freshwater ecosystems

State of the Manukau Harbour

While not part of the heritage area, the Manukau Harbour and Tasman Sea has integral connections to their surrounding catchments which includes parts of the heritage area. A state of the environment monitoring report for the Manukau Harbour was published in 2021, which presents and discusses monitoring results for the Manukau Harbour and its catchment including coastal water quality.

The Waitākere Ranges Local Board is a member of the Manukau Harbour Forum, along with the eight other boards which border the Manukau Harbour, and that body continues to press to raise the profile of the Harbour within the Auckland region.

5.20. Wetlands

The heritage area includes two significant regional wetland complexes; at Te Henga / Bethells Beach and at Whatipū. It also includes more recently deposited sand and silt sediments in the larger valleys (e.g. Te Henga) and along the coastline (e.g. Whatipū). Very large and diverse wetland systems are present on some of these more recent sediments, which are also internationally important as wading bird habitats.

Nine permanent wetland plots form part of a regional wetland monitoring network. These plots have not been fully resampled since the 2018 monitoring report so there is insufficient data to make a conclusion in this report. They are due to be sampled in 2023.

The previous heritage area report concluded that there was little change in pressure or condition of these wetland monitoring sites, and this is expected to remain the case. Wetland monitoring has identified an increasing presence of weeds across the region, and this is likely to be observed in the heritage area.

5.21. River water quality

Council's Research and Evaluation Unit (RIMU) undertakes long-term river water quality monitoring across the Auckland region. This enables council to present a region-wide perspective on water quality and understand the likely water quality of rivers that are not monitored. There are two sites from this programme in the heritage area, both also freshwater ecology sites.

Sites are monitored monthly for a suite of in-situ field parameters (measured by a hand-held meter e.g., temperature, dissolved oxygen, pH) and water samples are collected and sent to a laboratory for analysis for a range of other parameters (e.g. nutrients, metals, E. coli).

The Cascades Stream is in a native forest catchment and has some of the best water quality in the Auckland Region. Notable trends from the most recent trend analysis (2013 to 2021) show increasing concentrations of total and inorganic nitrogen at the Cascades Stream monitoring site. This signals a likely degrading trend, however, as noted above, there are no human activities in the catchment that could elevate nitrogen concentrations, so this is most likely due to natural variation.

The upstream catchment of the Opanuku Stream site is dominated by native forest, with areas of rural and urban land cover.

Trend analysis shows likely degradation trends for various inorganic (bio-available) nitrogen parameters (increasing concentrations of ammoniacal nitrogen, total oxidized nitrogen and dissolved inorganic nitrogen). This is most likely from inputs of nitrogen such as fertilizer application and stock grazing in the catchment. There are likely improving trends in total phosphorus and dissolved reactive phosphorus.

5.22. Macroinvertebrates as indicators of stream health

Freshwater macroinvertebrates, such as insects, crustaceans, molluscs, and worms, are commonly found living on or under rocks, logs, aquatic vegetation, and organic debris in rivers across the region. They are an important part of the aquatic food chain and because they are generally abundant across stream types, easy to sample and identify, are known to respond well to changes in stream water and habitat quality. They are a common tool for assessing stream ecological condition.

Macroinvertebrate communities are sampled annually at four river ecology monitoring sites in the heritage area. The results are evaluated using the macroinvertebrate community index (MCI), a tool which assesses the sensitivity of individual taxa (i.e. species) to environmental stressors and produces a single score as an indicator of ecological health.

This allows council scientists to estimate stream ecological health and to identify any changes that might be happening through time. Results suggest that:

- Opanuku Stream is in fair ecological health with very likely improving trends detected for the period 2012 to 2021
- Cascades Stream is in good ecological health with MCI scores remaining relatively consistent at this site over the preceding ten years
- The Wekatahi and Marawhara streams are in good to excellent ecological health respectively, with both sites showing likely degrading ten-year trends (2012-2021). MCI is unable to identify specific

pressures which may be influencing the change observed at both these sites; however, the magnitude of change is likely to be minor.

State and trend report published for river ecology in Tāmaki Makaurau/Auckland (2010 to 2019) can be found on Knowledge Auckland.

5.23. Freshwater fish

Freshwater fish surveys were undertaken at the four river ecology monitoring sites during the summer of 2022 (January to March) as part of a three-year monitoring pilot (2022 to 2024).

Freshwater fish can be good indicators of river ecological health and riverscape connectivity, and regular surveys can help provide a more holistic approach for assessing river ecological health. Fish communities were sampled using standard fishing protocols and emerging environmental DNA (eDNA) technologies. Results can be assessed using the regional fish index of biotic integrity (IBI). A tool which assesses current fish community composition against an estimated reference state.

