Kaipara, Place, People and Key Trends

Kaipara District Environmental Scan 2023

Kaipara te Oranganui
KAIPARA DISTRICT
Two Oceans Two Harbours

Contents

1 Executive Summary 1

2 Introduction 1

3 Kaipara – Two Oceans, Two Harbours 2

3.1 Land around the water – our maunga, awa and moana 2

3.2 Geology – bones of the landscape 7

3.3 Soil – foundation of life 9

3.4 Weather and climate 12

3.5 Climate change 17

3.6 Distribution of Settlement 21

4 Demography – Our people, Our communities 21

4.1 Population nationally 22

4.2 Population regionally 24

4.3 Kaipara's Population 25

4.4 Wellbeing 38

5 Economy – Our Livelihoods 46

5.1 Global commentary 46

5.2 New Zealand Commentary 49

5.3 Northland's economy 54

5.4 Kaipara's economy 54

5.5 Kaipara's recent economic performance 58

6 Infrastructure 64

6.1 Transport 64

6.2 Electricity 74

6.3 Telecommunications 80

6.4 Water 82

6.5 Social Infrastructure 96

7 References 104

1 Executive Summary

This Environmental Scan was compiled in February 2023. The purpose of this document is to provide a fact-based overview of the environment in which Kaipara District Council operates. This includes information on the physical environment, demographic trends, economy and state of the district's infrastructure. While the information presented in this document is intended to inform decision-making, this document does not make recommendations.

This report finds Kaipara is a geographically extensive district centred around the northern reaches of the Kaipara Harbour (the largest harbour in the southern hemisphere). Kaipara Harbour is a significant nursery ground for key fishery species but has and is experiencing significant degradation through sedimentation. Kaipara has some extensive areas of highly versatile soils, though most of the district is comprised of more marginal hill country. The main geological hazards affecting the district are land instability (slumping and sliding) and consolidation settlement in soft ground under the load of new buildings. Kaipara, together with the wider Northland region, is considered among the most tectonically stable areas in the country (meaning there is a low risk of damaging earthquakes).

Kaipara has a mild, humid subtropical climate. Rainfall is typically plentiful all year round with sporadic very heavy falls however, droughts and floods are not uncommon. Climate change is anticipated to make Kaipara drier with droughts more common. Short duration, high intensity rainfall events are also projected to become more common. Sea level rise, the result of a warming climate, will have significant ramifications for the Kaipara District due to its proximity to the ocean, extensive tidal river network, and large expanses of low-lying land.

Kaipara had an estimated resident population of 27,200 persons in 2022. Kaipara District's population has been growing strongly, particularly over the past ten years. This strong growth has primarily been focused around Mangawhai. Initially, Mangawhai's growth was driven by people building holiday homes or retiring with most migrants coming from Auckland. More recently, roading improvements and the advance of employment north into Auckland's North Shore have seen more young families moving to Mangawhai with many now able to work from home part of the week, commuting to work on the North Shore only some days a week. This has seen the number of holiday homes in Mangawhai reduce, with more and more becoming permanently occupied. By contrast, other areas of Kaipara have seen more modest growth driven primarily by local employment opportunities. Dargaville and its surrounds have seen sustained population growth in response to growing local employment. The more rural parts of Kaipara have seen stable or slightly declining populations as advances in technology have seen a need for fewer workers in the primary sector, particularly dairy. These trends look set to continue with Kaipara continuing to experience strong growth over the short term (3% in the year to June 2023), slowing to an average of 1.5% per annum over the period 2022 to 2030 and easing further thereafter, though remaining positive for the remainder of the projection period to 2054. This slowdown in population growth reflects a slowing in population growth nationally in the face of an aging population. In all, Kaipara is projected to grow steadily, reaching a population of 35,700 in 2054. All areas of the district are projected to have more people by 2054 than in 2022, however most growth will continue to be centred on Mangawhai due to its proximity to Auckland and coastal lifestyle offerings.

Most areas of Kaipara have medium to low wellbeing scores according to the New Zealand Index of Multiple Deprivation. Deprivation was generally worse in urban centres than in the rural areas between them with indicators for access to services scoring particularly poorly across all areas.

Kaipara's economy is founded on its primary industries, particularly the dairy sector, supported by a strong manufacturing sector. Dairy farming was the largest segment of the agriculture industry, making up 12% of the district's total economy, with sheep, beef cattle, and grain farming comprising a further 4.5% of Kaipara's GDP. Horticulture and market gardening's contribution is presently comparatively small at $20.6m or 2% of GDP in 2022. However, this is anticipated to increase as the Kaipara Water scheme is improving Kaipara District's water storage and use facilities, with the construction of the Te Waihekeora reservoir anticipated to support an additional 1,100ha of horticultural development.

Manufacturing was the second largest industry in the year ended March 2021, comprising nearly 12% of Kaipara District's economy. Meat and meat product manufacturing alone made up 2.6%, and wood product manufacturing made up 1.8% of the district's GDP. Fonterra's Maungaturoto dairy processing plant in Kaipara, is estimated to contribute $13m to the district's economy and support 127 jobs directly.

In all, the agriculture, forestry, and fishing industry employed 24% of the district's workforce in the year ended March 2021. Construction and manufacturing also employed substantial segments of the workforce, employing 13% and 12% of total employed persons respectively. Kaipara's unemployment rate remains near a decade-low of 2.3%.

Kaipara's infrastructure is improving but further improvement is still needed. Northland (including Kaipara) has poor connectivity (both internally and to the rest of New Zealand) via land transport (road and rail). Despite planned improvements to the state highway network north of Auckland City, Northland's road connections will continue to have significant areas of low resilience. Of Kaipara's local roads (roads other than state highways) 71% or 1,120kms are unsealed and 29% or 457kms are sealed. These land transport challenges impact on access to international markets for Kaipara's goods.

Northland's rail system has been maintained in a state of 'managed decline' for some years but is now receiving a major upgrade. This includes reopening the line to the Far North. Services on the Dargaville branch will remain suspended though the line remains in place for future use. The key reason for rail's failings in Northland is the network has no connection to Northland's port. The Government is purchasing the land needed for a rail link to Northport and has completed Geotech assessments however there is as yet no commitment to construct the line.

Northland's port at Marsden Point (Northport) is a natural deep-water port with flexible facilities capable of handling large multi-purpose vessels. The port has ample vacant industrial zoned land to facilitate its expansion. Northport is currently being expanded and aims to progressively increase its capacity to emerge as one of three strategic North Island ports, together with Auckland and Tauranga. Such a development could be beneficial for the Kaipara district, both in terms of improving its connectivity to international and domestic markets and through increasing employment.

Electricity supply in Kaipara is improving with projects to improve distribution and resilience of the Northpower network. In particular, Northpower are working to meet the demands of Mangawhai's growth by constructing an additional 33kV cable to bolster supply to the town. Local electricity

generation is also improving with additional local generation having recently been constructed and more having been consented.

Kaipara's telecommunications infrastructure is undergoing considerable improvement with increasing mobile phone and broadband coverage and expansion of the ultra-fast broadband fibre network. In addition, the Hawaiki submarine cable with its Mangawhai landing station makes Mangawhai and Maungaturoto well positioned to attract future digital industries.

Potable water supplies and reticulated wastewater systems are provided to a limited number of Kaipara communities and there is pressure to connect more households and communities. In particular, Mangawhai, the district's largest centre, is currently almost entirely dependent on private rainwater tanks for its water supply. Mangawhai's wastewater scheme is relatively new and can have its capacity progressively increased to cope with Mangawhai's growth into the future. However, an additional disposal site for the treated wastewater will be required as wastewater volumes grow. Across the remainder of the district's water, wastewater and stormwater networks, ageing infrastructure will create the need for increased renewals over the next five to ten years.

Kaipara district has the second largest area in New Zealand protected by land drainage schemes after the Hauraki Plains. This includes the Dargaville central business district and Ruawai township as well as vast areas of productive farmland with highly versatile soils in the Ruawai, Aratapu, Hoanga and Parore areas. Much of this area is presently just above or just below mean sea level and there are concerns over the ability of these rural communities to fund the necessary upgrades to prepare these drainage systems for the effects of climate change. Kaipara District Council is committed to working with its communities to address this issue.

Kaipara is generally undersupplied with social infrastructure, largely due to its small population base limiting its ability to support a full range of services. Health care services are particularly limited, as are opportunities for tertiary education and there is no secondary school in Mangawhai.

2 Introduction

The Environmental Scan provides an overview of the Kaipara district; the land, its people, their economy and the infrastructure on which it relies. Its purpose is to both identify the environment as it exists at present and to identify emerging trends and potential drivers for change.

The Environmental Scan is structured around the New Zealand Treasury's four capitals; human, social, natural and financial/physical, and the four wellbeings that define the purpose of local government; social, economic, environmental, and cultural (section 10 of the Local Government Act 2002). In the Environmental Scan these are interpreted as the following sections:

3. Kaipara – two oceans, two harbours (natural, environmental);
4. Demography – the people and communities of the Kaipara (human, social, cultural);
5. Economy – our livelihoods (economic); and
6. Infrastructure (financial/physical).

The Environmental Scan pulls together information from a variety of sources including Statistics New Zealand and Infometrics as well as an analysis of Council's internal records (e.g. resource consent data). While the information and analysis presented in this report is intended to support planning and decision-making functions of Council, it is not the role of this document to make recommendations or advise actions.

The Environmental Scan is a key document informing the development of Kaipara District Council's Long Term Plan and 30 Year Infrastructure Strategy. It also serves as a reference document for Council when developing other plans and strategies and is useful to inform elected members of the environment in which the Council operates. The Environmental Scan is also made available to the public on Council's website, both for their information and to provide an easy source of data that can be quoted in support of applications and submissions e.g. community groups and clubs applying for funding may want to support their application by explaining how their local population has grown.

3 Kaipara – Two Oceans, Two Harbours

Mai Waipoua ki Pouto i Te Tai Hauāuru

Whakawhiti atu i te raki o te moana o Kaipara ki Oruawharo

Mai Oruawharo ki Mangawhai ki te rāwhiti

Mai Mangawhai ki Tangiteroria, whakahoki atu ki Waipoua

When introducing one's self or giving a pepeha, one often begins by describing the maunga (mountains), awa (rivers) and moana (harbours) that collectively comprise the land from which one comes. These features are the landmarks which define our place.

Kaipara's geology, topography, soils and climate offer both unique opportunities and constraints. These affect where settlements and infrastructure can be built and what crops can be grown.

3.1 Land around the water – our maunga, awa and moana

Kaipara is one of the few districts that stretches from the west coast to the east coast; from Ripiro Beach on the Tasman Sea to Mangawhai Heads on the Pacific Ocean. The district includes two harbours, the Kaipara opening to the Tasman Sea and the Mangawhai Harbour opening to the Pacific Ocean.

The roughly triangular district stretches from a thinning of the North Auckland Peninsula south of Kaiwaka and Mangawhai in the southeast, around the foothills of the Brynderwyn Ranges and through the Northland hinterland to reach the Waipoua Forest in the northwest. From there the district extends down the west coast to the Kaipara Harbour entrance at Pouto. The district is bisected by the Northern Wairoa River and its tributaries, which flow into the northern end of the Kaipara Harbour. A map of the district is shown in Figure 3.1.1.

Figure 3.1.1: Map of the Kaipara district

Kaipara Maunga

In the northern part of the district, the tupuna mountain of Maunganui holds a commanding presence at the head of Ripiro Beach. This small remnant of a once massive volcano still measures 459m above sea level and is a pillar for the Te Roroa people.

The highest peak in Kaipara and second highest in Northland is the tupuna mountain of Tutamoe at 770m above sea level. Tutamoe presides over much of the northern Kaipara District. Both Northland's east and west coasts can be seen from the summit which can be accessed via a walking track from Tararua Road.

The two rocky peaks of Maunga Tokatoka and Maungaraho preside over the southwestern Northern Wairoa area. These mountains are the exposed roots of former volcanoes and today form prominent local landmarks.

Tangihua, at 627m above sea level is the highest peak in the Tangihua Range. This dividing range between the east and west forms a prominent boundary between the Kaipara and Whangārei districts.

Pukekaroro together with nearby Pukepohatu/Baldrock are the prominent peaks presiding over the southeast of the district. Pukekaroro is the Papa Maunga for Te Uri o Hau. Both Baldrock and Pukekaroro are of volcanic origin. Baldrock is composed of dacite lava, while Pukekaroro is mainly tuffs with thin lava flows.

Waipoua Forest

The Waipoua Forest straddles Kaipara's northern boundary. The Waipoua and adjoining forests of Mataraua and Waima, collectively comprise the largest remaining tract of the native forest that once covered most of Northland. These forests are managed as part of the Conservation Estate and are home to large stands of kauri trees, including Tane Mahuta, the largest known kauri tree alive today.

Tane Mahuta, the Waipoua Forest and nearby Trounson Kauri Park are among Northland's major tourist attractions and contribute greatly to attracting tourists to the region.

However, these forests are under threat from kauri dieback (*Phytophthora agathidicida*), a plant pathogen that can kill kauri of all ages (Northern Advocate, 2019). Kauri dieback lives in the soil and infects kauri roots. There is no cure for kauri dieback, and the disease kills most if not all the kauri it infects (Northern Advocate, 2019).

Kauri dieback is spread by soil disturbance (e.g. under boots, machinery or even by animals such as pigs), just a pinhead of soil can spread it (Northern Advocate, 2019). The Department of Conservation (DOC) and Te Roroa, as kaitiaki over Waipoua Forest, are working to protect Tane Mahuta from this disease.

Ripiro Beach and the Pouto Peninsula

Most of Kaipara district's west coast is comprised of consolidated and active sand dunes running from Maunganui Bluff in the north to Pouto Point in the south. This long peninsula's eastern edge is bounded by the Kaihu Valley in the north and the Northern Wairoa River and Kaipara Harbour in the south. The peninsula's western edge is bounded by the Tasman Sea and lined by the extensive Ripiro Beach.

Ripiro Beach is a long sandy beach running almost the whole length of the Kaipara district's west coast. The beach serves as a road and is drivable over the whole of its 107km length. The beach is lined by sandy bluffs along its northern extent and active sand dunes along its southern extent. It also adjoins an extensive area of shifting sand at its southern end near Pouto.

This natural wilderness area is popular for surfing, fishing, off-road driving, motorcross riding and forms part of the route of the Kaipara Missing Link Cycle Trail (one of the New Zealand Cycle Trail's Heartland Rides). These activities can damage these fragile sand dune environments if not undertaken responsibly.

There are also concerns about coastal erosion in some areas along the beach, particularly at Baylys.

Kai Iwi Lakes

The Pouto Peninsula is dotted with freshwater dune lakes along the whole of its length. The best known of these are the Kai Iwi Lakes, three of which, Kai Iwi, Taharoa and Waikare are located within the Taharoa Domain; a large recreation reserve administered by the Kaipara District Council in partnership with Te Roroa and Te Kuihi as Mana Whenua.

The Kai Iwi Lakes have exceptionally high water quality and are of high ecological significance. The Taharoa Domain is popular for camping, hiking, swimming, water skiing, kayaking, trout fishing and sailing. The Domain incorporates two campgrounds which are managed by Kaipara District Council and its popularity appears to be growing with both campers and day visitors.

Northern Wairoa River

The Northern Wairoa River and its tributaries are a dominant feature of the northern and western Kaipara district. The Northern Wairoa River is the longest and largest river in Northland draining a catchment of 3,650km^2 which stretches across all three Northland districts. The river flows into the Kaipara Harbour and is tidal for about 100km of its lower length (Northland Regional Council [NRC], 2020). Strong tidal currents and the mixing of fresh and saltwater keep sediment suspended and result in the river having a muddy brown appearance for much of its lower reach.

The lower reaches of the Northern Wairoa River are surrounded by extensive flood plains, including the Ruawai, Hoanga and Kaihu Valley areas. These areas are protected by land drainage schemes and harbour some of the district's most fertile soils. Consequently, this area is responsible for production of almost the whole of New Zealand's kumara crop.

Flooding remains a concern in much of the Northern Wairoa catchment, especially as the effects of climate change begin to be realised.

Kaipara Harbour

The Kaipara Harbour is the largest enclosed harbour in the Southern Hemisphere and New Zealand's largest estuarine ecosystem (Kaipara Moana Remediation, 2023). The Kaipara Harbour is the receiving environment of a massive 640,000ha catchment that extends across the Auckland and Northland regions and includes almost the whole of the Kaipara district (see figure 3.1.2) (Kaipara Moana Remediation, 2023).

Figure 3.1.2: Extent of the Kaipara Harbour catchment (Kaipara Moana Remediation, 2023)

Evidence exists that the Kaipara Harbour plays a significant fisheries role in the wider west coast North Island ecosystem as a nursery ground for key commercial and recreational species including snapper, grey mullet, flounder, white shark, hammerhead shark and rig (Kaipara Moana Remediation, 2023).

The Kaipara Harbour has suffered a prolonged period of degradation, primarily due to the release of sediment from the deforestation of its catchment (Kaipara Moana Remediation, 2023). This degradation continues into the present with inputs of sediment from streambank and hill country erosion continuing to be the primary pollutant (Kaipara Moana Remediation, 2023).

To address the ongoing environmental degradation of the Kaipara Harbour, the Kaipara Moana Remediation programme (KMR) has been established to work with landowners on projects to reduce sediment and nutrients from entering the harbour (Kaipara Moana Remediation, 2023).

KMR has an ambitious goal to halve sediment flows into the Kaipara Moana through a 10-year programme of action. $200m has been budgeted for the first six years of the Kaipara Moana Remediation programme. Through this programme, KMR is able to offer assistance to landowners and community groups working to fence and plant waterways, or reduce erosion (Kaipara Moana Remediation, 2023).

Mangawhai Harbour

The Mangawhai Harbour opens to the Pacific Ocean on the Kaipara district's east coast and is protected from the open ocean by a large sand spit. The sand spit is the result of sand being pushed north across the harbour mouth by wave action (known as longshore drift). The longshore drift pushes the harbour entrance further north until it meets the hard rock of Mangawhai Heads and can go no further. The harbour entrance is kept open by the force of tidal flows in and out of the harbour as well as flows of fresh water from the harbour's catchment flowing into the sea.

The sand spit is a dynamic landform and can change in response to wave action, ocean and tidal currents. In the years leading up to 1991, a series of large storms (including Cyclone Bola in 1987) caused the Mangawhai Harbour entrance to block up with sand and a new entrance to form further down the sand spit. This new entrance would have gradually been forced northward by the long shore drift current to resume its usual position, however in the meantime it was proving hazardous for navigation. In response, a large number of committed locals gathered together, dug out the usual harbour entrance and stopped up the new entrance.

Following this event, the Mangawhai Harbour Restoration Society was formed to maintain the Mangawhai Harbour into the future. The Society's work has included establishing a nursery to grow native spinifex and pingao plants to stabilise the Mangawhai sand spit, dredging of the Mangawhai Harbour and removing mangroves. The Mangawhai Harbour Restoration Society continue to operate a dredge in the Mangawhai Harbour.

The Mangawhai Harbour is also a key habitat and foraging ground for the New Zealand fairy tern/tara iti which nests on the Mangawhai sand spit. With a population of around 45 individuals that includes approximately 12 breeding pairs, the New Zealand fairy tern is probably New Zealand's most endangered indigenous breeding bird (Department of Conservation, 2019).

3.2 Geology – bones of the landscape

Kaipara's geology is important to understand, because it speaks to the geotechnical properties, strength characteristics, and engineering properties of the rocks and soils (ENGEO, 2019). It is the foundation upon which our district is built.

The Kaipara district is characterised by rolling hills of some of the most diverse and complex geology in all of New Zealand (ENGEO, 2019). The basement rock (commonly called bedrock) of the Kaipara District is typically comprised of thin-bedded, alternating fine grained sandstone and argillite (claystone/mudstone) with massive beds of laminated argillite and highly fractured Greywacke sandstone. These rocks are typically strong to very strong and closely fractured. These basement rocks are the oldest known rocks in the Kaipara district and most often are buried deep beneath younger rocks and soil. The whole of Northland's geology has been tilted down to the west by tectonic

forces. This means these older rocks are typically only exposed along the east coast, northeast of Mangawhai Heads, where they form sheer craggy cliffs in coastal exposures, and spiny mountainous terrain inland (ENGEO, 2019). This tilting is also the reason why most rivers in Northland flow to the west instead of the east.

These bedrocks are overlain by rocks of the Northland Allochthon (ENGEO, 2019). The Northland Allochthon is the result of a rare geological phenomenon in which the down tilting of the bedrocks created a vast under sea basin into which younger sedimentary rocks gradually slid to lie over the top of the older bedrocks. This occurred at a time when Northland was covered by the sea. The Northland Allochthon is a series of thrust sheets and broken up rock containing a range of sedimentary and igneous rocks. Stronger rocks of the Allochthon include the Mahurangi Limestone and Punakitere Sandstone and are most common in the east of the district (ENGEO, 2019).

Due to the nature of their past movement, the Northland Allochthon thrust sheets (or nappes) are faulted, folded and sheared resulting in a complex structure (ENGEO, 2019). They also tend to be deeply weathered. This results in rolling hills that are generally soft and vulnerable to slipping and instability. These hills are bisected by broad valleys and incised gullies, which are filled with young alluvial sediment eroded from the surrounding landscape and deposited by rivers. In particular, extensive river flats have developed around the lower reaches of the Northern Wairoa River (ENGEO, 2019).

Kaipara's complex geology is also bisected by past volcanic activity and plutonic rocks (plutonic rocks form when magma rises through the Earth's crust but hardens inside the earth rather than emerging at the surface as a volcano) (ENGEO, 2019). Remnants of these old volcanos and plutonic rocks exist throughout the district, including in the Kaihu, Waipoua, Tutamoe, Kaiwaka and Mangawhai areas. Between Tokatoka and Dargaville about 140 small basaltic, andesitic and dacitic intrusions extend through Northland Allochthon rocks. Maungaraho is a prominent example of these (ENGEO, 2019).

The most resent geological feature of the Kaipara District is the Pleistocene to Holocene-aged coastal sand deposits which comprise almost the whole of Kaipara's west coast area as well as much of the Mangawhai area (ENGEO, 2019). Holocene-aged fixed dunes comprise loose and poorly consolidated sands with inter-dune lake and swamp deposits of minor sand, mud and peat. These deposits are generally stabilised by vegetation growth. Pleistocene dune deposits typically comprise weakly cemented and uncemented sands with preserved interdune deposits, where buried organic material has formed lignite. These lignite layers are notably observed at Baylys Beach though they are present along the whole of the Kaipara's west coast. The presence of titanomagnetite (an iron rich mineral) in the west coast sands makes these consolidated sand dunes susceptible to the development of iron pans. Mobile (or active) dune deposits comprise constantly moving sand dunes with sparse vegetation, particularly in the Pouto area (ENGEO, 2019).

There are no known active faults in the Kaipara District, and the Northland Volcanic Field is generally considered to be dormant (ENGEO, 2019). This means Northland and Kaipara have a low risk of volcanism and damaging earthquakes and is considered one of the most tectonically stable regions in the country.

The main geological hazards to consider in the Kaipara District are consolidation settlement in soft ground under the load of new buildings, land instability near steep land or Northland Allochthon rock units and liquefaction in young alluvial sand deposits (ENGEO, 2019). Of these, land slumping and sliding is particularly prevalent given Northland's susceptibility to high intensity rainfall events, the broken up nature of the Northland Allochthon rocks and the warm wet subtropical climate which accelerates the weathering of rock minerals into clays. All of these geological hazards can be adequately managed, however early recognition is key to understanding and developing an effective and efficient solution (ENGEO, 2019).

3.3 Soil – foundation of life

With such complex and varied geology, it naturally follows that the Kaipara district has a diverse range of soil types and that soil type is highly localised. Kaipara's soils include sandy soils derived from weathered sand dunes, hill country soils derived from strongly weathered sedimentary or volcanic rocks, and alluvial and peat soils deposited on flood plains and river terraces. A significant limiting factor of Kaipara's soils is drainage, with many of the most versatile soils having imperfect drainage, a problem not uncommon in Northland.

The most versatile soils in Kaipara are found on the flood plains around the Northern Wairoa River (Griffiths et al., 2003). These are predominantly clays and peaty clays dominated by Whakapara soils from alluvium derived from sedimentary rocks. While these can be poorly drained, they are well supplied with plant nutrients and are widely used for kumara growing. Better drained alluvial terraces and hill country flood plains also occur but have a narrow distribution and are generally not used for cropping (Griffiths et al., 2003).

In addition, about 51km^2 of Parore peaty sandy loam occurs in small valleys in the sand country (Griffiths et al., 2003). While these soils are generally very poorly drained with shallow rooting depth, they may provide good growing environments for a limited range of crops. Due to these soils being imperfectly drained and susceptible to flooding, careful site assessments are required when considering moisture-sensitive crops (Griffiths et al., 2003).

Most of the western Kaipara is comprised of sand country soils which occur all the way up the west coast, and for a significant distance inland; becoming older and more weathered away from the coast (Griffiths et al., 2003). The sequence begins seaward with the very weakly developed and recent Pinaki series. The Red Hill series occurs inland from these and covers an area of 90km^2. The Red Hill series has just enough development to provide one of the better opportunities for land-use conversion to higher value crops (especially in some protected inter-dune basins), although subsoil acidity would need checking as it can be low. Tangitiki sandy soils are slightly older and show high variability over short distances, with some sites strongly podzolised ('egg cup podzols' where large kauri trees once grew). Podzols named Te Kopuru occur furthest inland on the oldest dunes. These are uniformly poor in many attributes affecting the growth of deeper rooting and moisture-sensitive crops (Griffiths et al., 2003). All these sandy soils benefit from being free draining however this drainage can be impeded by the regular occurrence of iron pans. These free draining qualities can also make these soils more drought prone. While these sandy soils are best known for dominating Kaipara's west coast, similar

sandy soils are also to be found around Mangawhai, with some rated as highly versatile (Harmsworth, 1996).

Kaipara also has some areas of volcanic soil where rolling slopes have developed on basalt volcanic geology and where terraces have formed from redeposited volcanic material (Griffiths et al., 2003; Harmsworth, 1996). These primarily occur in the Donnellys Crossing to Kaihu area, Tangihua Range and Tinopai Peninsula. These soils are usually brown granular loams and clays, complexed with or associated with yellow-brown earths or brown or red loams complexed with or associated with yellow-brown earths. For example, brown granular clays and loams and yellow-brown earths often form complex associations or soil complexes on a range of volcanic and sedimentary rock types around the periphery of the Tangihua Range. The volcanic soils are usually spatially dominant in these associations and complexes (Harmsworth, 1996). These volcanic soils are naturally well supplied with plant nutrients, have good structure and offer good opportunities for crop production. While upper subsoils can be firm and plant rooting slightly restricted, the soils do not become firmer with increasing depth (Griffiths et al., 2003).

The majority of soils across the rest of the district are hill country soils which have weathered from a variety of sedimentary rock types (Harmsworth, 1996). These are to be found on the rolling hill country which typifies most of central Kaipara. The main parent materials are sandstones, mudstones, argillites (shale), and limestones, and in some areas deeply weathered volcanic rock may also be complexed or associated with the sedimentary rock types. Because of the complex and variable spatial pattern of rock types from which these soils have formed, soil type can vary considerably over short distances. Furthermore, many of the soils form complexes or spatially complex associations, having formed from a mix of parent rock types. Adding to the complexity, these soils range from weakly to strongly leached and weakly podzolised to podzolised (Harmsworth, 1996).

Yellow-brown earths are recorded extensively across this hill country landscape, including the Pūhoi, Waiotira, Omu, Omanaia, Purua, and Omaiko suites) (Harmsworth, 1996). Rendzinas and associated soils are also common, typically forming on limestone, calcareous argillite, or calcareous mudstone. The rendzinas and associated soil group comprises three main soil suites; being Arapohue, Maungaturoto, and Konoti (Harmsworth, 1996).

Some of these sedimentary soils can be valuable for agriculture where they occur on easy slopes (Griffiths et al., 2003). In particular, soils in the area east of the Kaihu River/Waihue Road area are typically Omu, Aponga and Mata series soils with potential plant rooting depth generally about 45-60cm (Griffiths et al., 2003). Soils in the hills east of Dargaville and Ruawai are typically Arapohue and Rockvale series soils formed from argillaceous limestone, and while both have heavy clayey subsoils, potential plant rooting depth is still about 60–90cm in Rockvale soils but is shallow (25-45cm) in Arapohue soils. The Waiotira soils are another of the better hill country soils being moderately well drained and having few root restrictions above about 60cm depth. However, slope steepness on Waiotira soils generally precludes arable land uses and subsoil pH may need to be checked (Griffiths et al., 2003).

Figure 3.3.1 maps Kaipara's soils based on their New Zealand Land Resource Inventory (NZLRI) Land Use Capability (LUC) score. The LUC considers both soil type and slope to identify how versatile an area of land is. Class 1 land is land with virtually no limitations for arable use and suitable for cultivated crops and most other uses. At the other end of the scale, class 8 land is land with very severe to extreme limitations or hazards that make it unsuitable for cropping, pasture or forestry. There is no class 1 land in Kaipara but there are extensive areas of class 2 land as well as class 3 and 4 land.

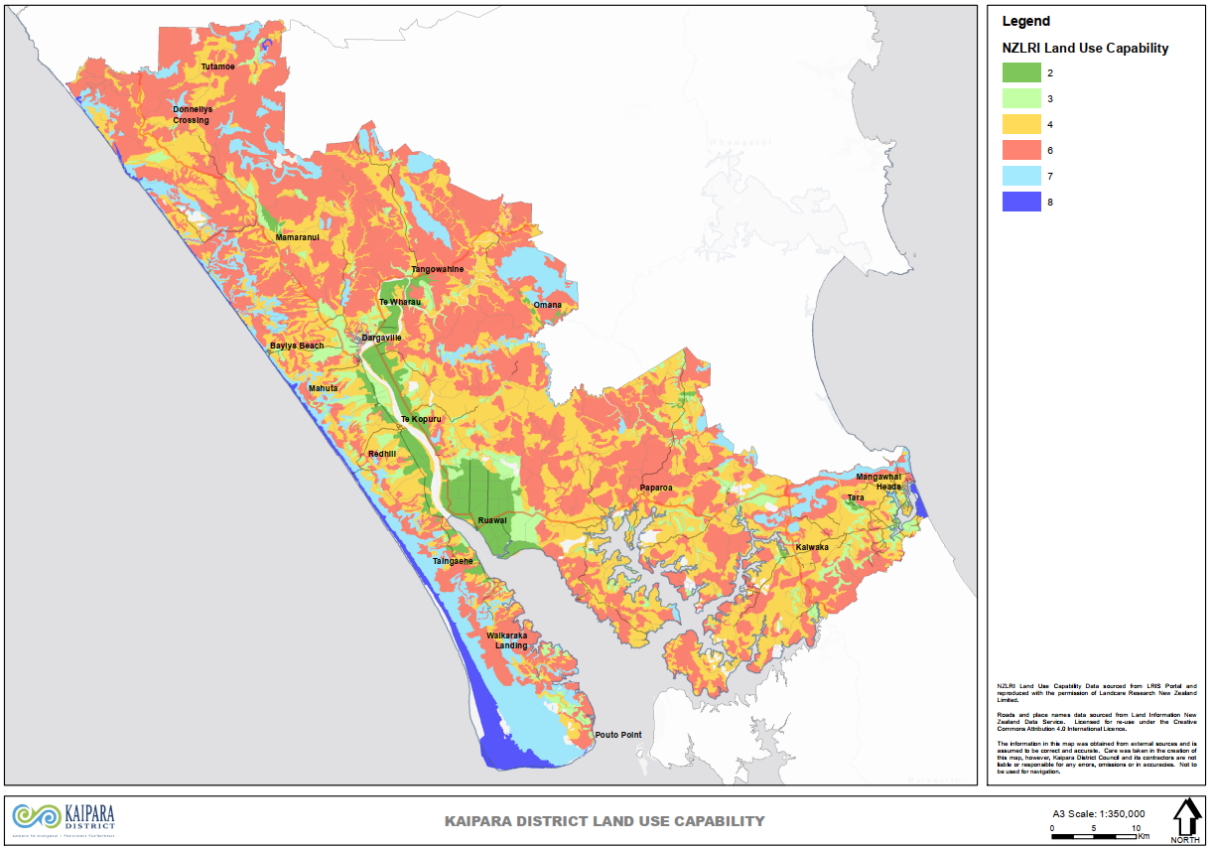


Figure 3.3.1: Land use capability in the Kaipara District (NRC, 2016)

Figure 3.3.2 maps Kaipara's highly versatile soils as identified in the Northland Regional Policy Statement. In addition to showing the LUC class 2 and 3 land, it also identifies the specific LUC units for Kaipara's most versatile soils.

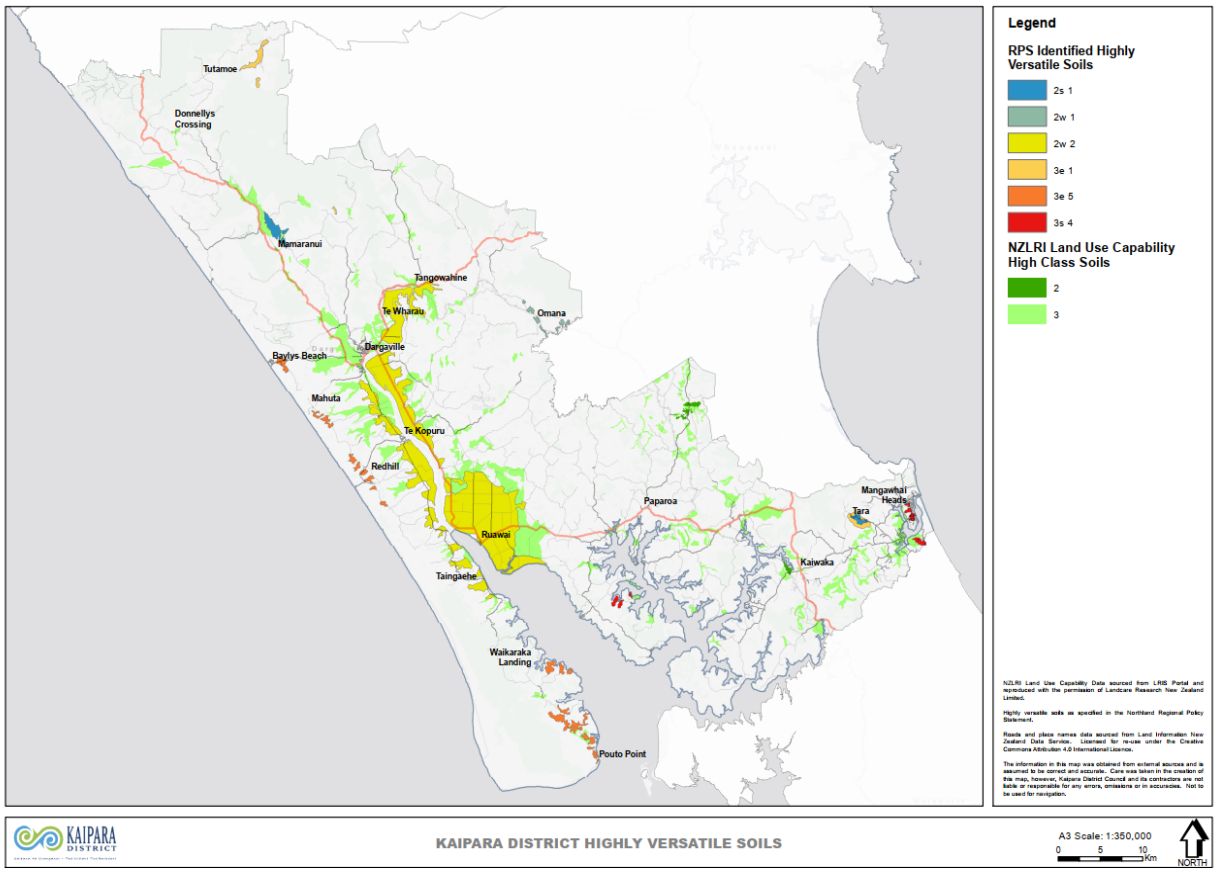


Figure 3.3.2: Kaipara's highly versatile soils as identified in the Northland Regional Policy Statement (NRC 2016)

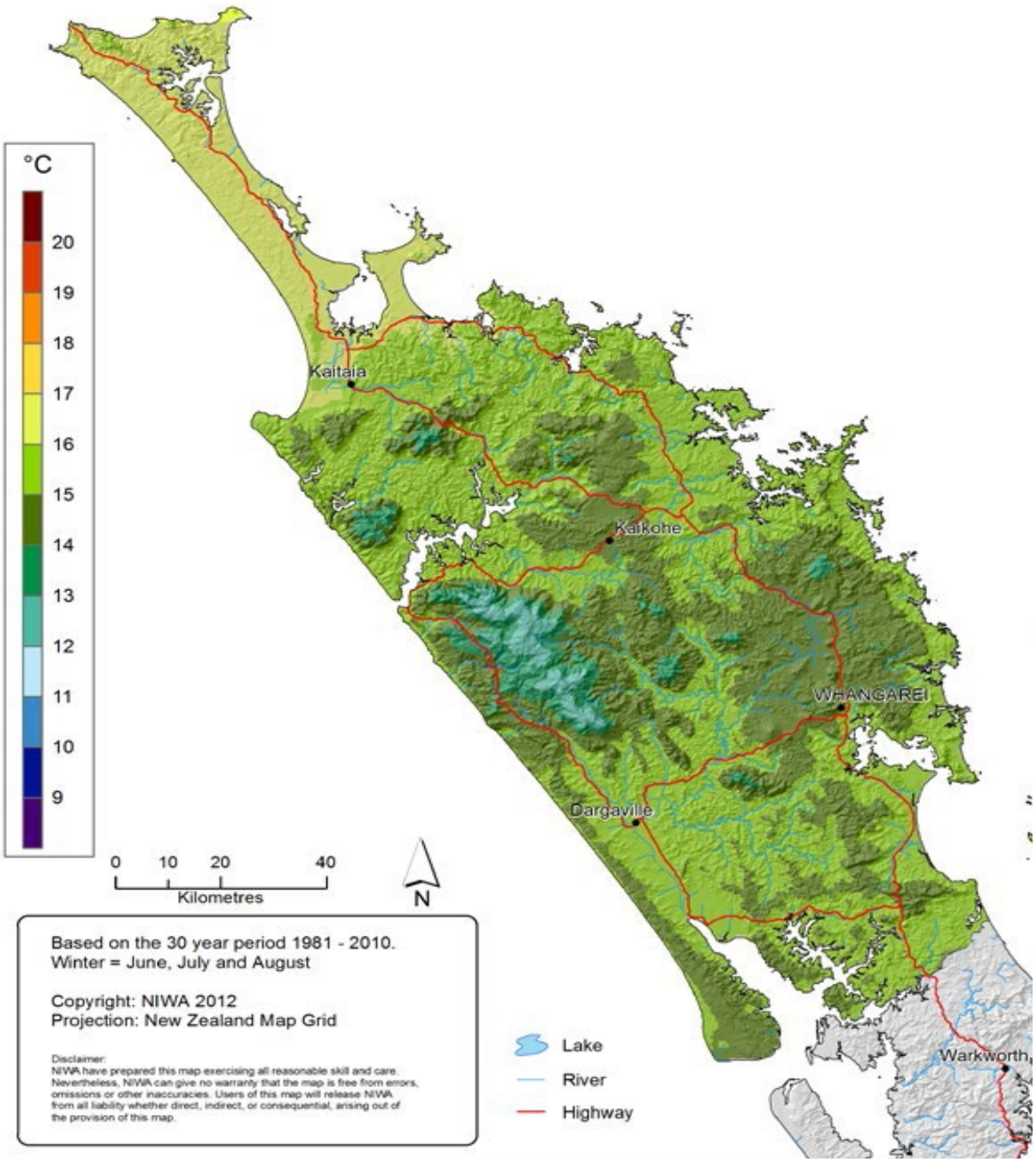
3.4 Weather and climate

Northland, with its northern location, low elevation and close proximity to the sea is characterised by a mild, humid and relatively windy climate (National Institute of Water and Atmospheric Research [NIWA], 2014). Summers are warm and tend to be humid, while winters are mild, with many parts of the region having only a few light frosts each year. Rainfall is typically plentiful all year round with sporadic very heavy falls. However dry spells do occur, especially during summer and autumn. Most parts of Northland receive about 2,000 hours of sunshine per year. It can be very windy in exposed areas and occasionally Northland experiences gales (NIWA, 2014).