Overall, 15 fish species were identified across all four sites through standard fishing methods and eDNA. The total number of species identified per site ranged from six to 11 (see table 1. next page) and included 12 native species, one non-resident native and two introduced species. Both of the region's only nationally threatened fish species were identified through eDNA sampling, with lamprey/piharau detected in Cascades Stream and shortjaw kōkopu in Wekatahi Stream. While the majority of species observed were generally classified as not threatened, other species of importance included nationally at-risk inanga, kōaro and torrentfish/panoko.

Two introduced pest species were identified in Cascades Stream (perch) and Wekatahi Stream (gambusia). Such species can have detrimental effects on habitat quality and native biological communities; however, combined fish-IBI scores ranged from 58 to 60 indicating a community rating of excellent across all four sites. Although the overall health of species populations could not be verified, results suggest high species diversity and community integrity. This is likely associated with the general stream characteristics present within each site and the wider catchment, including cool, swift-flowing streams with cobbled substrates, good connectivity to the marine environment and catchments comprised of diverse native vegetation. All factors which are favoured by our native species.

A summary of the fish species identified during pilot fish surveys undertaken in 2022 is provided in Table 2. Further results are not expected to be published until after the three-year pilot is completed, post 2024. Due to the nature of data collection, the ability to assess changes over time may be limited.

Case study: Freshwater fish in the heritage area

Table 0-7 . Summary of freshwater fish species and fish-IBI scores recorded at heritage area river ecology monitoring sites over summer 2022

Species	Threat status	Cascades Stream	Marawhara Stream	Opanuku Stream	Wekatahi Stream
Lamprey/ Piharau *Geotria australis*	Threatened - Nationally Vulnerable	✓			
Shortjaw kōkopu *Galaxias postvectis*					✓
Inanga *Galaxias maculatus*	At Risk - Declining	✓	✓	✓	
Kōaro *Galaxias brevipinnis*		✓	✓		✓
Longfin eel/ tuna *Anguilla dieffenbachii*		✓	✓	✓	✓
Torrentfish/ Panoko *Cheimarrichthys fosteri*				✓	
Banded kōkopu *Galaxias fasciatus*	Not Threatened	✓	✓	✓	✓
Common Bully/ Toitoi *Gobiomorphus cotidianus*		✓		✓	
Common smelt/ Porohe *Retropinna retropinna*		✓		✓	
Crans bully/ Tītarakura *Gobiomorphus basalis*		✓			
Redfin bully *Gobiomorphus huttoni*		✓	✓	✓	✓
Shortfin eel/ tuna *Anguilla australis*		✓	✓	✓	✓
Speckled longfin eel/ tuna *Anguilla reinhardtii*	Non-resident Native - coloniser			✓	
Gambusia *Gambusia affinis*	Introduced and Naturalised				✓
Perch *Perca fluviatilis*		✓			
Total number of species identified		11	6	9	7
Combined fish-IBI score		60	58	60	58

5.54. Changes in the dune lakes

There are two lakes currently monitored by Council within the heritage area; Lake Wainamu and Lake Kawaupaku, both of which are predominantly surrounded by native bush catchments.

Lake Wainamu has historically been monitored every quarter, however as of January 2020, both lakes are now monitored every month for lake water quality.

Results for the monthly monitoring for both lakes will be available in late 2023. Therefore, this summary focuses on Lake Wainamu, with some indicative results for Lake Kawaupaku.

Case study: Lake Wainamu

Sampling is undertaken at the deepest point of the lake, using a sensor to measure the temperature of the water, the concentration of oxygen in the water and the pH, at every one metre depth. Water samples are collected from the two layers in the lake and sent to a laboratory to be analysed for concentrations of nutrients, algae and sediment. Additional water samples are taken at the surface of the lake to provide information on human health (levels of *E. coli* and cyanobacteria).

Every three years, the ecological condition of lakes is assessed by divers surveying the under-water plants. An assessment of the amount of native and invasive plants (i.e., weeds), is in each lake made to provide an indication into the ecological health of the lake.

The state of water quality in Lake Wainamu can be inferred from the annual lake Trophic Level Index (TLI) which is used for summarising lake condition. This is calculated from four separate water quality measurements, including nutrients, algae and water clarity (total nitrogen, total phosphorus, chlorophyll *and* water clarity). Result for July 2020 – June 2021 show Lake Wainamu is in 'fair' condition, meaning there is average water quality (LAWA, 2022). Results have varied over time between fair and 'poor'.

A breakdown of the individual water quality parameters summarised results for the past five years (2016 to 2021) (LAWA, 2022).

Both nutrient parameters (total nitrogen and total phosphorus) are in the B band according to assessment defined in the National Policy Statement for Freshwater Management (NPS-FM 2020). This suggests that lake ecological communities are slightly impacted by nutrient levels that are elevated above natural conditions.

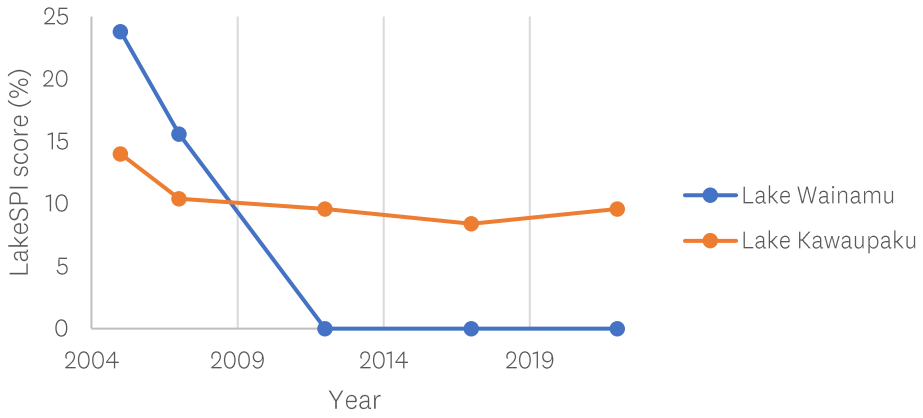


Table 2. LakeSPI scores for Lake Wainamu and Lake Kawaupakuare used to infer ecological condition over time

Assessments of algae (chlorophyll *a*) are in the C band. This suggests that the lake is moderately impacted by additional algal growth and reduced water clarity is a likely consequence.

At Lake Kawaupaku Indicative results from suggest that the lake is in poor condition (TLI) for July 2020/June 2021.

The ecological condition of a lake can be inferred from LakeSPI, which is a way of characterising the ecological health of lakes based on the amount of native and invasive plants growing in them. The higher the score, the better the ecological health of the lake. Lake Wainamu is currently classed as being non-vegetated, which means there is little, or no submerged vegetation cover in the lake. This is because it was stocked with grass carp in 2009 to eradicate aquatic weeds. The LakeSPI scores have declined over time from being classed as moderate in 2005, to poor in 2007 and non-vegetated since 2010.

Lake Kawaupaku

The ecological condition of Lake Kawaupaku is classed as poor due to no native plants and a large proportion of invasive plants in the lake (Egeria). The lake has been classed as poor ecological health since the first survey in 2004.

5.55. Heritage area dams and related stream ecology

Approximately 6,800 ha of the regional park is designated for water catchment purposes. These were incorporated into the regional park under Regional Catchment Parkland (Local Government Act) on 1 July 1992, with ongoing catchment and supply function protected by designations.

Watercare holds 11 designations for provision of water and wastewater services. These have been established over a long period of time as the water supply system has developed to meet the needs of a growing city.

The natural water flows of streams are stopped by dam structures, which capture and hold the water for water supply purposes. If not managed, the resulting lack of water would have catastrophic effects to stream ecology, particularly migratory fish, eels and other stream life.

There are five dams:

- Lower Huia
- Upper Huia
- Lower Nihotupu
- Upper Nihotupu
- Waitākere.

Short-term events, such as the 2019/2020 drought, appeared to affect ecological results at some sites downstream of the Waitākere reservoir. A NIWA review of reservoir water quality indicated that there was no clear evidence that extreme weather events in 2018 or the 2019/2020 drought had significantly affected long-term water quality.

5.56. Managed interventions

To ensure that the ecology of streams within the water supply catchments is maintained a number of managed interventions are undertaken as discussed below.

Catchment management

Protection of the water catchments and reservoirs during the early 1900s was a fundamental driver in allowing the regeneration of land to native forest that was later incorporated as part of the regional park (originally Auckland Centennial Memorial Park and established in 1940).

The water catchments within the regional park contain a number of bush walking tracks and the reservoirs are the destination of some walks. To protect the water in the reservoirs from contamination people and dogs are prohibited within a 50-meter buffer zone around the dams and contact with water within a reservoir is prohibited. Discretionary activities in the regional park that are within water catchment land are required to obtain Watercare's approval.