Mean annual temperatures in Northland are typically between 14°C and 14°C, with a mean annual temperature range (difference between summer and winter) averaging just 8.1°C (NIWA, 2014). The mean annual temperature for the region north of Auckland City is the highest for any part of New Zealand (NIWA, 2014). Figure 3.41 below shows the median annual average temperature as it varies across Northland.

Figure 3.4.1: Northland median annual average temperature (NIWA, 2014)

The airflow over Northland is predominantly from the southwest (NIWA, 2014). This is particularly so in winter and spring, however in summer the proportion of winds from the easterly quarter, especially in eastern districts, about equals that from the southwest (NIWA, 2014).



Northland's proximity to the sea and low altitude causes winds to be very moist with abundant rainfall throughout the region (NIWA, 2014). Rainfall distribution patterns are related to topography with rainfalls ranging from about 1,000mm in low-lying coastal areas, to approximately 2,000mm at higher elevations.

Figure 3.4.2 shows the distribution of median annual rainfall based on the 1981/2010 period (NIWA, 2014).

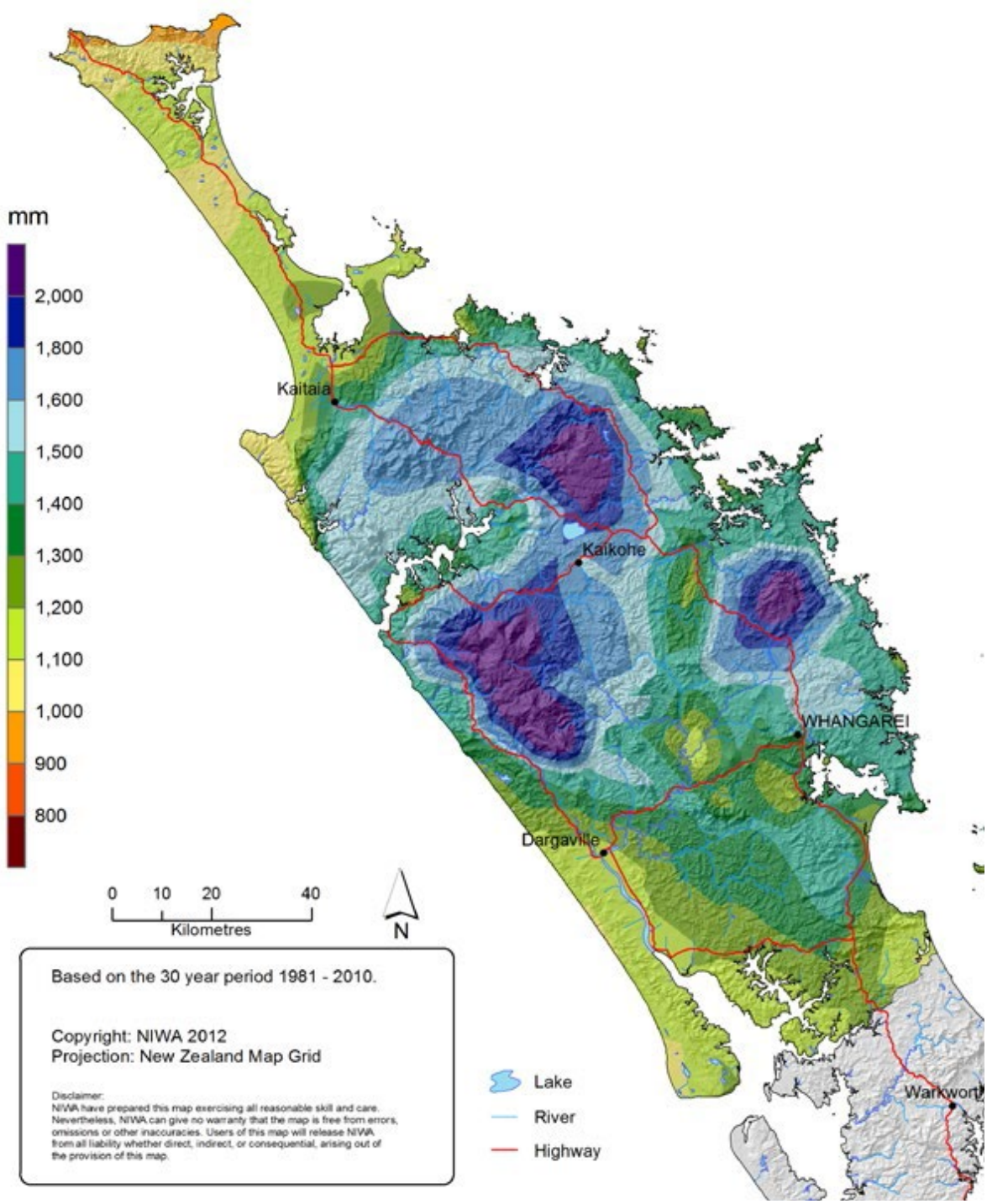


Figure 3.4.2: Northland median annual total rainfall 1981-2010 (NIWA, 2014).

Seasonal influences on rainfall distribution are also quite well-defined (NIWA, 2014). Table 3.4.1 lists monthly rainfall norms and percentages of annual totals for the period 1981/2010 for selected weather stations. This table clearly shows that rainfall is greater during the winter, June to August, period (NIWA, 2014).

Table 3.4.1: Northland's monthly rainfall norms and percentages of annual totals for the period 1981/2010 shown as a) monthly/annual rainfall norms (mm) and b) percentage of annual total for each month (%) (NIWA, 2014).

Location		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Cape Reinga Aws	a	58	65	56	109	96	103	128	95	85	61	57	76	988
	b	6	7	6	11	10	10	13	10	9	6	6	8	
Kaitaia Observatory	a	85	93	81	96	135	151	169	144	128	99	87	100	1367
	b	6	7	6	7	10	11	12	11	9	7	6	7	
Kaitaia Aero Ews	a	69	121	86	119	138	125	136	104	93	93	73	99	1253
	b	5	10	7	9	11	10	11	8	7	7	6	8	
Kaeo Northland	a	88	102	120	140	144	169	200	170	148	113	102	100	1596
	b	6	6	8	9	9	11	12	11	9	7	6	6	
Rawene 2	a	78	72	89	98	128	145	164	142	118	91	83	91	1299
	b	6	6	7	8	10	11	13	11	9	7	6	7	
Opononi	a	86	65	93	94	124	144	133	116	105	93	92	88	1234
	b	7	5	8	8	10	12	11	9	8	8	7	7	
Kaikohe Aws	a	110	106	109	140	139	152	188	159	124	100	96	109	1532
	b	7	7	7	9	9	10	12	10	8	6	6	7	
Kerikeri Airport	a	122	117	138	145	154	185	205	182	162	127	114	123	1775
	b	7	7	8	8	9	10	12	10	9	7	6	7	
Russell	a	91	87	116	117	130	144	172	146	121	97	89	90	1400
	b	7	6	8	8	9	10	12	10	9	7	6	6	
Waipoua Visitor Centre	a	89	82	103	97	146	177	166	153	132	110	93	94	1443
	b	6	6	7	7	10	12	11	11	9	8	6	7	
Whangarei Airport	a	78	98	117	103	110	132	169	127	110	84	76	97	1300
	b	6	8	9	8	8	10	13	10	8	6	6	7	
Dargaville 2	a	64	69	102	107	97	121	141	109	109	82	63	74	1137
	b	6	6	9	9	9	11	12	10	10	7	6	7	

Figure 3.4.3 shows region-wide variability in days of soil moisture deficit per year (days when there is not enough soil moisture to sustain plant growth without irrigation) for the period 1981/2010. The figure shows that, in an average year, there is between 50 and 70 days of soil moisture deficit for most areas of the Kaipara (NIWA, 2014). The area around Mangawhai appears to be particularly dry. It should be noted however, that this model does not take soil type into account. Free-draining sandy soils such as those in the western Kaipara will therefore likely have more days of soil moisture deficit than indicated by this figure.

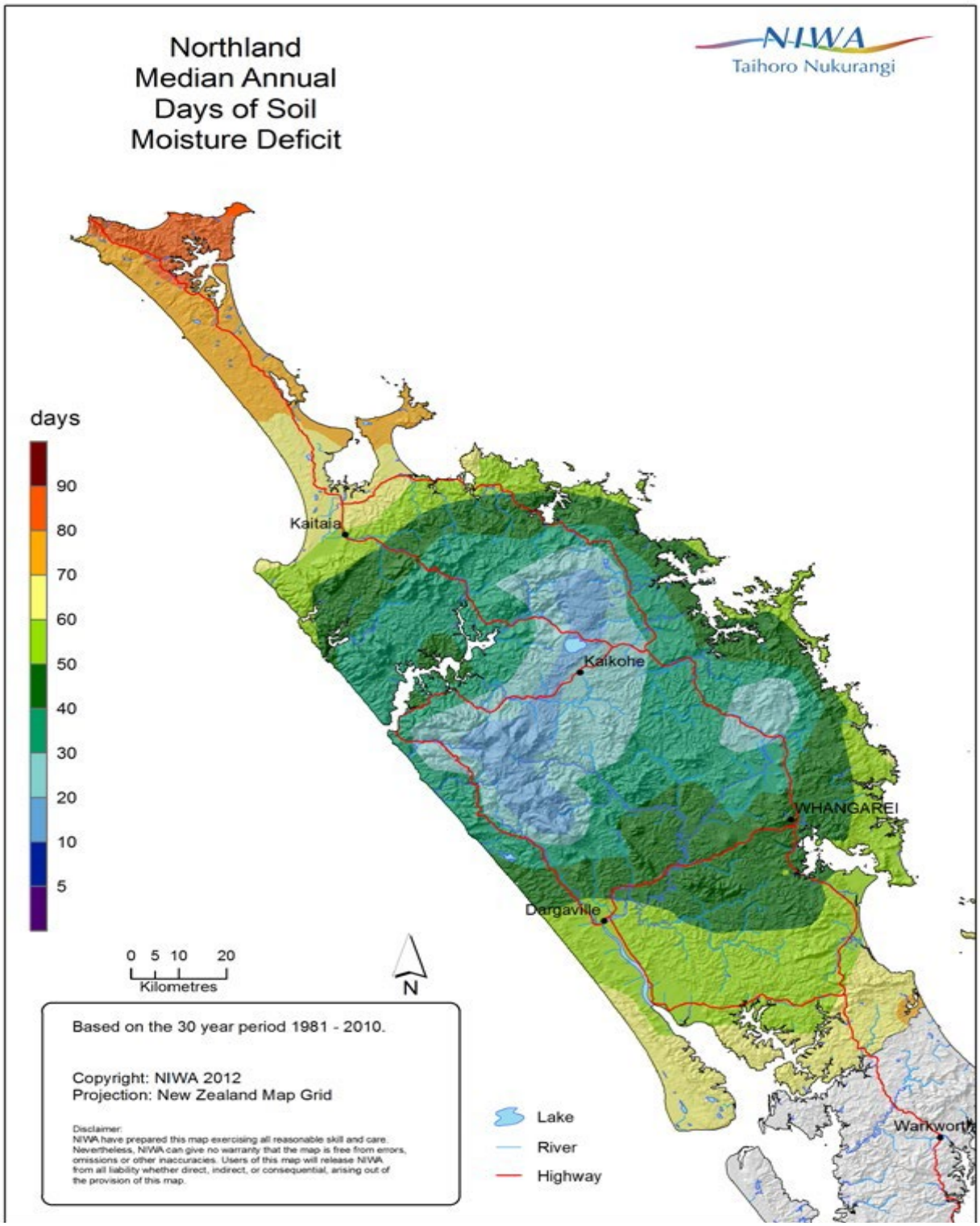


Figure 3.4.3: Northland median annual days of soil moisture deficit (NIWA, 2014).

In addition to varying throughout the year, rainfall can also vary considerably from year to year with the risk of both floods and droughts. Rainfall can also be highly localised, particularly with respect to thunderstorms and heavy downpours. Extreme weather events, such as droughts and storms do occur and can endanger essential services and the prosperity of Northland's primary industries. In the recent past, Kaipara experienced droughts in 2010, 2012/13, 2014 and 2019/20 (Ministry for Primary Industries [MPI], 2013) and major floods in February, March and July 2007, April 2008, January 2011,

March 2012, July 2014, August 2016, August 2017, July 2020 and February 2023. Both the lack and abundance of rain can therefore pose significant problems for Council infrastructure with heavy rain causing slips and flooding and droughts causing water restrictions.

However, despite these occasional extremes, Kaipara enjoys a pleasant subtropical climate overall with reasonably consistent warm temperatures and plentiful rain and sunshine.

3.5 Climate change

The world's climate is warming, due largely to greenhouse gas emissions from human activity (MFE, 2017). These gases such as carbon dioxide and methane add to the Earth's natural "greenhouse effect", a blanket of gases that keep heat from escaping into space, keeping the Earth warm. Unnaturally high concentrations of these gases, the result of rapid fossil fuel consumption and deforestation since the industrial revolution, are causing the Earth to warm at an unprecedented rate (MFE, 2017).

The rate and extent of warming is dependent on the level of greenhouse gases humans continue to emit and these depend on the combined effect of a wide range of socio-economic influences and climate-related policies (MFE, 2017).

The Intergovernmental Panel on Climate Change's Sixth Assessment Report (2021) applied a different approach to global climate scenarios, taking a range of socio-economic factors into account along with possible future greenhouse gas concentrations. The new climate scenarios are called socio-economic pathways (SSPs). The range of scenarios include SSP1-1.9, SSP1-2.6, SSP2-4.5, SSP3-7.0, SSP5-8.5, and SSP5-8.5+ (Intergovernmental Panel on Climate Change, 2021).

These future scenarios will inform updated climate projections but are yet to be downscaled to regional and district levels. The Ministry for the Environment has advised that local government use best available data for the middle-of-the-road scenario (SSP2-4.5 or RCP4.5) and the fossil-fuel intensive development scenario (SSP5-8.5 or RCP8.5) (MFE, 2022).

This section sets out projected changes to Kaipara District's climate and hazards landscape over the next 20 to 70 to 100 years. This information comes from NIWA, Ministry for the Environment, Northland Regional Council, and Crown Research Institutes. These sources form the best available data for RCP4.5 and RCP8.5 climate scenarios, in line with central government guidance. Information has also been drawn from Council's first pass risk assessment, Northland lifeline risk assessment and the first regional climate risk overview.

Average temperatures

Kaipara District's annual average temperature is projected to increase by 0.5-1.0°C for all seasons by about 2040 under RCP4.5. The same is projected for about 2040 under RCP8.5, except autumn, which is projected to warm by 1.0-1.5°C. By about 2090, most of the district is projected to warm by 1.0- 1.5°C under RCP4.5 for all seasons. Under RCP8.5, warming is projected to be around 2.0-3.5°C for most of the region at the annual and seasonal scale.

Higher temperatures may allow for different crops to be grown but may also introduce different pests and diseases. Higher temperatures will allow earlier sowing of crops, and they will generally reach

maturity faster (depending on sowing time). However, higher temperatures could also lead to decreased yields. The greatest risk for pasture and cropping will be the availability of water, which is projected to decrease due to increased evaporation and reduced average annual rainfall, although increased summer rainfall (as is projected) will likely prove beneficial (NIWA, 2016). Higher temperatures and more "hot days" are also likely to cause more heat stress in cattle and livestock (NIWA, 2016).

In horticulture, subtropical crops such as persimmon and macadamia have already become commercially viable in northern New Zealand, and it is expected that new subtropical (and possibly tropical) crops will begin to be commercially grown as the climate warms in Northland (NIWA, 2016). Avocado in particular is currently expanding in the region. A lack of winter chilling will become increasingly limiting for the kiwifruit industry in Northland, in particular for the Hayward variety. That said, new kiwifruit varieties which require lessor winter chilling to achieve adequate bud break and flowering are being developed (NIWA, 2016).

Changes in pests and diseases will also be an important factor for agriculture (NIWA, 2016). Many foreign species which are currently unable to survive and reproduce in New Zealand may be able to establish as the climate warms. However, while much of the biosecurity risk will come from species establishing from beyond New Zealand's borders, there are also a number of species already in New Zealand which are not able to spread and flourish to the extent they could if the climate was warmer. These types of pests are often weeds but may also be invertebrates (such as the *Sphenophorus venatus vestitus* weevil, migratory locust *Locusta migratoria*, tropical armyworm *Spodoptera litura* and even the native moths *Epyaxa rosearia* and *Scopula rubraria*) (NIWA, 2016).

Pinus radiata, is expected to perform even better in a warmer Northland than it currently does (NIWA, 2016). However, forestry potential may be negatively impacted by increasing wildfire conditions. Wildfire risks are likely to increase due to increased temperatures, changes to rainfall and increased drought potential (Scion, 2021). These changes will increase the frequency, severity and length of fire weather conditions (Scion, 2021). The number of days per year of Very High and Extreme Forest Fire Danger is projected to increase from 2.2 days/year to 3.1 days/year for Dargaville over the period to 2050 and 2090 (NIWA, 2016).

An increase in the number of days where temperatures go above 30°C will further increase the risks of melting of road surfaces and can result in increased transport network repair and maintenance.

Changes in Rainfall

Under both RCP 4.5 and RCP 8.5, little change in annual rainfall (±2%) is projected for most of the district by about 2040. There is also little change in annual rainfall by about 2090, under RCP4.5. Under RCP8.5, by about 2090, annual rainfall is projected to decrease by 2-6% in northern inland areas. Projections show a 6-15% decrease in winter and spring rainfall for many parts of the district. By 2090, under both RCP4.5 and RCP8.5, there is a projected increase in autumn rainfall of 2-15% for most of the district. These percentage changes are relative to the 1986-2005 average.