Compensation flow release (CFR)

CFR involves water being released from a dam at a rate that is sufficient to maintain downstream water flows and the ecological values of streams.

At the Upper Huia and Lower Nihotupu reservoirs this involves:

- water being released continuously at a set rate, regardless of operations or storage needs
- flow rates being changed seasonally to benefit the downstream environment
- the flow rate being constantly monitored.

Compensation flows are not released from the Lower Nihotupu and Lower Huia reservoirs as they are situated close to the sea and the downstream water courses experience tidal influences that enable the natural ecological function of the stream. Watercare varied its consent in 2019, and again in 2022 in response to the 2019/2020 drought. The compensation flow there is at least 11.6 Ls irrespective of system storage.

Stream health

Watercare monitors the impact of dams on the downstream environment as part of its Environmental Source Monitoring Programme.

There are three catchments which supply the heritage area reservoirs. These are:

- Huia stream
- Nihotupu stream
- Waitākere River.

These are each assessed through discrete and continuous sampling at pre-determined locations. One control site upstream of each reservoir is used as a benchmark and multiple locations downstream of the reservoir are measured against this control benchmark. The sites chosen for monitoring are considered the optimal sites to measure stream health. A range of factors are measured such as pH, water temperature, and nitrate levels.

Migratory fish trap and haul (fish/eel capture and release)

Native migratory fish and native freshwater eels make their way down streams to the sea to breed and adults return to freshwater streams. Dam structures in a stream prevent the natural migration in both directions (i.e. adult eels migrating to the sea or juveniles returning to their native water body). To ensure that the breeding cycles of native fish and migratory eels can continue, intervention is required.

Photo 0-15 Adult eels captured in nets at the Waitākere Dam fyke net

Photo 0-16 Waitākere Dam trap / fish path and trap

Photo 0-17 Waitākere Dam trap location / compensation flow release point

Photo 0-18 Adult migratory eels being released downstream of the Lower Huia Dam

To ensure the continued breeding cycles of native fish and eels Watercare have a special permit granted by the Ministry for Primary Industries to undertake a ‘trap and haul’ programme. Trapping is where a ramp with

a constant flow of water with a trap at the end captures migrating juvenile native fish (whitebait) and eel (elvers) as they try to make their way upstream from the sea. Trapping is undertaken from August to March with traps being checked at least weekly and the trapped fish and elvers being transported to a safe release point within the reservoir.

Hauling involves the capture of adult eels to enable their transport and release so they can make their way to the sea and to a location near Tonga where they breed. Adult eels are captured using non-baited fyke nets in strategic positions. Non-migrating eels are released back into the reservoir and migratory eels are released into a stream where they can make their way to the sea. Techniques for trapping and hauling fish species have evolved. This has resulted in increases in catch numbers over the five-year period.

Juvenile species are released into protected catchments, and reservoirs, where no fishing is permitted. This is particularly important for species such as the Longfin eel Anguilla dieffenbachii, which is classified as "At Risk: Declining" by the Department of Conservation.

The results of the trap and haul programme are provided to the Ministry for Primary Industries in August each year.

Macroinvertebrates

The presence and abundance of macroinvertebrates (the insects, bugs and worms living in a stream) is a common way to assess water quality as certain species are sensitive to various pollutants and environmental stressors.

Watercare undertake macroinvertebrate sampling to produce a Macroinvertebrate Community Index (MCI) and undertaken yearly monitoring to determine the ecological quality of streams. Monitoring results continue to show no significant downstream effects on water quality because of the dams. Watercare’s overall monitoring results compare well to council’s regional reference site at Cascade Stream. The water quality of the sites monitored is very high.

Environmental flushing flow programme

Heavy rainfall washes out the accumulated debris in streams and contributes to biodiversity by ‘flushing out’ dominating flora and fauna that can be ‘overtaking’ and inhibiting less competitive organisms.

As dams interrupt this natural flushing process Watercare implement an environmental flushing programme that is designed to simulate a natural flood event between December and March when the dams are not over-spilling water. This involves leaving discharge valves at 15 percent open for three hours to discharge water into streams that are not situated close to the sea.

Reservoir water quality

The management of water quality for water supply purposes is subject to Drinking Water Standards for New Zealand. A number of factors are measured to confirm the quality of the water stored in the reservoirs. These include pH, metals, total organic carbon, temperature, dissolved oxygen, taste and odour compounds, and E. coli and protozoa tests for other microorganisms. Nutrient concentrations in the reservoirs are measured for the purpose of determining their trophic, or nutrition, statuses.

Indicators such as pH, temperature, dissolved oxygen and microbial pathogen have remained relatively stable over the past five years. This indicates that the catchment protection measures (such as the 50-meter buffer zone and prohibitions on water contact) that are in place are effective in minimising the likelihood of water source contamination.

The nutrient levels of the five reservoirs are low to moderate. Run-off from native forests is the principal source of nutrients to the reservoirs, and this is reflected in lower trophic status in drier years. Trends over the last five-year monitoring period are consistent.

Cyanobacterial/algal growth has been observed in all of the reservoirs. These naturally occurring microorganisms can generate compounds that can cause the water to smell (earthy, musty, or like a fish tank) and in extreme cases (depending on the species and the conditions), can produce cyanotoxins which can be harmful to human health.

Photo 0-19 Waitākere Reservoir Free Discharge Valve in operation (WSL)

Appendix A: National significance, heritage features, and objectives of the Act

Section 7 National significance and heritage features of heritage area

1. The heritage area is of national significance and the heritage features described in subsection (2), individually or collectively, contribute to its significance.
2. The heritage features of the heritage area are —

a. its terrestrial and aquatic ecosystems of prominent indigenous character that —

(i) include large continuous areas of primary and regenerating lowland and coastal rainforest, wetland, and dune systems with intact ecological sequences:

(ii) have intrinsic value

(iii) provide a diversity of habitats for indigenous flora and fauna

(iv) collect, store, and produce high quality water

(v) provide opportunities for ecological restoration

(vi) are of cultural, scientific, or educational interest

(vii) have landscape qualities of regional and national significance

(viii) have natural scenic beauty.

b. the different classes of natural landforms and landscapes within the area that contrast and connect with each other, and which collectively give the area its distinctive character:

c. the coastal areas, which —

(i) have a natural and dynamic character

(ii) contribute to the area's vistas

(iii) differ significantly from each other:

d. the naturally functioning streams that rise in the eastern foothills and contribute positively to downstream urban character, stormwater management, and flood protection

e. the quietness and darkness of the Waitākere Ranges and the coastal parts of the area

f. the dramatic landform of the Ranges and foothills, which is the visual backdrop to metropolitan Auckland, forming its western skyline

g. the opportunities that the area provides for wilderness experiences, recreation, and relaxation in close proximity to metropolitan Auckland

h. the eastern foothills, which —

(i) act as a buffer between metropolitan Auckland and the forested ranges and coasts; and

(ii) provide a transition from metropolitan Auckland to the forested ranges and coast:

i. the subservience of the built environment to the area's natural and rural landscape, which is reflected in—

(i) the individual identity and character of the coastal villages and their distinctive scale, containment, intensity, and amenity; and

(ii) the distinctive harmony, pleasantness, and coherence of the low-density residential and urban areas that are located in regenerating (and increasingly dominant) forest settings; and

(iii) the rural character of the foothills to the east and north and their intricate pattern of farmland, orchards, vineyards, uncultivated areas, indigenous vegetation, and dispersed low-density settlement with few urban-scale activities:

j. the historical, traditional, and cultural relationships of people, communities, and tangata whenua with the area and their exercise of kaitiakitanga and stewardship:

k. the evidence of past human activities in the area, including those in relation to timber extraction, gum-digging, flax milling, mineral extraction, quarrying, extensive farming, and water impoundment and supply:

l. its distinctive local communities:

m. the Waitākere Ranges Regional Park and its importance as an accessible public place with significant natural, historical, cultural, and recreational resources:

n. the public water catchment and supply system, the operation, maintenance, and development of which serves the people of Auckland.

Section 8 Heritage area objectives

The objectives of establishing and maintaining the heritage area are –

a. to protect, restore, and enhance the area and its heritage features:

b. to ensure that impacts on the area as a whole are considered when decisions are made affecting any part of it

c. to adopt the following approach when considering decisions that threaten serious or irreversible damage to a heritage feature:

(i) carefully consider the risks and uncertainties associated with any particular course of action

(ii) take into account the best information available

(iii) endeavour to protect the heritage feature.

d. to recognise and avoid adverse potential, or adverse cumulative, effects of activities on the area's environment (including its amenity) or its heritage features

e. to recognise that, in protecting the heritage features, the area has little capacity to absorb further subdivision

f. to ensure that any subdivision or development in the area, of itself or in respect of its cumulative effect —

(i) is of an appropriate character, scale, and intensity

(ii) does not adversely affect the heritage features

(iii) does not contribute to urban sprawl.