Extreme, rare rainfall events are projected to increase in intensity. The average depth of a 1-in-100-year rainfall event and a 1-in-50-year rainfall event is projected to increase across the district under

both RCP4.5 and RCP8.5. Short duration rainfall events have the largest projected relative increases. For a one-hour event, increases range from 8% (by 2040 and 2090 under RCP2.6) to 35% (by 2090 under RCP8.5). For a 6-hour event, projected increases range from 7% (by 2040 and 2090 under RCP2.6) to 29% (by 2090 under RCP8.5). For a 24-hour rain event, increases range from 5% (by 2040 and 2090 under RCP2.6) to 22% (by 2090 under RCP8.5).

Drought potential is projected to increase across the district through increased accumulated evapotranspiration, reduced rainfall, and increased soil moisture deficit. Drought potential is most accurately projected through potential evapotranspiration deficit (PED) mm accumulation, the accumulated difference in water demand for plant growth, soil's water capacity, and water loss through evaporation and transpiration. By about 2040 under both RCPs, most of the district is projected to experience an increase in annual PED of 80-100 mm. By about 2090 under RCP4.5, much of the district is projected to experience an additional 80-100 mm of annual PED. By about 2090 under RCP8.5, annual PED is projected to increase by 120-160 mm for most of the district.

Drought potential is also projected to increase due to reduced water supply from decreased mean annual discharge and mean annual flow in the tributaries, streams and rivers across the district. By about 2090, under both RCP4.5 and RCP 8.5, there is a projected 5-20% decrease in mean annual discharge across the district. By about 2090, under RCP4.5, the mean annual low flow is projected to decrease by 5-15% across most the district. By about 2090, under RCP8.5, the mean annual low flow is projected to be more severe, with a 20-50% decrease across most of the district.

Increased drought potential has been rated as a high to extreme risk to water security, supply, and demand within the mid to late century. Kaipara District has higher sensitivity to lower rainfall and drought conditions. Drought potential will impact private, on-site water storage, community water schemes and water supply for irrigation, agriculture, and horticulture. Drought conditions usually come with high temperatures, increasing the demand for water as quantity simultaneously decreases. Drought potential may also negatively impact water quality.

Higher intensity rainfall events are also likely to increase land instability (slumping, landslides, and slips) hazards across the district. Although geotechnical information is available on erosion prone areas within the district (GNS, 2004; NRC, n.d.), there is an absence of information available applying climate scenarios and projections to better understand the extent of the increase, or site-specific variations to this increase.

River flooding (fluvial flooding) will increase in severity due to increased rainfall intensity and storms, and sea level rise for catchments flowing downstream into a coastal area. The extent of this severity is specific to the catchment area. Northland Regional Council River flood mapping shows changes to the extent of flooding across Kaipara District's catchments for a 1-in-100-year event, at about 2090, under RCP8.5. This is based on increases in rainfall intensity of 35%, 30%, 26% and 22% respectively for 1-hour, 6- hour, 12-hour and 24-hour duration events (NRC, 2021a; NRC, 2021b).

High intensity rainfall events and flooding can exceed stormwater systems' capacity, leading to street flooding, damage to assets, and posing a risk to residents' health and safety. For stormwater systems with coastal boundaries, sea level rise can compound the risk of flooding by further reducing the draining capacity.

Sea level rise

Sea levels are rising along Kaipara District's coasts, along with the rest of the country. Sea level rise will mean long-term changes in our coastline and shorelines. Changes in sea levels comes from actual sea level rise due to thermal expansion, glacial and ice sheet melt and changes to levels in land for the relevant coastal area (NIWA, 2016).

Table 3.5.1 shows sea level rise projections compared to 1995–2014 median sea level baseline (MfE, 2022). These projections have been downscaled for New Zealand from the IPCC Sixth Assessment Report (2021). These projections are a national scale and do not factor in localised land movement.

Table 3.5.1: Sea level rise projections compared to 1995–2014 median sea level baseline (MfE, 2022).

Year (approximate)	SSP2-4.5 / RCP4.5 Median, in metres	SSP5-8.5 / RCP8.5 Median, in metres	SSP5-8.5H+ / RCP8.5H+ 83rd percentile, in metres
2050	0.22	0.26	0.23
2090	0.49	0.69	0.90
2130	0.81	1.21	1.66

The relative sea level rise (RSLR) for a specific area depends on localised land movement patterns (Vertical Land Movement, VLM). Land subsidence exacerbates the height of sea-level rise relative to the sinking land, even if the rise in ocean elevation is unchanged. Uplifting land, locally or regionally, will cause a slower rise in the height of sea-level relative to the rising land.

RSLR projections from NZSeaRise on the Takiwā platform (https://www.searise.nz/maps; n.d.), show a wide variation across Kaipara District between rates of subsidence and uplift. The Mangawhai, Arapaoa and Ruawai coastal areas show the highest rates of subsidence, with projections close to or greater than -3mm per year.

As sea level rises, there will be an inland advancement of the saltwater-groundwater interface, which may increase the risk of saltwater intrusion into groundwater bores and reduce water availability. Rising groundwater can also lead to long-term standing surface water. Both rising groundwater and infiltration of seawater underground can affect land productivity capacity.

In low-lying coastal areas, rising groundwater can impact on-site, septic wastewater treatment systems by increasing soil saturations and reducing the effectiveness of land disposal systems (dispersal fields). This increases monitoring and compliance pressures for Council and increases the risk of water contamination and public health issues.

Low-lying catchment areas, where rivers or creeks drain into the Kaipara Harbour or Mangawhai Estuary, are particularly exposed to coastal flooding because higher sea levels can cause the rivers or creeks to back up inland.

Coastal erosion is also projected to worsen with sea level rise and increased storm events. Coastal erosion can cause damage to homes, private buildings and permanent loss of land, posing flow-on effects to community wellbeing and increases costs for insurance and to repair, rebuild or relocate.

Although high-level, an initial understanding of climate change risks to public assets and infrastructure services is proving useful. Further assessment and investigation will support effective planning,

reducing vulnerability and increasing resilience. Council can also work with communities to understand the risks and the range of potential solutions. Effective planning and adequate resourcing can help communities to pursue opportunities for positive and beneficial outcomes.

3.6 Distribution of Settlement

Kaipara is an extensive rural district with no cities and significant distances between centres. Historically, transport was primarily by sea, resulting in many settlements being established in the upper reaches of harbours/harbour arms or along navigable rivers.

The largest settlements in the district are Dargaville and Mangawhai. Dargaville is the key service centre for the western and northern part of the district. It is 13km/10 minutes' drive from Baylys and 12km/12 minutes' drive from Te Kopuru which serve as satellite settlements. Dargaville is 57km/50 minutes' drive from Whangārei (Northland's only city) and 175km/two and a half hours' drive from Central Auckland.

Mangawhai has historically been a community with a significant proportion of holiday homes as well as a large retiree population. However, the settlement is now emerging as a service centre for the surrounding area, including Kaiwaka (18km/19 minutes' drive away) and Maungaturoto (28km/25 minutes' drive away). Mangawhai's proximity to Auckland, increasing services and the rising popularity of working from home are seeing Mangawhai grow rapidly with more permanent residents and more young families. Mangawhai is now Kaipara's largest centre. Mangawhai is 100km/one and a half hours' drive from Central Auckland, 64km/an hour and seven minutes' drive from Whangārei, 25km/28 minutes' drive from Waipū and 88km/one hour and ten minutes' drive from Dargaville.

Outside of the two largest settlements, the district is serviced by a collection of smaller settlements which also service the needs of the District's rural residents. The most prominent of these are Kaiwaka, Matakohe, Paparoa, Ruawai and Maungaturoto. Maungaturoto is 62km/53 minutes' drive from Whangārei and 112km/one hour 40 minutes' drive from Auckland.

Some of Kaipara's smallest communities are very remote and have few services such as shops and health care. Emergency services can often be a considerable distance away. For example, Pouto is 69km/one hour and ten minutes' drive from Dargaville and Donnellys Crossing is 41km/37 minutes' drive from Dargaville.

4 Demography – Our people, Our communities

Ko ngā maunga ngā poupou hei whāinga mō ngā awa o te rohe o te Kaipara. Ko ngā moana ko Kaipara, Ko Mangawhai. Ko ngā waka i hoea mai nei i te nuku o whenua i mauria mai ngā iwi, ngā hapū me ngā whanau ki ngā marae. Ko ngā marae ngā puna huihuinga tangata, huihuinga kaupapa.

Tihei ki runga, mauri ora ki whenua.

This section looks at population and demographic trends affecting Kaipara's communities. It begins by considering population trends nationally and regionally, before looking at local population trends and local wellbeing.

"He aha te mea nui o te ao. He tāngata, he tāngata, he tāngata".

What is the most important thing in the world? It is people, it is people, it is people.

4.1 Population nationally

New Zealand had an estimated resident population of 5,124,100 in 2022 (Infometrics, 2023a). National population growth has been slow in recent years (0.2% from 2021 to 2022 and 0.4% from 2020 to 2021) compared to pre-pandemic levels (2.2% between 2019 and 2020 and 1.6% between 2018 and 2019) as border controls and other pandemic restrictions have affected migration trends (Infometrics, 2023a).

International net migration rose to record highs in the 2010s, and a further record high in 2021 as expat New Zealanders rushed home ahead of the COVID-19 border restrictions (Figure 4.1.1). This was followed by a sharp fall in net migration while the border was closed (Infometrics, 2023b).

Despite a progressive loosening of migration settings as New Zealand's international border reopened in 2022, a highly competitive global market for labour is expected to limit migration inflows, at the same time as an elevated number of New Zealanders are leaving. Net migration is forecast to trend back to its long-term level of 30,000 per annum later in this decade as forecast steady employment growth and an ageing population sustain a need for migrant workers leading to positive net migration over the long term (Infometrics, 2023b).

This net migration projection reflects that Although New Zealand does not currently have a long-term immigration strategy, it is expected labour market pressures will persuade future governments to enable sustained, moderate net migration flows through favourable migration settings. However, net migration is not expected to return to the highs observed in the past decade, given the highly competitive global market for migrants, as many countries face an ageing population (Infometrics, 2023b).

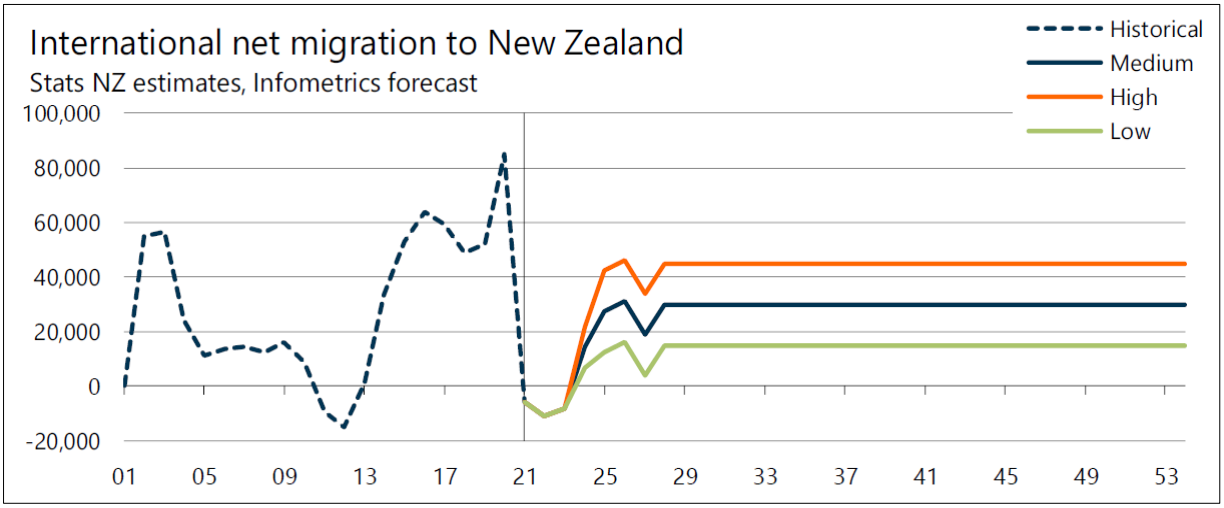


Figure 4.1.1: International net migration to New Zealand as estimated by Stats NZ and forecast by Infometrics (Infometrics, 2023b).

The distribution of international migrants across New Zealand's regions is changing. Over the 1990s and 2000s, periods of high international net migration largely translated to periods of high net migration into New Zealand's metropolitan centres (Infometrics, 2023b). For example, when international net migration peaked (at the time) in 2003 at 51,500pa, metro centres took 86% of the country's net migration, and rural areas continued to experience net outflows. However, by the 2010s, the distribution of population across metropolitan, provincial and rural areas fundamentally changed (Figure 4.1.2). Between 2014 and 2020, 57% of net international migration went to the metro centres, allowing

provincial and rural areas to make substantial net migration gains and therefore arrest population decline which dated back to the economic reforms of the 1980s. This change was driven by a combination of factors – extremely strong net migration volumes which exceeded housing capacity in the metropolitan centres, rising unaffordability of housing which has pushed commuters further out from cities, and emphasis on regional migration in work visa rules. Improved internet connectivity and greater options for remote working have likely aided this change too. These changes have had a significant effect on Kaipara, being located on the edge of Auckland (Infometrics, 2023b).

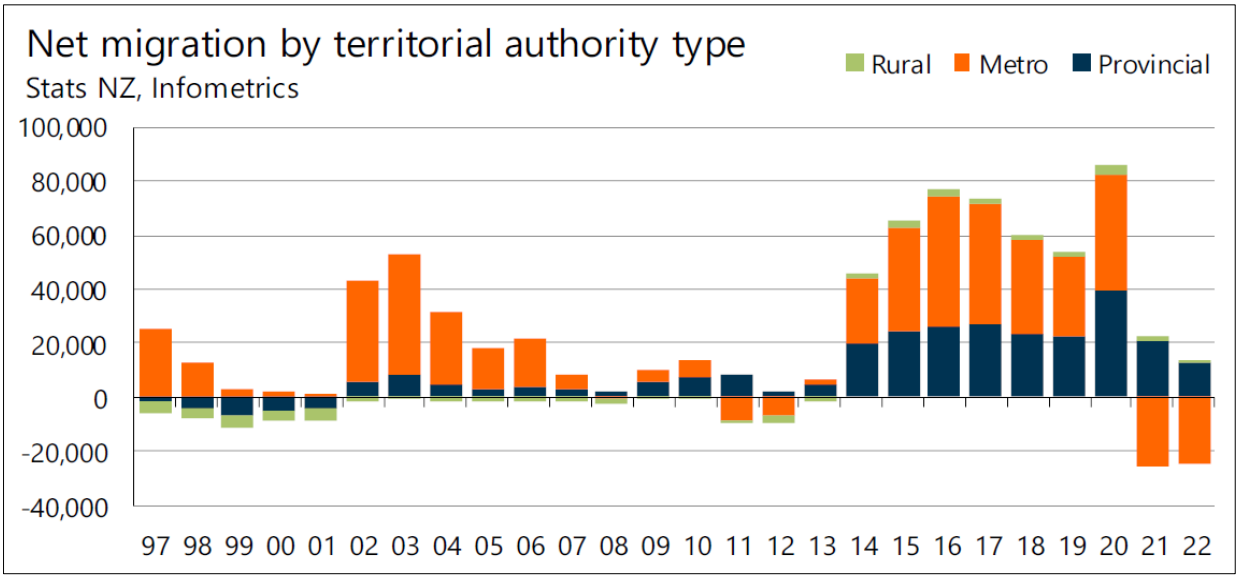


Figure 4.1.2: Net migration by territorial authority type (Infometrics, 2023b).

Shifts in international net migration have been the most noteworthy driver of population growth in the past decade nationally, owing to the relative volatility of migration (Figure 4.1.3) (Infometrics, 2023b). However, this belies the long-term ageing of New Zealand's population which is closing the gap between births and deaths, known as natural increase.

Births are projected to remain broadly steady in numeric terms, at or above 300,000 per five-year period, with a growing population offsetting a declining fertility rate. Deaths are projected to grow steadily as burgeoning older age groups outpace decreasing mortality rates. As natural population growth decreases, with deaths growing faster than births, population growth will slow and become increasingly dependent on net migration. Nationally, deaths are projected to outnumber births in the 2050s, at which point New Zealand's population will be entirely reliant on net migration to avoid decline (Infometrics, 2023b).

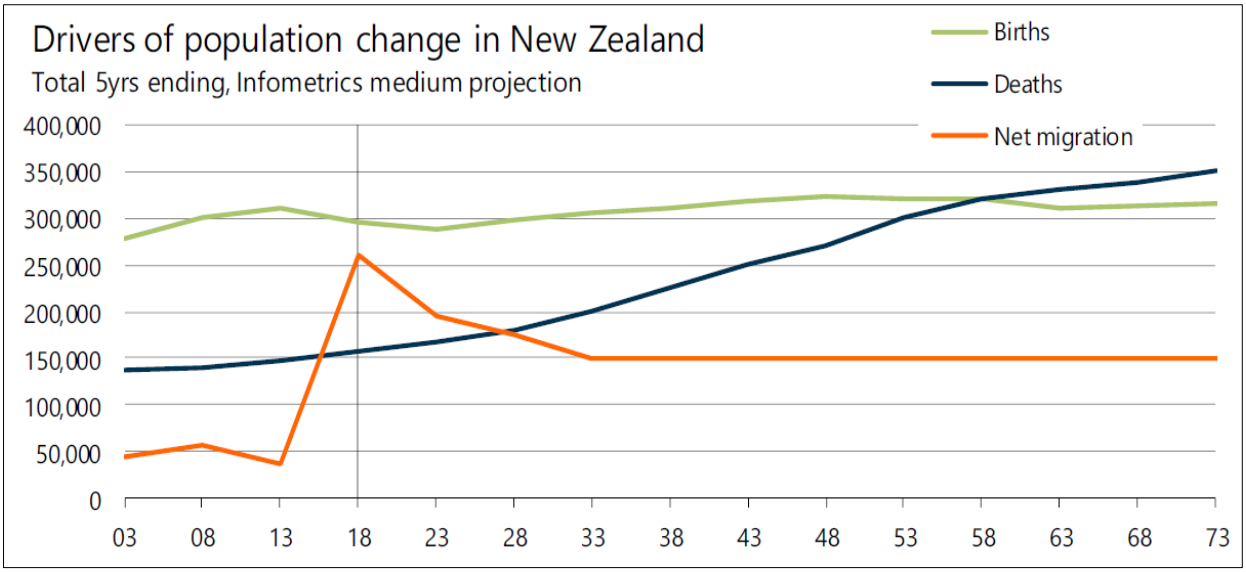


Figure 4.1.3: Drivers of population change in New Zealand (Infometrics, 2023b).

The 2018 Census shows New Zealand's population is unevenly distributed, with about 76% of New Zealanders living in the North Island and half living in three regions; Auckland, Waikato and Bay of Plenty. At the time of the 2018 Census around 46% of New Zealanders lived within the triangle of Auckland, Hamilton and Tauranga (the so called 'Golden Triangle'). Auckland alone accounts for one third of New Zealand's population. That means out of every 100 people in New Zealand, 33 currently live in Auckland (Statistics New Zealand).

Auckland is increasingly spilling over into its peripheries with Warkworth and Pukekohe now recognised as satellite settlements. This has fuelled the growth of the Waikato region and Tauranga with population and business expanding into the Waikato District particularly. However, constrained transport linkages have prevented expansion into Northland to the same extent.

4.2 Population regionally

According to the latest population estimates, Northland had an estimated resident population of 201,500 in 2022 (Infometrics, 2023a). This was a 1.3% increase on the previous year (Infometrics, 2023a).

Whangārei is Northland's only city and the closest city servicing the Kaipara district. Whangārei district accounts for about half Northland's population with an estimated usually resident population of 100,500 in 2022 (Infometrics, 2023a). According to the 2018 Census, Whangārei is growing strongly, increasing 18% between 2013 and 2018. Both Northland and Whangārei's growth is mainly attributed to net migration with natural increase contributing to a lesser extent (Infometrics, 2023a).

Net migration's greater contribution to Northland's population growth than natural increase is in contrast to historic trends and suggests an increasing number of people moving to Northland (Infometrics, 2023b). Out-migration from Auckland is a key contributor to this trend as high living costs drive Aucklanders to look north and south of the city. Retirees leaving Auckland to enjoy a quieter lifestyle in coastal settlements along Northland's east coast will also be contributing.

Not surprisingly given these trends, the fastest growing areas of Northland were around Kaiwaka/Oneriri, Mangawhai and Waipū which are both close to Auckland and near the sea.

The Far North district also saw strong growth in some areas, the district growing by 17.1% or 65,250 residents between 2013 and 2018. The Far North's 2022 population was estimated at 73,800 (Infometrics, 2023a).

4.3 Kaipara's Population

4.3.1 Kaipara Uri – Kaipara's first peoples

Kaipara settlement goes back more than seven centuries, when the ancestors of the many iwi and hapū lived by fishing, hunting and growing crops in an area blessed with rich harvests from the harbour, ocean, rivers, forest and soil. The Kaipara was also a major route for travel to and from the north, to the Waitemata and Manukau Harbours.

The major iwi/hapū of the Kaipara are Te Roroa and Te Uri o Hau. Te Roroa iwi occupy the hinterland and rich valleys between the Kaipara and Hokianga harbours, particularly the Kaihu Valley, Waipoua, Tunatahi (Dargaville) and Maunganui Bluff areas. Te Uri o Hau occupy the Pouto peninsula, the hill country around the many arms of the Kaipara Harbour and the Mangawhai area. Te Uri o Hau are a hapū of Ngāti Whātua whose tribal area extends into Auckland. These major Kaipara hapū rohe are shown in figure 4.3.1.1.

Figure 4.3.1.1: The major Kaipara hapū rohe and location of significant battle sites prior to 1840.

Te Uri o Hau, together with their overarching Iwi; Ngāti Whātua, and Te Roroa have Mana Whenua status over their ancestral lands (their rohe). This means they are recognised as having authority to exercise kaitiakitanga over their rohe. Council needs to be aware of Te Uri o Hau and Te Roroa's rohe extents and work with these Iwi appropriately.

4.3.2 Population Growth in Kaipara

Kaipara had an estimated resident population of 27,200 persons in 2022 (Infometrics, 2023a). Kaipara District's population is projected to grow steadily, reaching 35,700 in 2054 (Infometrics, 2023b). This amounts to an additional 8,500 residents between 2022 and 2054. Kaipara's strong historical growth, particularly in the past ten years, increased the district's population by 9,400 between 1996 and 2022 (Infometrics, 2023b).

Kaipara's population growth has risen steadily over the past 25 years, peaking at over 4% per annum in 2020 and 2021, and easing back to 2.6% in 2022 (Infometrics, 2023b). The district's exceptionally strong growth in 2020 was driven by expats returning to New Zealand ahead of the COVID-19 border closures. Strong growth in 2021 reflected a burst of migration to commuter areas on Auckland's peripheries (such as Mangawhai – Kaiwaka) as working from home practices reached widespread adoption (Infometrics, 2023b).

Kaipara's population is projected to grow 3.0% in the year to June 2023. Growth is projected to average 1.5% per annum over the period 2022 to 2030 (Infometrics, 2023b). The rate of population growth is then projected to ease over time, though remaining positive throughout the projection period to 2054 (Infometrics, 2023b).

Kaipara's population is projected to grow faster than the national average throughout the 2020s, and then grow at a similar rate to the national population from the early 2030s onwards (Infometrics, 2023b). New Zealand will experience the same characteristic slow-down as Kaipara, which reflects the gradual softening in natural increase over time. Kaipara's historic and projected growth path is shown in figures 4.3.2.1 and 4.3.2.2 (Infometrics, 2023b).

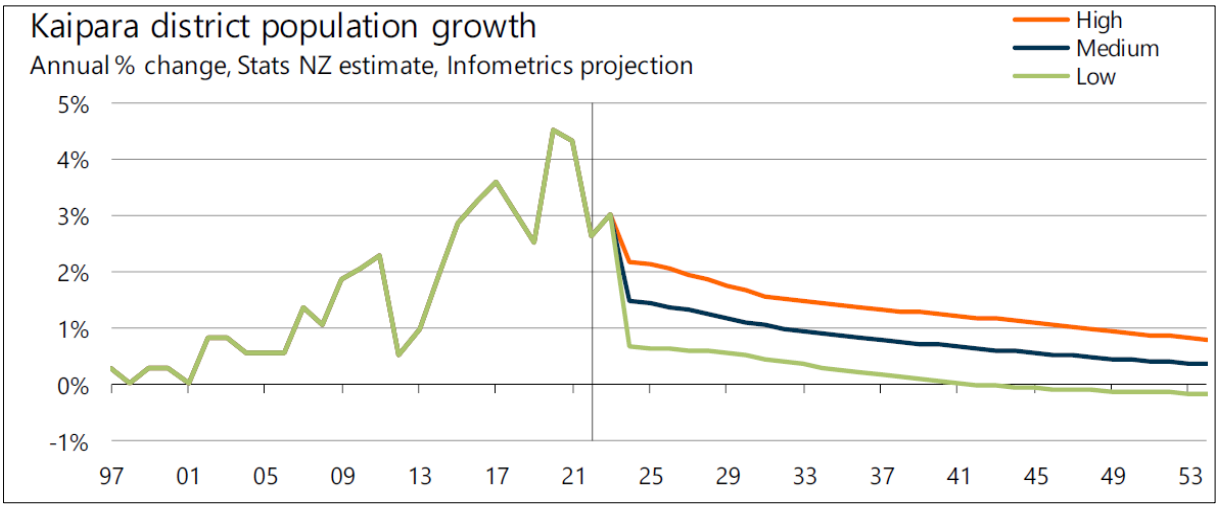


Figure 4.3.2.1: Kaipara District's population growth rate from 1997 to 2054 under high, medium and low growth scenarios (Infometrics, 2023b).

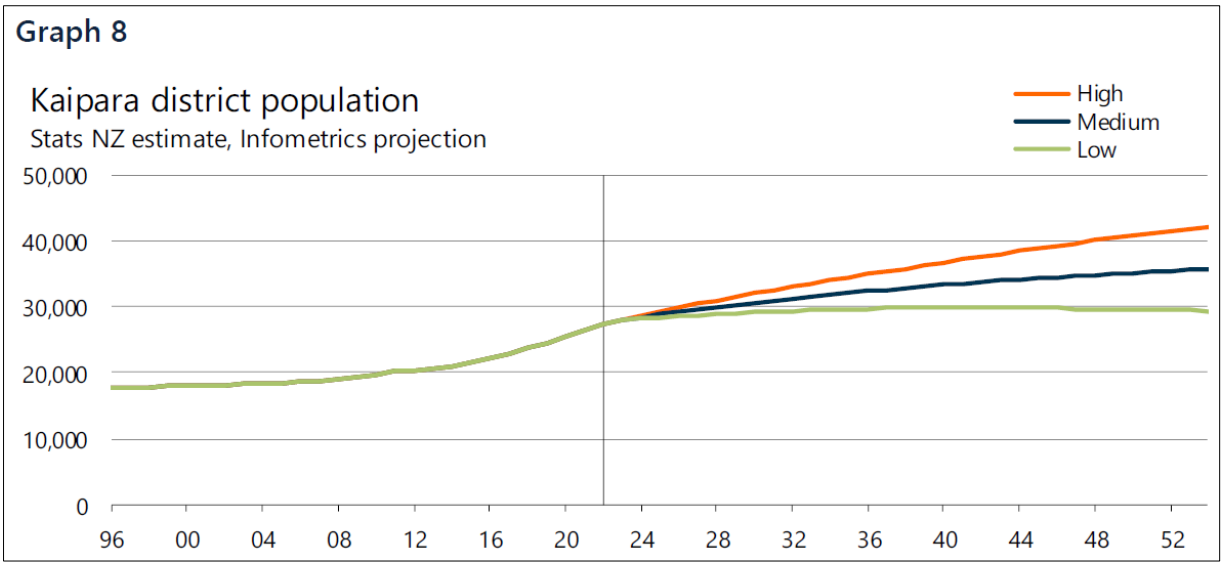


Figure 4.3.2.2: Kaipara District's population growth from 1996 to 2053 under high, medium and low growth scenarios (Infometrics, 2023b).

Net migration to Kaipara District has steadily increased over the past two decades, particularly as the Mangawhai area has grown (Infometrics, 2023b). Net migration into Kaipara is projected to peak in the five years to 2023, reflecting the surge of international net migration to New Zealand in 2020, and the district's success in attracting domestic migrants during the pandemic. Net migration into Kaipara is projected to stabilise at around 1,500 every five years, for the remainder of the projection period. This level reflects the need for migrant workers to replace retiring workers across the district, as well as the ongoing popularity of Mangawhai in attracting domestic migration from fast-growing Auckland. Natural population increase in Kaipara (births minus deaths) is projected to turn negative in the 2040s, with a growing number of deaths outpacing the steady numbers of births (figure 4.3.2.3) (Infometrics, 2023b).

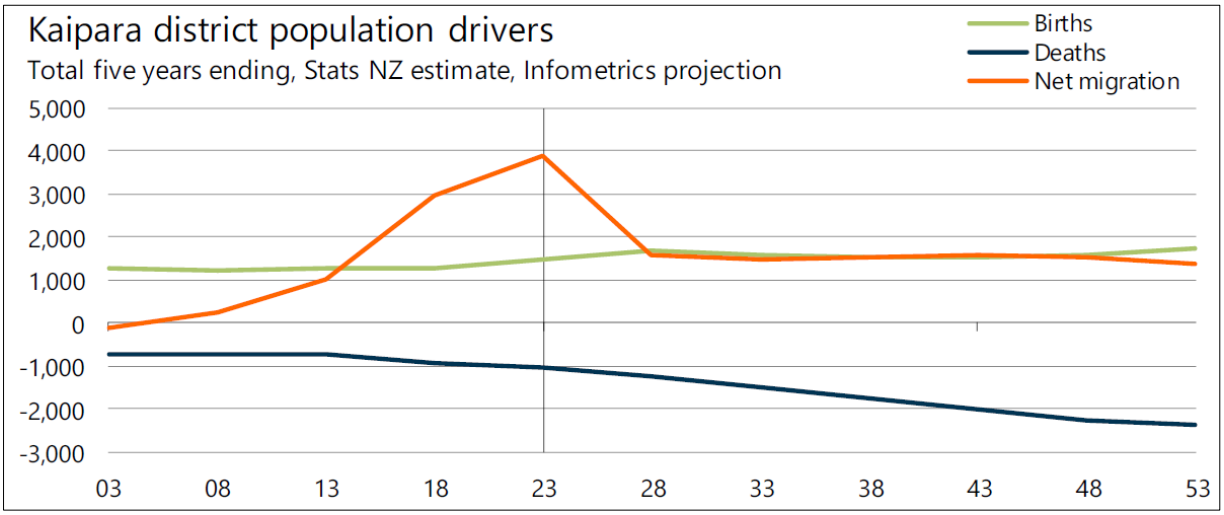


Figure 4.3.2.3: The varying contributions of births, deaths and net migration to Kaipara's population growth, note that deaths are shown as a negative number (Infometrics, 2023b).

Population growth is projected to be strongest in the Mangawhai area, with moderate growth across the rest of the district (Infometrics, 2023b). Table 4.3.2.1 shows how growth is projected to vary across the district's "Statistical Area 2s" (SA2s), the geographic extents of which are shown in figure 4.3.2.4.

Mangawhai's population overtook Dargaville's in 2018, making it the largest centre in the district, and is expected to have nearly double the population of Dargaville by 2054 (see figure 4.3.2.5) (Infometrics, 2023b).

Table 4.3.2.1 Differing rates of population growth across Kaipara's communities (Infometrics, 2023b).

	Population		Annual growth	
SA2 area	**2022**	**2054**	**2024-2034**	**2034-2054**
Kaipara Coastal	4,201	4,764	0.5%	0.4%
Maungaru	1,936	2,077	0.3%	0.0%
Dargaville	5,214	6,420	0.8%	1.0%
Ruawai-Matakohe	2,765	3,020	0.4%	0.2%
Otamatea	1,946	2,178	0.6%	0.2%
Maungaturoto	1,447	1,903	1.1%	1.3%
Kaiwaka	2,656	3,559	1.2%	1.3%
Mangawhai Rural	3,024	5,727	2.9%	2.9%
Mangawhai Heads	2,713	4,116	1.8%	1.7%
Mangawhai	1,297	1,931	2.2%	0.8%
Kaipara District	**27,200**	**35,696**	**1.1%**	**0.6%**

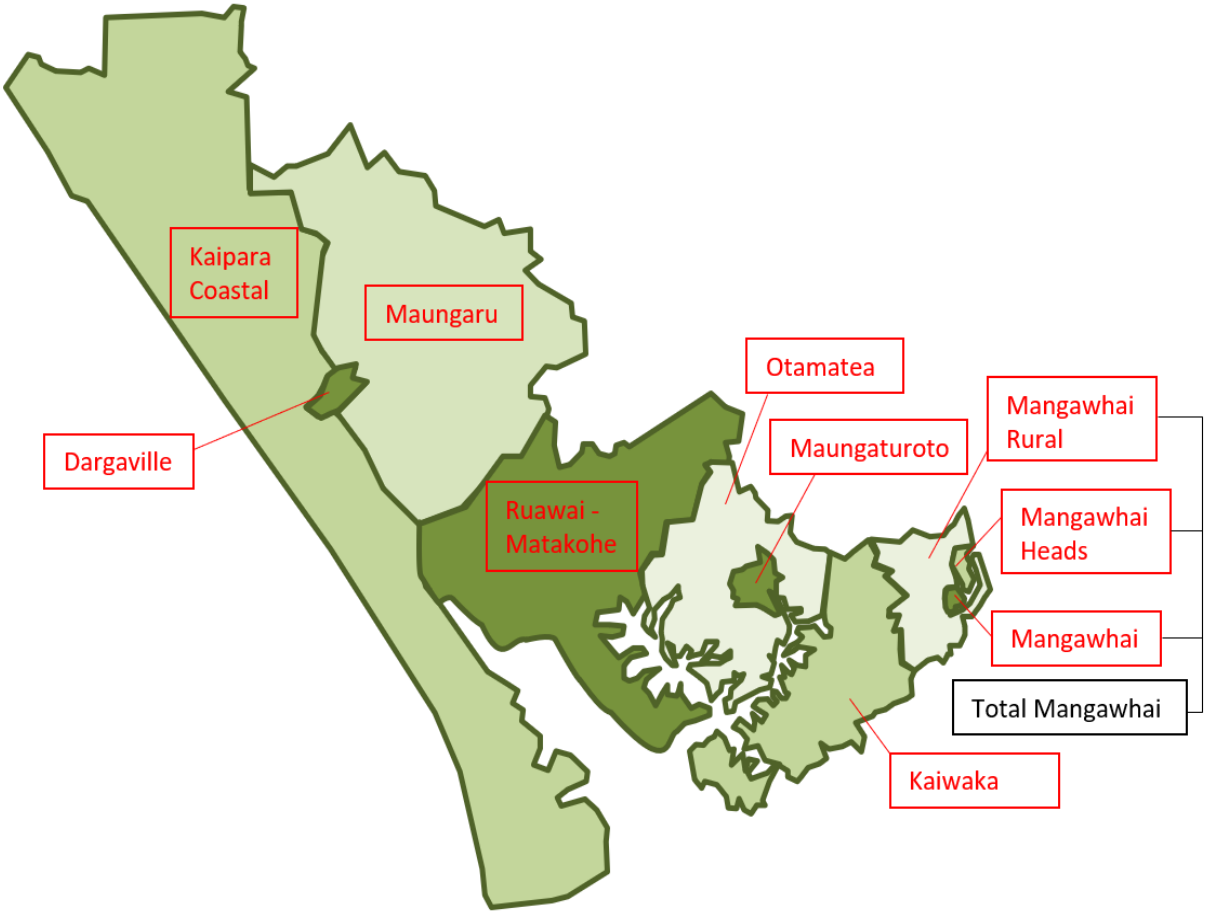


Figure 4.3.2.4: The geographic extents of the SA2s that comprise the Kaipara District. Note that the Mangawhai Central development is located in the Mangawhai Rural SA2.

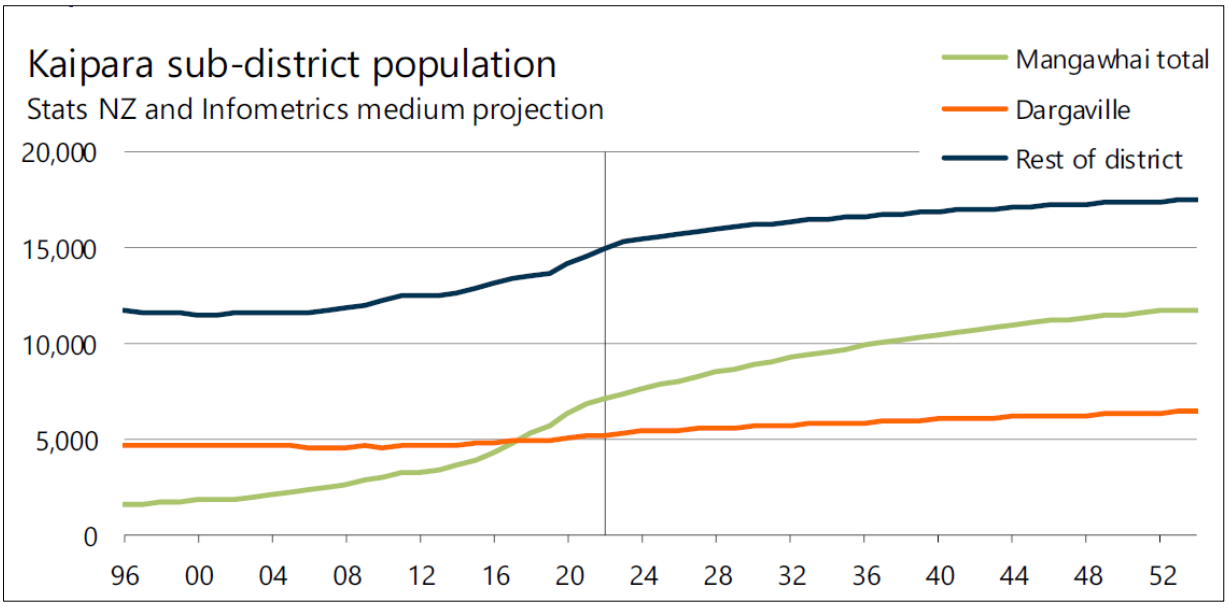


Figure 4.3.2.5: The importance of Mangawhai to Kaipara's growth story (Infometrics, 2023b).