g. to maintain the quality and diversity of landscapes in the area by —

(i) protecting landscapes of local, regional, or national significance

(ii) restoring and enhancing degraded landscapes

(iii) managing change within a landscape in an integrated way, including managing change in a rural landscape to retain a rural character.

h. to manage aquatic and terrestrial ecosystems in the area to protect and enhance indigenous habitat values, landscape values, and amenity values

i. to recognise that people live and work in the area in distinct communities, and to enable those people to provide for their social, economic, environmental, and cultural well-being

j. to provide for future uses of rural land in order to retain a rural character in the area

k. (k) to protect those features of the area that relate to its water catchment and supply functions

l. (l) to protect in perpetuity the natural and historic resources of the Waitākere Ranges Regional Park for their intrinsic worth and for the benefit, use, and enjoyment of the people and communities of the Auckland region and New Zealand.

Appendix B: Legislative and policy framework

The Act exists within a wide legislative and policy framework[13], which includes:

1. National policies and strategies which set the parameters in which council must operate
    - The Local Government Act 2002*
    - The Local Government (Auckland Council) Act 2009*
    - The Resource Management Act 1991 (RMA)*
    - The Waitākere Ranges Heritage Area Act 2008
    - Heritage New Zealand Pouhere Taonga Act, 2014
    - National Policy Statement on Urban Development*
    - National Policy Statement on Freshwater Management 2020 (NPS-FM)*
    - National Policy Direction for Pest Management, 2015*
    - New Zealand Coastal Policy Statement, 2010 (NZCPS)*
    - Statutory Acknowledgements*
    - Designations*
2. Regional strategies and associated budget decisions which establish prorities
    - The Auckland Unitary Plan (AUP)*
    - The Auckland Plan (30 years)
    - The 10-year budget / long-term plan
    - The Annual Budget
    - The Waitākere Ranges Local Board Plan (every three years)
3. Regional management plans which establish priority activities according to topic
    - The Regional Pest Management Plan 2020 to 2030 (the RPMP)
    - The Regional Parks Management Plan 2022
4. Local management plans which establish priority actitvites by topic or by place
    - A Local Parks Management Plan (in preparation)
    - Local Area Plans: (a) Henderson Valley/Opanuku, (b) Muddy Creeks (c) Oratia, (d) Te Henga (Bethells Beach)/Waitākere River Valley (e) Waiatarua*
    - Waitipu Service Outcomes Plan 2022*

[13] Discussed further if marked *

5. On the horizon
    - Resource management system reform, the National Policy Statement on Indigenous Biodiversity (NPS-IB), the Water Services Reform Programme

a. The Local Government Act (LGA)

The Local Government Act 2002 sets out the general framework and powers under which local authorities must operate. Council must promote the social, economic, environmental, and cultural wellbeing of its communities in the present, and into the future.

Additionally, the Local Government (Auckland Council) Act 2009 sets out the statutory responsibilities of the governing body and local boards. It also provides principles for the governing body to decide how to allocate non-regulatory activities to itself or local boards; and the governing body's ability to delegate some responsibilities to local boards.

Through this, the respective decision-making responsibilities and geographical boundaries which overlay the heritage area and the Auckland region, were established.

b. The Resource Management Act (RMA)

The RMA* is the means through which councils set rules and requirements to manage activities ranging from building houses, clearing vegetation, moving earth, or taking water from a stream.

Section 9 of the Act states that if a conflict arises between the Act and the RMA, then the RMA will take priority. The only exceptions relate to section 13 (1) (a) (ii) and section 15 (2) (b) of the Act which are additional matters to be considered in decisions regarding resource consents, and designations and heritage orders. The objectives of the Act which seek to establish and maintain the heritage area have to be taken into account in plan development, and in some applications for resource consents.

This includes, for example, protecting, restoring and enhancing the heritage features and the heritage area, and ensuring the impacts on the area as a whole are considered when decisions are made affecting any part of it.

Section 10 of the Act also requires council to give effect to the purpose and objectives of the Act when it prepares or reviews a Regional Policy Statement or Regional Plan which affects the heritage area.

When evaluating a proposed policy statement, or proposed plan change or variation that affects the heritage area, Council must also examine whether the statement, plan change, or variation is the most appropriate way to achieve the objectives having regard to the purpose of the Act. There are similar requirements under section 11 of the Act when changes are being put into effect for District Plans.

In addition, private plan change applications must explain how the application is consistent with the purpose of the heritage area and the objectives of the Act. Failure to do so may result in the application being rejected either wholly or in part (section 12).

c. Pouhere Taonga Act 2014

Any pre-1900 archaeological site is protected by the Heritage New Zealand Pouhere Taonga Act 2014. Heritage New Zealand maintains a list that identifies New Zealand's significant and valued historical and cultural heritage places.

d. National policy statements

NPS are prepared by the New Zealand Government and issued under sections 45-55 of the RMA. They provide national direction for matters of national significance for Council's to implement.

Councils have limited discretion in relation to a National Policy Statement and must implement them.

National Policy Statement on Urban Development (NPS-UD)

The NPS-UD aims to improve housing affordability. It directs councils to allow for more housing and businesses to be built with greater height and density in places close to jobs, community services and public transport, and in response to market demand. Council must implement the NPS-UD and amend its planning documents and has only limited flexibility to tailor it to Auckland's urban environment.

The heritage area has been identified as a 'qualifying matter', which means that that it justifies a reduction in the development permitted relative to that which would otherwise be permitted under the NPS-UD.

This includes land around the perimeter of the ranges, which in the AUP is identified as the 'Waitākere Ranges Foothills Zone'.

Freshwater Management

The NPS-FM came into effect on 3 September 2020 and replaced the National Policy Statement for Freshwater Management 2014 (amended 2017). It sets objectives and policies for freshwater management under the RMA and provides local authorities with direction on how they should manage freshwater.

This includes rivers, lakes, wetlands, groundwater, and coastal receiving environments, and relates to water quality, quantity, and ecosystems.

The National Policy Statement for Freshwater Management (NPSFM) requires council to identify Freshwater Management Units (FMUs), or specific areas to implement freshwater management approaches. The heritage area sits within the 'Kaipara Harbour' FMU. A plan change to make necessary changes to the AUP is due in 2024.

Pest Management

The NPD-PM sets out requirements for developing pest management plans and programmes under the Biosecurity Act 1993.

It sets out the framework for developing national and regional pest or pathway management plans and small-scale management programmes. council approved a new Regional Pest Management Plan in 2020.

New Zealand Coastal Policy Statement, 2010 (NZCPS)

The NZCPS guides councils in day-to-day management of the coastal environment. It is compulsory under the RMA. In the heritage area it is given effect through AUP provisions relating to the coastal environment.

e. The Auckland Unitary Plan (AUP)

The AUP guides the use of Auckland's natural and physical resources, including land development, by determining what can be built and where, how to create a higher quality and more compact Auckland, how to provide for rural activities and how to maintain the marine environment.

The Act relies on the Auckland Unitary Plan (AUP) to determine whether a resource consent is required.

It uses a variety of methods to manage effects on features and land use, which include the 'zones', 'controls' and 'overlays' mentioned at times in this report. These planning tools guide land-use in a particular area.

An area with a special overlay usually has more restrictive controls over what can be developed in that area that the larger Auckland 'zone' with which it is identified. Land use in the heritage area is controlled by some unique zones, controls, and overlays, including the Waitākere Ranges Conservation Zone, the Waitākere Ranges Foothills Zone. Others apply across the region, including the heritage area.

f. Statutory acknowledgements

Under the Resource Management Act 1991, Deeds of Settlement and Settlement Legislation achieved with each iwi, require regional, city and district councils to include statutory acknowledgments in relevant district and regional plans and policy statements, and to have regard to them in resource consent decision making.

Statutory Acknowledgements are formal acknowledgements by the Crown which recognise the particular cultural, spiritual, historical and traditional association an iwi has with a site of significance or resource identified as a statutory area.

Te Kawerau a Maki has statutory acknowledgements over Whatipū Scientific Reserve, Waitākere River, Swanson Conservation Area, Henderson Valley Scenic Reserve, Taumaihi (part of Te Henga Recreational Reserve), Goldies Bush Scenic Reserve, Motutara Settlement Scenic Reserve, Motutara Domain (part Muriwai Beach Domain Recreation Reserve), Te Wai-o-Pareira (Henderson Creek), and the coastal area of its rohe. Public access is vested in the sites except the future urupâ site at Te Henga and the Wai Whauwhaupaku site at Swanson. These are both 1-ha sites that adjoin larger conservation land sites.

g. Designations

Designations are specified areas of land set aside for network utilities or large public works. In the heritage area designations effectively apply to the regional park and a variety of land within the regional park managed for water supply purposes by Watercare.