Within Mangawhai, growth is projected to slow down in the Mangawhai SA2 (the area known locally as Mangawhai Village) in the long term as the area becomes fully built up, with growth becoming more focused on the Mangawhai Rural SA2 (Infometrics, 2023b). The Mangawhai Rural SA2 includes the rural residential area around Mangawhai as well as the Mangawhai Central development, which will be urban in nature. The population in the Mangawhai Rural SA2 is projected to almost double between 2022 and 2054, growing 2.9% per annum (figure 4.3.2.6) (Infometrics, 2023b).

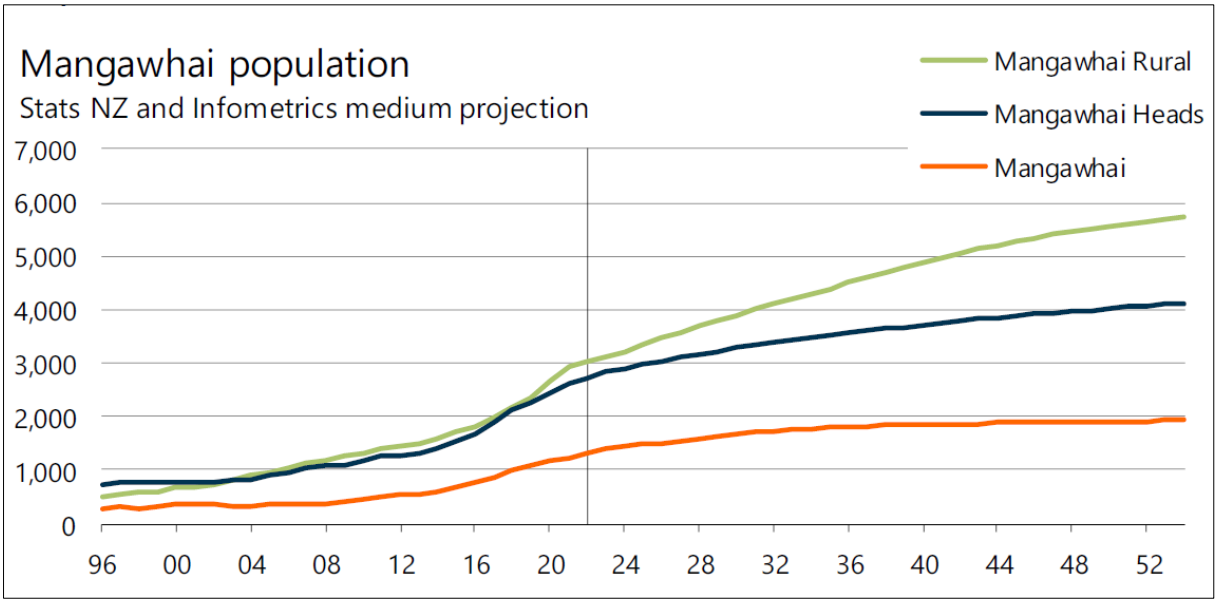


Figure 4.3.2.6: The different growth paths of Mangawhai's suburbs (Infometrics, 2023b).

Relatively strong growth is also expected in nearby Maungaturoto and Kaiwaka (Infometrics, 2023b). Mangawhai, Maungaturoto and Kaiwaka all benefit from their proximity to Auckland, with expected further growth in commuting as transport connectivity is further improved. The area around Kaiwaka, including the Oneriri Peninsular and Hakaru area, is popular for lifestyle block developments with working from home arrangements and improving commuting times facilitating more working age people

to settle in these picturesque rolling hills with their families. Potential industrial development in Maungaturoto and Kaiwaka is also expected to support population growth in these two centres (Infometrics, 2023b).

The village of Paparoa (included within the Otamatea SA2) is presently being expanded by a 14-lot residential subdivision aimed at retirement living and a further 15 rural residential lots, representing the continuing growth of this area. However, overall, the Otamatea, Ruawai-Matakohe and Maungaru areas are projected to have only modest growth as advances in the automation of farming see fewer workers required in the farming sector. These differing growth paths are compared in figure 4.3.2.7. Though growth paths vary, all areas are projected to have more people in 2054 than in 2022 (Infometrics, 2023b).

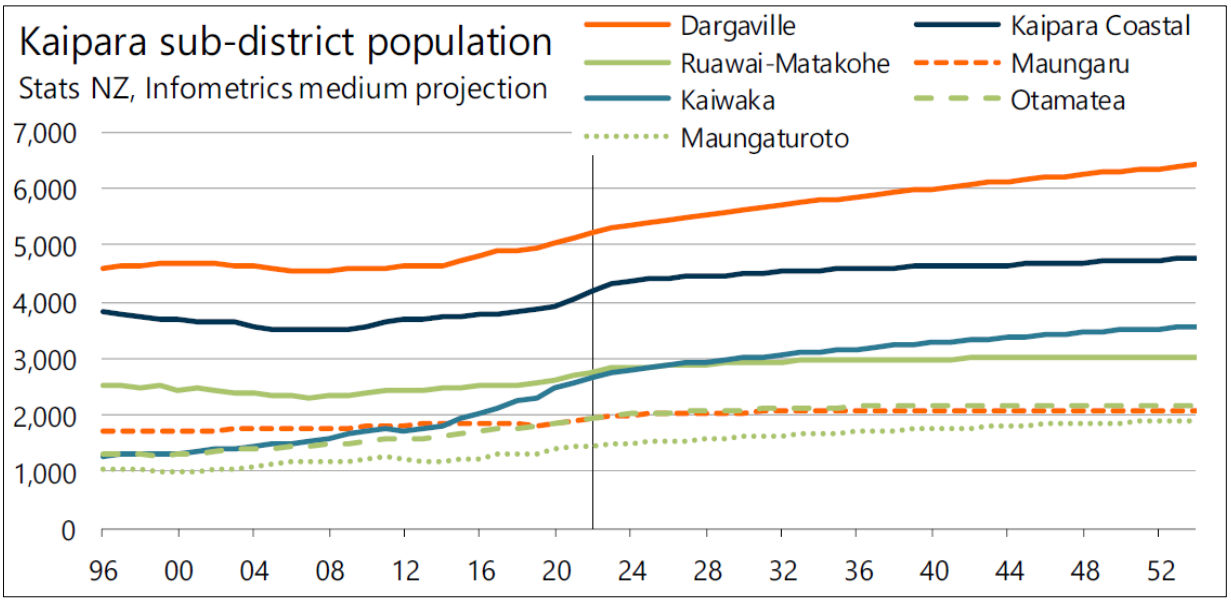


Figure 4.3.2.7: A comparison of growth across the district, other than in Mangawhai (Infometrics, 2023b).

Dargaville has historically been a hub for employment in Kaipara, and over the past decade has experienced faster growth in employment than population (figure 4.3.2.8) (Infometrics, 2023b). The gap between population and employment in Dargaville has narrowed over time, which may reflect greater commuting from nearby Kaipara Coastal and Maungaru SA2s into Dargaville for work (Infometrics, 2023b). Both Te Kopuru and Baylys urban areas (in the Kaipara Coastal SA2) are within easy commuting distance of Dargaville and act as satellite suburbs. In all, employment growth appears to be one of the main factors influencing population growth in Dargaville and surrounding areas.

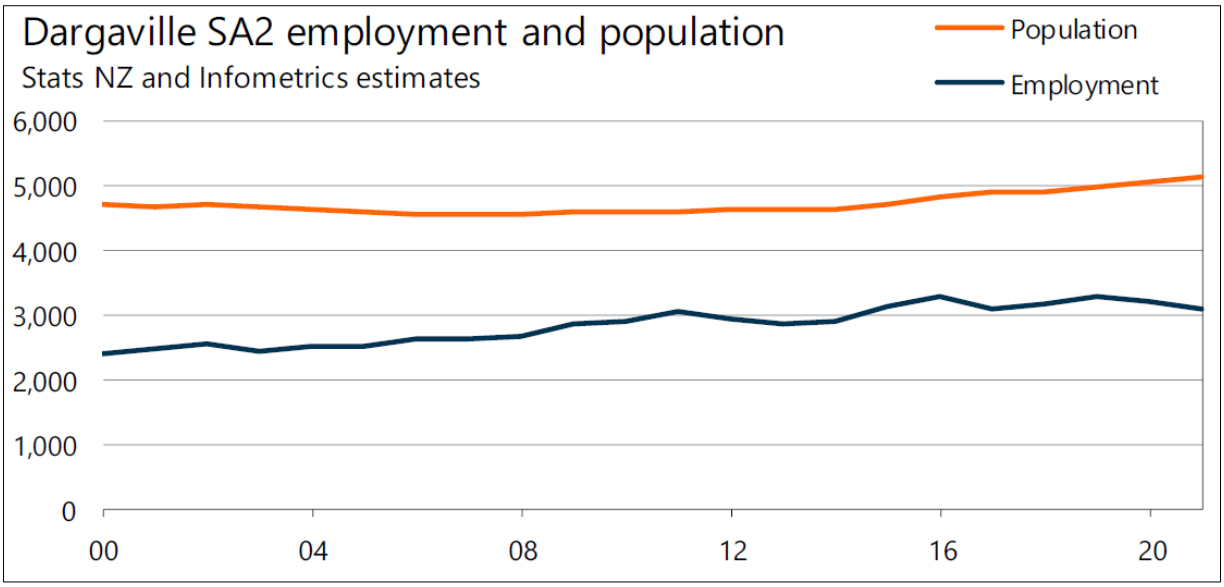


Figure 4.3.2.8: A comparison of population and filled jobs in Dargaville (Infometrics, 2023b).

By contrast, Mangawhai's growth has been predominantly population-driven, with population growing much faster than employment (figure 4.3.2.9) (Infometrics, 2023b). This reflects that Mangawhai's growth is driven more by being a satellite of Auckland than local job opportunities (Infometrics, 2023b).

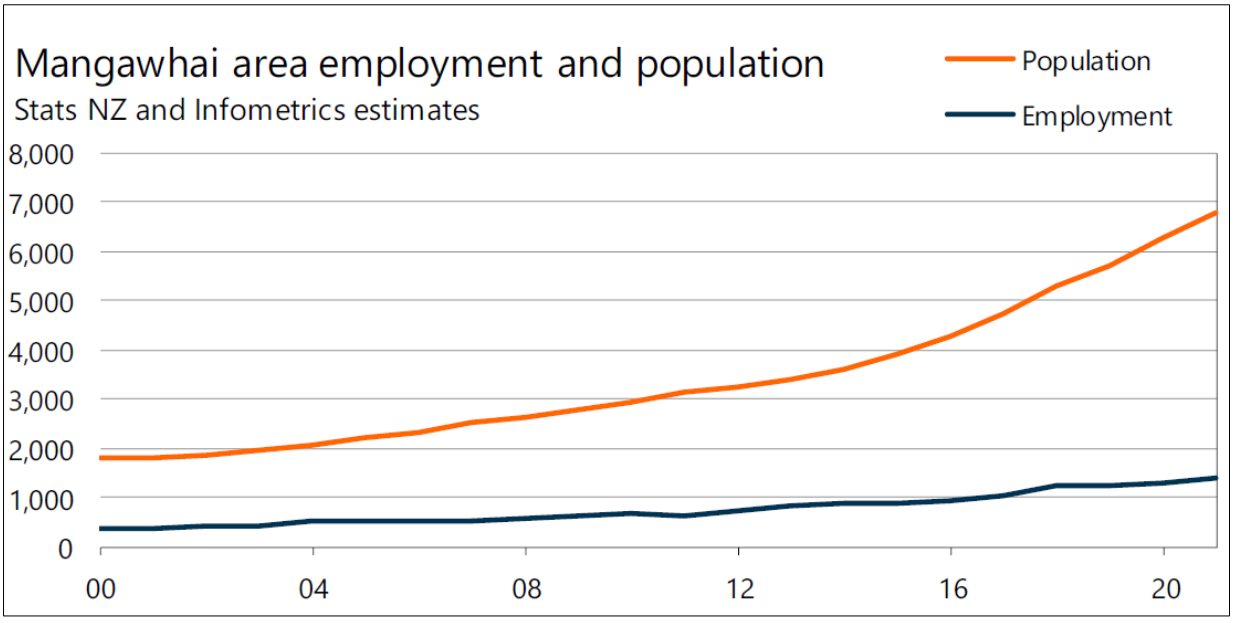


Figure 4.3.2.9: A comparison of filled jobs and population in Mangawhai (Infometrics, 2023b).

4.3.3 Household Growth in Kaipara

A household is a grouping of individuals and/or families living in the same dwelling and sharing facilities with each other (Infometrics, 2023b). The number of households and average household size are estimated based on projected changes in the structure of the population (such as a growing older-age population) and trends in household formation (such as women deferring childbirth). These trends provide a theoretical estimate of the number and composition of households. Understanding household trends is important for Council as the costs of the services it provides are typically recovered from rates which are levied on a per-household/per property basis rather than on individuals.

The total number of households in the Kaipara District is estimated to have risen from 7,100 in 2001 to 11,300 in 2022 (Infometrics, 2023b). Households are projected to grow to 15,000 in 2054 (figure 4.3.3.1). Household growth in Kaipara reached a peak of 4.7% in 2020 and 5.0% in 2021, driven by strong population growth. Household growth eased to 3.0% in 2022 and is projected to ease further in the coming years as population growth settles to more moderate levels. Households are projected to grow at 1.6% per annum between 2022 and 2030, 0.9% between 2030 and 2040, and 0.4% between 2040 and 2054 (Infometrics, 2023b).

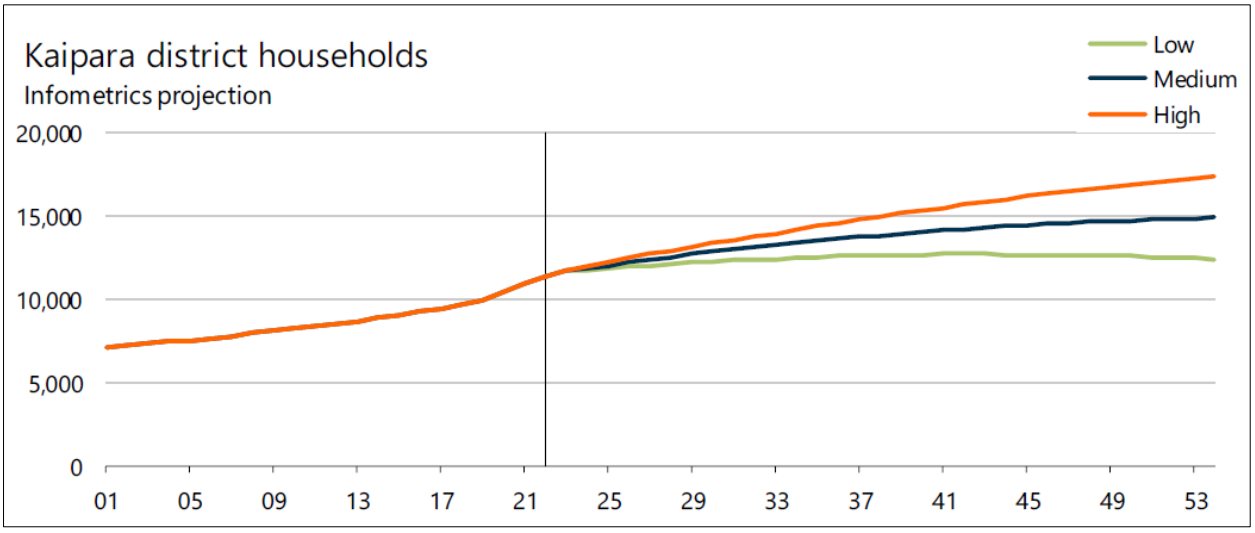


Figure 4.3.3.1: Kaipara District household growth from 2001 to 2053 (Infometrics, 2023b).

At a districtwide level, occupied households grew substantially faster than new dwelling consents between 2019 and 2022 (Figure 4.3.3.2), which suggests that the strong growth in households was accommodated by formerly unoccupied holiday houses becoming permanently occupied residences (Infometrics 2023b). In practical terms, this could reflect holiday house owners choosing to spend more time in their holiday house during COVID-19 lockdowns, and then choosing to move there permanently – perhaps working remotely or retiring (Infometrics 2023b).

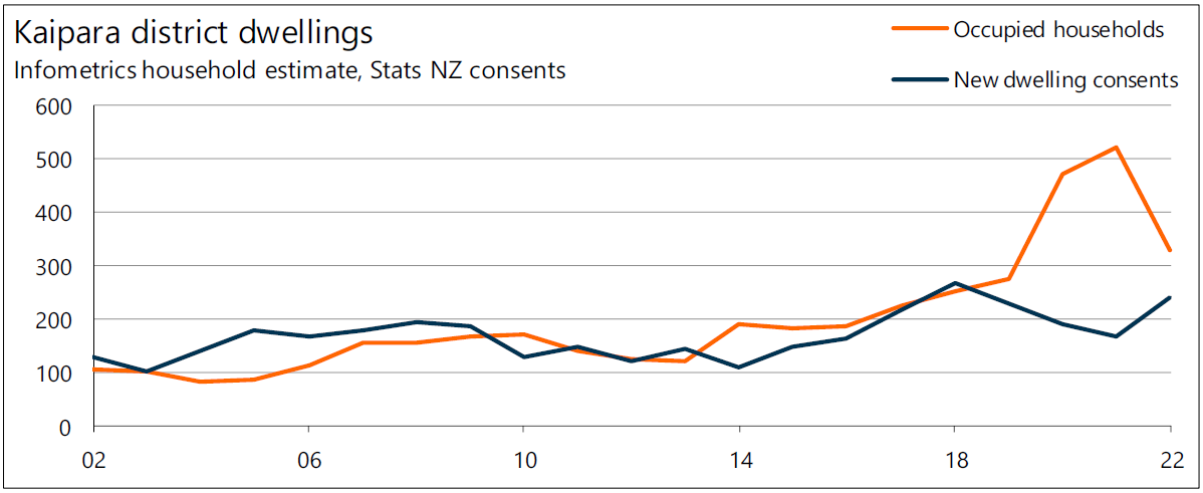


Figure 4.3.3.2: The divergence between growth in occupied dwellings and new dwelling consents (Infometrics, 2023b).

Unoccupied dwellings have been a particularly strong feature of the Mangawhai community. A past analysis comparing the number of unoccupied dwellings to occupied dwellings and comparing wastewater flows between peak and off-peak times suggests Mangawhai's population (in particular Mangawhai Heads) greatly swells during holiday periods, with a peak population likely exceeding 7,700. Trends suggest this seasonal influx is and will continue to become less extreme over time as Mangawhai transitions away from being a predominantly "bach"/holiday community.

Sub-district household growth mirrors sub-district population growth, with the strongest household growth expected across the Mangawhai area, again with a sharp slowdown in the Mangawhai SA2 (Mangawhai Village) over the longer term as the area becomes fully built up (Table 4.3.3.1) (Infometrics, 2023b). Household growth slows down overall across the district in the 2034-2054 period, leading to slower growth in nearly all SA2s in this period compared to 2024-2034. Ruawai-Matakohe and Otamatea are expected to experience a slight decline in the number of households due to softer rural employment, although there will still be more households in 2054 than in 2024 (Infometrics, 2023b).