These are identified in the Act and appear in Schedule K of the AUP, which means that proposed works can be carried out at any time. The authority responsible does not have to comply with Unitary Plan rules, but they do need to notify council by submitting an outline plan of works.

h. Management plans

The RPMP sets priorities and goals for managing animal and plant pests in Auckland. It also sets out rules that must be complied with under the Biosecurity Act. The Regional Parks Management Plan * sets the vision and direction for managing the regional park network (including Waitākere Ranges Regional Park) for 10 years. The Waitipu Service Outcome Plan 2022 identifies appropriate recreational activities, facilities, access routes and connections for future development of a former quarry

Works Cited

ATEED. (n.d.). *Waitakere Ranges Lcoal Board Economic Briefing 2022.*

Auckland Council. (2019). Waitākere Local Board – Neighbourhood Parks .

Auckland Council. (2020). *Regional Pest Management Plan.* Retrieved 2022, from www.aucklandcouncil.govt.nz.

Auckland Council. (2022, September 2022). *Longstanding Karekare surf lifesaving club celebrates their brand new building.* Retrieved from https://ourauckland.aucklandcouncil.govt.nz.

Auckland Council. (2022). *Regional Parks Management Plan.* Retrieved 2022, from www.aucklandcouncil.govt.nz.

Auckland Council. (2022). *What we do to help the environment.* Retrieved 2023, from www.aucklandcouncil.govt.nz: www.aucklandcouncil.govt.nz/environment/

Auckland Council. (2023, 02 20). *Our Auckland.* Retrieved from https://ourauckland.aucklandcouncil.govt.nz/: Auckland Transport says the scale of damage to Auckland's roads from ex-Cyclone Gabrielle is unprecedented, with 75 roads fully closed and 60 roads partially closed.

Auckland Council et al. (2022, June 29). *2021 Waitākere Ranges kauri population health monitoring survey.* Froud, K., Y.C. Chew, J. Kean, J. Meiforth, S. Killick, E. Ashby, R. Taua-Gordon, A. Jamieson, L. Tolich,. Auckland: Auckland Council. Retrieved 2022, from www.knowledgeauckland.org.nz

Auckland Transport. (2021). Regional Land Transport Plan 2021 - 2031. Retrieved from www.at.govt.n.

Bethells Beach Surf Lifesaving Patrol. (2022). *https://www.bethellsbeach.org.nz.* Retrieved from https://www.bethellsbeach.org.nz: https://www.bethellsbeach.org.nz/club-redevelopment

Council, Auckland. (2018). *The Auckland Plan 2050.* Retrieved 2022, from www.aucklandcouncil.govt.nz.

Council, Auckland. (2019). *Track Reopening Work Programme Waitākere Ranges Regional Park 2019-2024.* Auckland: Auckland Council. Retrieved from https://ourauckland.aucklandcouncil.govt.nz/media/edipjp2i/wrrp-track-reopening-work-programme-2019-2024.pdf

Kensington, P. (2023). *Landscape Monitoring Report informing State of the Waitākere Ranges Heritage Area 2023.* Auckland: KPLC Planning Consultants.

LEARNZ. (2022). *LEARNZ.* Retrieved from www.learnz.org.nz: https://www.learnz.org.nz/kauri182/bg-standard-f/agathis-australis---kauri#:~:text=%20Kauri%20naturally%20grow%20in%20forests%20throughout%20northern,epiphytes.%20Image%3A%20LEARNZ.%20Kauri%20are%20a%20keystone%20species.

NIWA. (2020, May 22). *niwa.co.nz.* Retrieved from National Institute of Water and Atmospheric, Research: https://niwa.co.nz/news/aucklands-drought-most-extreme-in-modern-times

NZ Herald. (2019, August 15). *www.nzherald.co.nz*. Retrieved from NZ Herald: https://www.nzherald.co.nz/nz/record-rat-numbers-in-waitakere-ranges-raise-fears-for-kokako/HOMGCVYGABS3MVUMWQW2NIZGOE/

Piha Surf Lifesaving Club. (2023). *The Trust: Piha Surf Lifesaving Club Inc*. Retrieved from https://www.pihaslsc.com/wp-content/uploads/Piha-Bequest-2023.pdf.

Stuff. (2021, January 20). *Auckland's Piha Beach divided over brutalist design for new lifeguard watchtower*. Retrieved 2022, from www.stuff.co.nz: www.stuff.co.nz

Te Kawerau ā Maki. (2017, November 30). *Waitākere Rahui*. Retrieved 2022, from www.tekawerau.iwi.nz.

The Spinoff. (2018, February 2). *Why aren't people listening? Māori scientists on why rahui are important*. Retrieved from www.thespinoff.co.nz.

Photo 0-20 View of Titirangi. Looking past Lopdell House to 'The Rise'.