Table 4.3.3.1: Household growth projections across Kaipara's communities (Infometrics, 2023b).

	Households		Annual growth	
SA2 area	**2022**	**2054**	**2024-2034**	**2034-2054**
Kaipara Coastal	1,726	1,851	0.3%	0.0%
Maungaru	784	783	0.3%	-0.3%
Dargaville	2,100	2,499	0.6%	0.4%
Ruawai-Matakohe	1,145	1,165	0.4%	-0.2%
Otamatea	821	875	0.6%	-0.2%
Maungaturoto	557	750	1.2%	0.6%
Kaiwaka	1,058	1,427	1.4%	0.5%
Mangawhai Rural	1,313	2,732	3.3%	1.7%
Mangawhai Heads	1,204	1,913	1.9%	1.1%
Mangawhai	573	868	2.2%	0.5%
Kaipara District	**11,282**	**14,862**	**1.2%**	**0.5%**

Family households are the most common household type in Kaipara (Infometrics, 2023b). Most of the families include couples, including two-parent families and couples without children. Couples without children are projected to be the fastest growing family type in the 2020s, as the district continues to attract pre-retirees and retirees. From the 2030s onwards, growth in couples without children slows down, and growth in one or two parent families picks up. One-person households are the second most common household type, accounting for 26% of Kaipara households in 2018. This type of household often includes older persons living alone, such as widows or widowers. Other multi-person households (colloquially known as flatting) are projected to remain steady in percentage terms over time, accounting for around 3% of Kaipara households (Infometrics, 2023b).

Kaipara's average household size has eased over the past 20 years, from 2.49 persons in 2001 to 2.39 persons in 2022 (Infometrics, 2023b). As Kaipara has aged, an increasing number of older persons have formed couple-without-children or one-person households. At the same time, lower fertility means that even families with children are becoming smaller. Kaipara's average household size is projected to ease a little further, to 2.35 in the mid-2030's, and remain around 2.35 for the remainder of the projection period to 2054 (Infometrics, 2023b).

The declining average household size projected for the 2020s means that the number of households in Kaipara is projected to grow slightly faster than the population (Infometrics, 2023b). Household growth will be increased by the existing population forming smaller households, as well as households formed through population growth. Thereafter, the steady average household size means that household growth will mirror population growth (Infometrics, 2023b).

4.3.4 Age structure of Kaipara's population

The 65-years-and-older age group has been Kaipara's fastest growing in the past two decades, growing 5.1% per annum on average between 2003 and 2018 (Infometrics, 2023b). It will continue to be the fastest growing age group, projected to grow 3.8% per annum between 2018 and 2033. This growth is driven by attracting further migrants aged 65 years and older, and the last of the baby boomer generation (those born between 1946 and 1964) transitioning from the 30-64 age group into the 65 years and older age group by 2030. Growth in the 65-years and older age group is expected to slow down after 2033, but it will continue to be the fastest growing age group in Kaipara, growing at 1.2% per annum (Infometrics, 2023b).

The population under the age of 65 is also projected to grow in Kaipara, albeit at a much slower rate than the 65 years and older group (Infometrics, 2023b). The 0-14 year old population is projected to grow from 5,200 in 2023 to 5,500 in 2053. The 15-29 year old population is projected to grow from 3,700 to 4,300. The 30-64 year old population is projected to grow from 12,200 to 13,100 (Infometrics, 2023b).

The population aged 65 years and older is projected to grow from 25% of Kaipara's population in 2023 to 32% in 2033, and 36% in 2053 (Infometrics, 2023b). Over this period, the 30-64 year old population will ease back from 43% to 37%, almost equal in size to the 65+ population by 2053. By contrast, the under 30 population is projected to decline as a share of the population. The 0-14 year old population is projected to ease from 18% in 2023 to 15% in 2053, and the 15-29 year old population from 13% to 12% (Infometrics, 2023b). Figure 4.3.4.1 shows these projected changed in the age demographic of Kaipara's population.

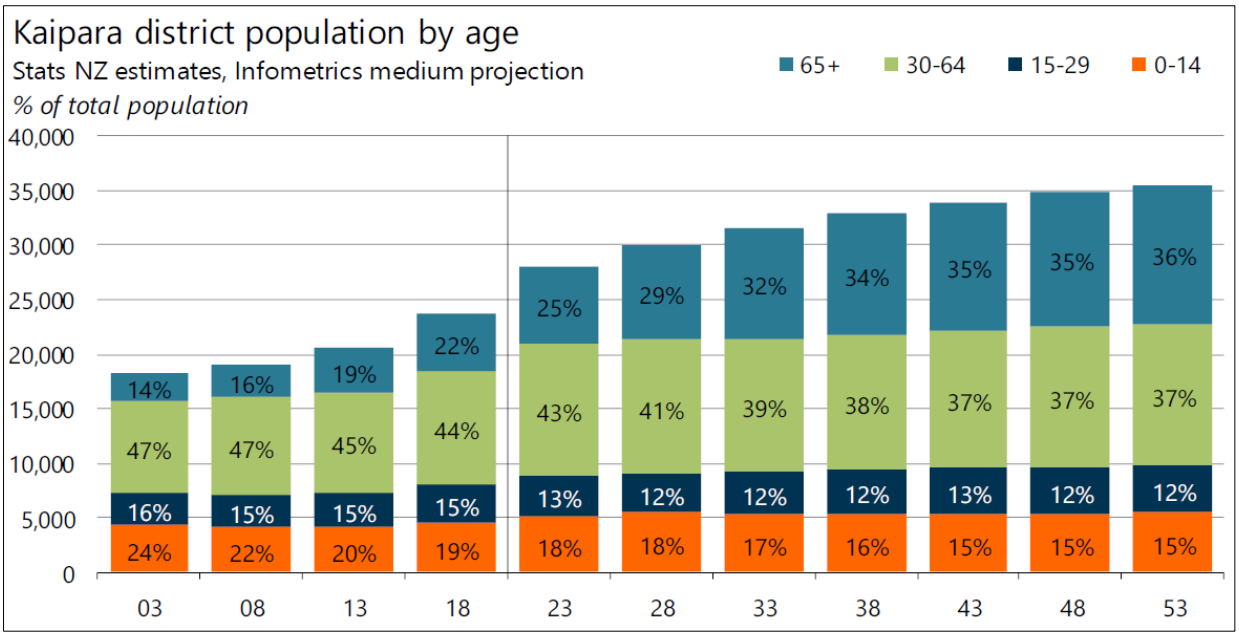


Figure 4.3.4.1: The projected changes in the age structure of Kaipara's population (Infometrics, 2023b).

In 1996, Kaipara's average age of 35 years was the same as the national average (Figure 4.3.4.2) (Infometrics, 2023b). Since then, a net migration loss in young age groups, and net migrant gain in older age groups, has pushed the average age higher and faster than New Zealand overall. As of 2022, the average age in Kaipara was 44 years, compared to 39 years nationally. The average age in Kaipara and New Zealand is projected to continue growing, although the gap will persist. Kaipara's average age is projected to be 50 years in 2054, compared to 44 years nationally (Infometrics, 2023b).

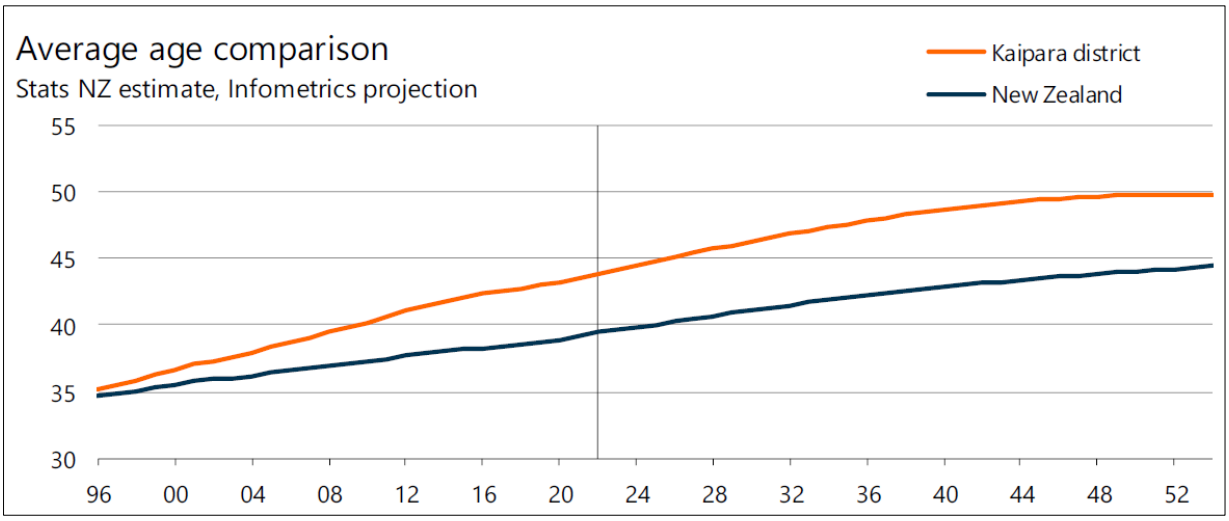


Figure 4.3.4.2: A comparison of the average age of persons in Kaipara versus New Zealand (Infometrics, 2023b).

4.3.5 Ethnicity of Kaipara's population

Ethnicity is a measure of cultural affiliation. It is not a measure of race, ancestry, nationality, or citizenship. Ethnicity is self-perceived, and people can belong to more than one ethnic group (Stats NZ, 2020).

Kaipara's population is projected to become more diverse over time, with growth across all major ethnic groups and an increase in people identifying with multiple ethnic groups (Infometrics, 2023b). As of 2018, 84.1% of Kaipara's population identified with European ethnicity, 24.9% with Māori, 3.8% with Pacific and 2.9% with Asian (Figure 4.3.5.1). Between 2018 and 2043, the strongest growth is expected in the Pacific ethnic group, growing by 131%, and Asian, growing by 106%. The Māori population is projected to grow 80% and European by 50% (Infometrics, 2023b).

Note that as people can identify with more than one ethnicity, the population by ethnic group is greater than the total population, and percentages add up to more than 100% (Infometrics, 2023b).

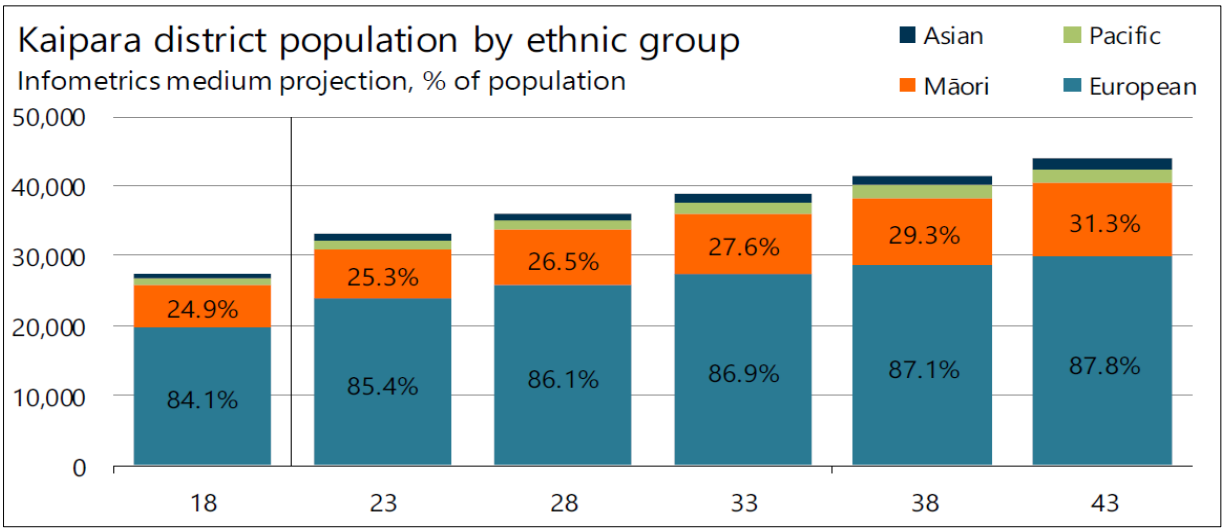


Figure 4.3.5.1: Kaipara district population by ethnic group (Infometrics, 2023b).

Table 4.3.5.1 shows the ethnic make-up of Kaipara's population in the different communities as at the 2018 Census. Four of the Statistical Area 2 (SA2s), Dargaville, Kaipara Coastal, Ruawai-Matakohe and Kaiwaka, have a relatively large Māori population compared to the district average, while the opposite is true for Otamatea, Mangawhai Village, Mangawhai Rural and Mangawhai Heads. In 2018 24.6% of Kaipara's population identified as Māori compared to 48.3% in the Far North, 30.1% in Whangārei, 36.0% in Northland, 11.5% in Auckland and 16.5% nationally (Stats NZ, 2020).

Table 4.3.5.1: ***Ethnic make-up of Kaipara district and its neighbours according to the 2018 Census (Stats NZ, 2020).***

Area	Ethnicity					
	European	Māori	Pacific	Asian	Middle Eastern/ Latin American/ African	Other
Dargaville	70.7%	35.7%	7.4%	4.4%	0.3%	1.1%
Maungaru	91.8%	21.3%	2.8%	1.7%	0.2%	0.8%
Kaipara Coastal	79.2%	30.4%	3.1%	2.9%	0.3%	1.6%
Ruawai-Matakohe	85.8%	26.2%	2.5%	1.0%	0.5%	1.2%
Otamatea	90.7%	17.0%	2.5%	1.4%	0.2%	1.2%
Maungaturoto	85.8%	23.4%	2.8%	2.4%	0.0%	0.9%
Kaiwaka	79.0%	26.2%	3.5%	3.5%	0.8%	1.8%
Mangawhai Village	93.6%	14.1%	2.2%	2.9%	0.6%	0.6%
Mangawhai Heads	91.1%	11.6%	2.6%	3.9%	0.6%	0.8%
Mangawhai Rural	93.7%	11.9%	2.9%	1.9%	0.6%	1.7%
Kaipara District	**83.3%**	**24.6%**	**3.8%**	**2.8%**	**0.4%**	**1.3%**
Far North District	64.2%	48.3%	4.8%	3.0%	0.5%	1.0%
Whangarei District	77.0%	30.1%	3.9%	4.9%	0.5%	1.3%
Northland Region	73.1%	36.0%	4.2%	3.9%	50.0%	1.2%
Auckland Region	53.5%	11.5%	15.5%	28.2%	2.3%	1.1%
New Zealand	*70.2%*	*16.5%*	*8.1%*	*15.1%*	*1.5%*	*1.2%*

In 2022 Kaipara's Māori population was estimated at 6,420 persons, an increase of 1.7% since 2021 (Infometrics, 2023a). Figure 4.3.5.2 shows how Kaipara's Māori population and non-Māori population have grown between 1996 and 2022. When considering figure 4.3.5.2, it should be noted that growth in Kaipara's Māori population reflects not only net migration and natural increase but also changing cultural identity with more people who formally chose to identify as non-Māori reconnecting with their heritage and coming to identify as Māori.

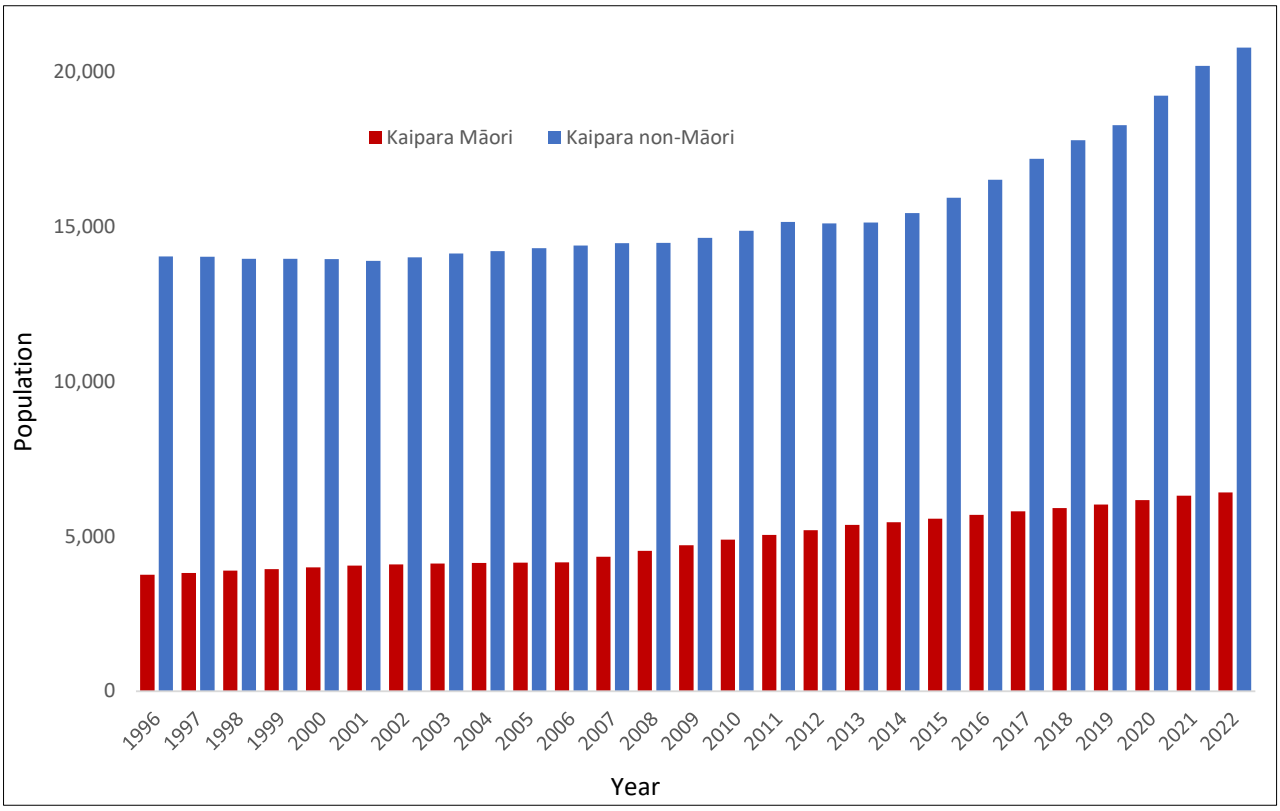


Figure 4.3.5.2: Growth in Kaipara's Māori and non-Māori populations (Infometrics, 2023a).

Kaipara's Māori population is comparatively large as a proportion of the population (compared to the national average) and is growing in real terms. Prior to 2015, Kaipara's Māori population had also been growing as a proportion of the total population. However, this proportional growth has more recently been offset by increased net migration of non-Māori to the District.

4.4 Wellbeing

One means of comparing wellbeing between areas is through the New Zealand Index of Multiple Deprivation (the Deprivation Index). The Deprivation Index gives an overview of disadvantage based on seven domains of deprivation; employment, income, crime, housing, health, education and access to services (Chiang & Exeter, 2019). The Deprivation Index divides the New Zealand land mass into 5,958 neighbourhood-level data zones, each containing an average of 712 people. A score is then attributed to each of these based on their performance against the seven domains of deprivation. Data zones are then ranked from the least to most deprived (1 to 5,958) and grouped into five quintiles. Quintile 1 represents the least deprived 20% of data zones in the whole of New Zealand while quintile 5 represents the most deprived 20%.

In Northland, 47.8% of data zones are amongst the 20% most deprived in New Zealand. Compared to other regions in New Zealand, Northland has the largest proportion of most deprived data zones, as demonstrated in table 4.4.1 (Chiang & Exeter, 2019).

Table 4.4.1: Proportion of data zones in each area ranked in each of the different quintiles. The first quintile (Q1) represents the least deprived 20% of data zones while the fifth quintile (Q5) represents the most deprived 20% (Chiang & Exeter, 2019).

Regions	Q1	Q2	Q3	Q4	Q5
Northland	**2.2%**	**7.1%**	**19.0%**	**23.9%**	**47.8%**
Southland	45.8%	27.1%	10.2%	13.6%	3.4%
Otago	34.9%	23.5%	21.0%	16.0%	4.6%
Canterbury	33.1%	24.2%	17.4%	17.9%	7.5%
Wellington	25.3%	21.9%	19.1%	18.8%	14.9%
Nelson Marlborough	20.9%	26.5%	29.6%	13.8%	9.2%
Auckland	19.6%	19.3%	20.4%	17.5%	23.2%
Hawke's Bay	16.7%	14.5%	18.1%	25.8%	24.9%
Taranaki	16.0%	19.9%	28.2%	26.3%	9.6%
Waikato	12.6%	18.9%	20.3%	23.9%	24.4%
West Coast	12.5%	27.1%	20.8%	29.2%	10.4%
Manuwatu	10.9%	18.1%	18.6%	26.2%	26.2%
Bay of Plenty	7.6%	14.4%	18.5%	27.4%	32.1%
Gisborne	6.3%	14.1%	15.6%	18.8%	45.3%

In the Far North, 57.7% (49/85) of data zones are among the 20% most deprived, while 1.2% (1/85) were among the 20% least deprived in New Zealand. In Whangārei, those in the Q5 quintile accounted for 31.3% (35/112) of data zones and 3.6% (4/112) were in the Q1 quintile. In Kaipara, 42.9% (12/28) were in each of the Q5 and Q4 quintiles and no data zones were among the least deprived Q1 quintile (Chiang & Exeter, 2019).

The following Figures 4.4.1 to 4.4.4 show how deprivation (as measured by the Deprivation Index) varied around Kaipara, Northland, the North Island and South Island. Light shading represents lessor deprivation (Chiang & Exeter, 2019).

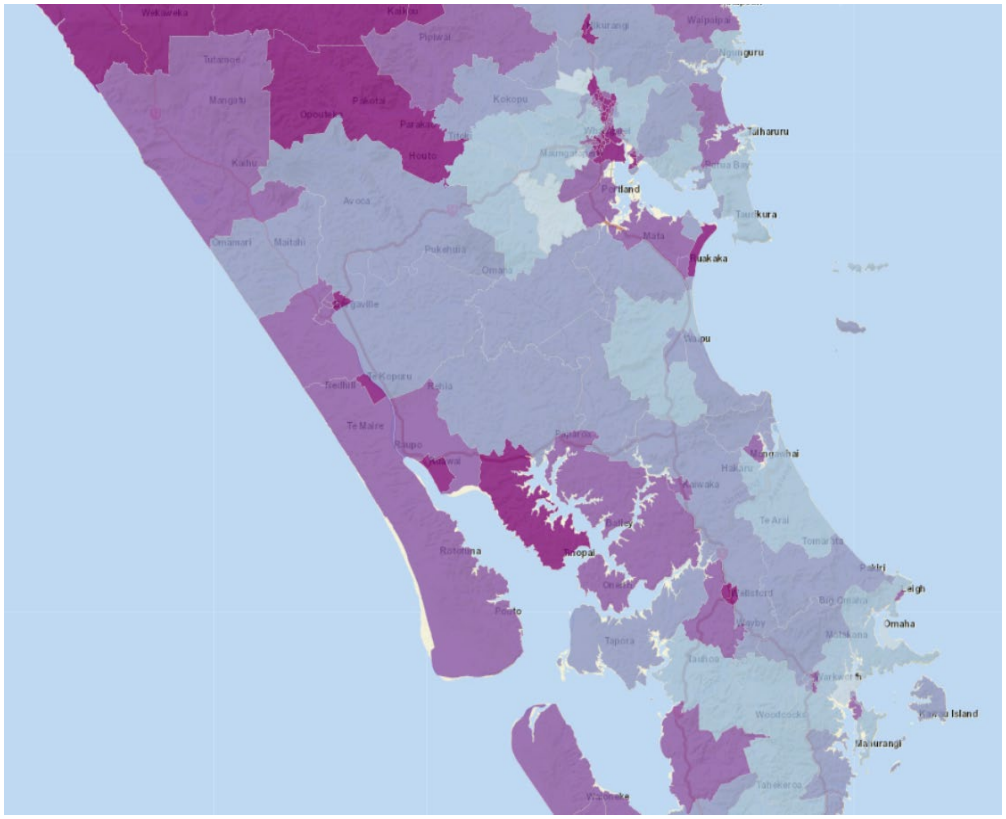


Figure 4.4.1: The disparity of deprivation in the Kaipara (as measured by the Deprivation Index) (Chiang & Exeter, 2019).

Figure 4.4.2: The disparity of deprivation in Northland (as measured by the Deprivation Index) (Chiang & Exeter, 2019).

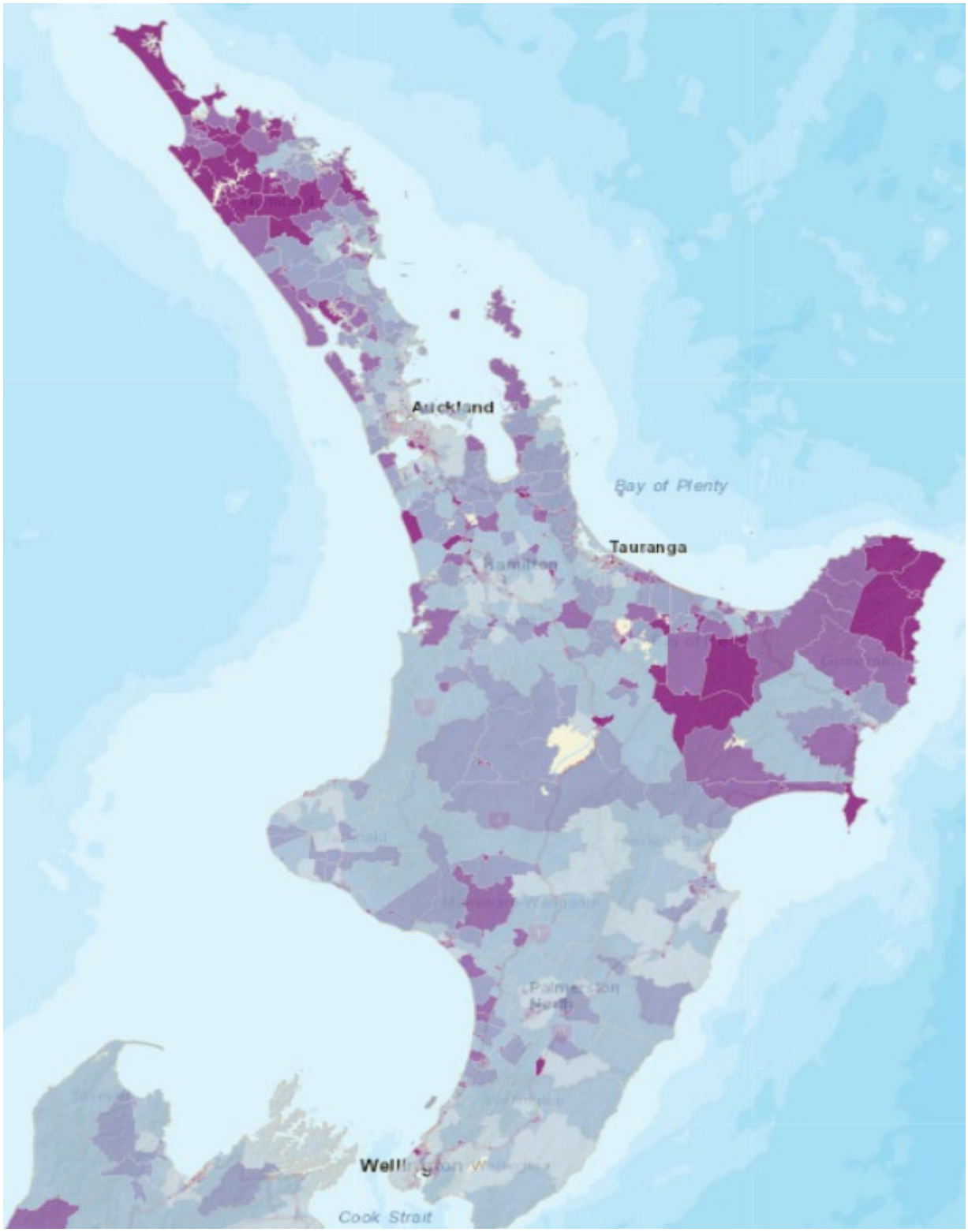


Figure 4.4.3: The disparity of deprivation in the North Island (as measured by the Deprivation Index) (Chiang & Exeter, 2019).

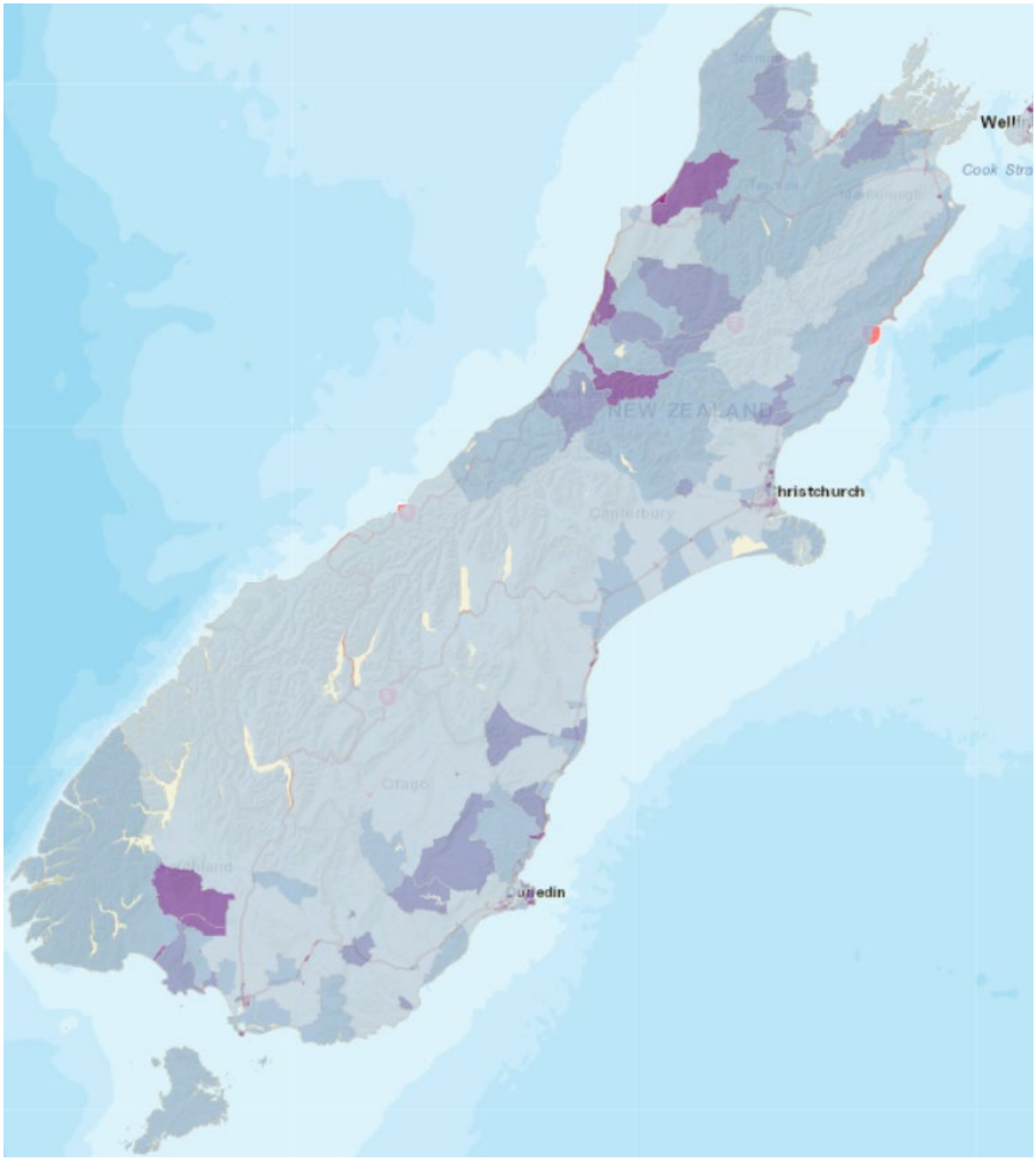


Figure 4.4.4: The disparity of deprivation in the South Island (as measured by the Deprivation Index) (Chiang & Exeter, 2019).

Looking at the components of Kaipara's Deprivation Index score (employment, income, crime, housing, health, education and access to services), Kaipara generally received its best scores in the crime, health and housing categories and its worst scores for education and access to services. This reveals people in Kaipara had low levels of housing deprivation and are much healthier than elsewhere in Northland (Chiang & Exeter, 2019). The poor score for access to services reflects the expansive and rural nature of the district, together with the limited number of services established in Mangawhai at that time - 2018. The access domain measures the distance to the nearest three General Practitioners (i.e. doctors), supermarkets, service stations, schools and early childhood education centres. High deprivation scores for the access domain suggest people living in these data zones would need to travel further for these services (Chiang & Exeter, 2019).

Education

That Kaipara's people achieve relatively good outcomes for income, housing and health while having poor outcomes for education may reflect the greater proportion of jobs in the primary, manufacturing and trade sectors (which are overrepresented in Kaipara's economy). While these jobs often do not require higher qualifications such as a university degree, they do require specialist skills such as machine operating and practical skills which (while not recognised by the Deprivation Index) are recognised and rewarded by employers in these industries.

Figure 4.4.5 shows how highest qualifications in Kaipara's 2018 population compared to those of the population nationally. It reinforces the greater importance of practical over academic skills in the District's work force compared to the national average (Infometrics, 2023a).

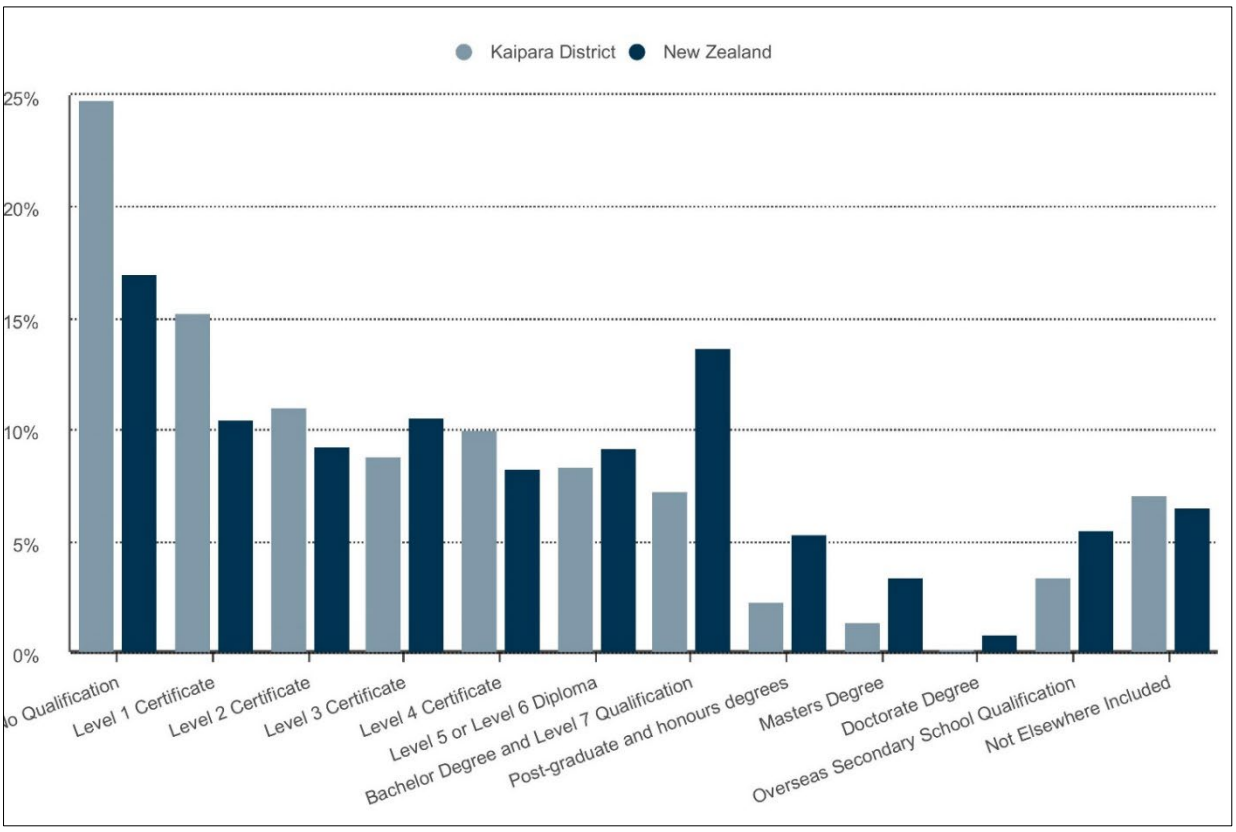


Figure 4.4.5: Population by highest qualification in 2018 (Infometrics, 2023a).

Household income

Household income, a measure of the income per household rather than per individual, is often a better measure of wellbeing than personal income, especially when considering shared expenses such as the cost of housing (and local government rates). In addition to income earnt in employment, household income also captures other sources of income such as benefits and superannuation. The 2022 mean household income in Kaipara was estimated at $92,176. This was considerably lower than the New Zealand mean household income of $117,786 and lower than all of Kaipara's neighbours (refer to Figure 4.4.6) (Infometrics, 2023a). In their report, Chiang & Exeter (2019) identify low income levels as a key area of concern in the Northland region.

Figure 4.4.6: Comparison of household income in 2022 (Infometrics, 2023a).

Household incomes are generally higher in areas of New Zealand with a greater urban concentration. This metro-provincial divide is due to a higher concentration of white-collar jobs in urban areas, which generally pay more. Professional, technical, and scientific services add to higher household incomes, as do government-based industries (Infometrics, 2019).

Housing affordability

For lower-income households, high housing costs relative to income are often associated with severe financial difficulty and can leave households with insufficient income to meet other basic needs such as food, clothing, transport, medical care and education. High outgoings-to-income ratios are not as critical for higher-income earners, as there is sufficient income left for their basic needs (Infometrics, 2023a).

Housing affordability can be assessed by comparing average house values with mean household income (Infometrics, 2023a). This gives a housing affordability index which is the ratio of the average current house value to average household income. A higher ratio, therefore, suggests that average houses cost a greater multiple of typical incomes, which indicates lower housing affordability. This means that an area with cheap houses will still have poor housing affordability if local incomes are too low (Infometrics, 2023a).

Kaipara scores 9.9 on this housing affordability index suggesting housing is less affordable than other areas of Northland, the Waikato District and the New Zealand average (Figure 4.4.7) (Infometrics, 2023a).

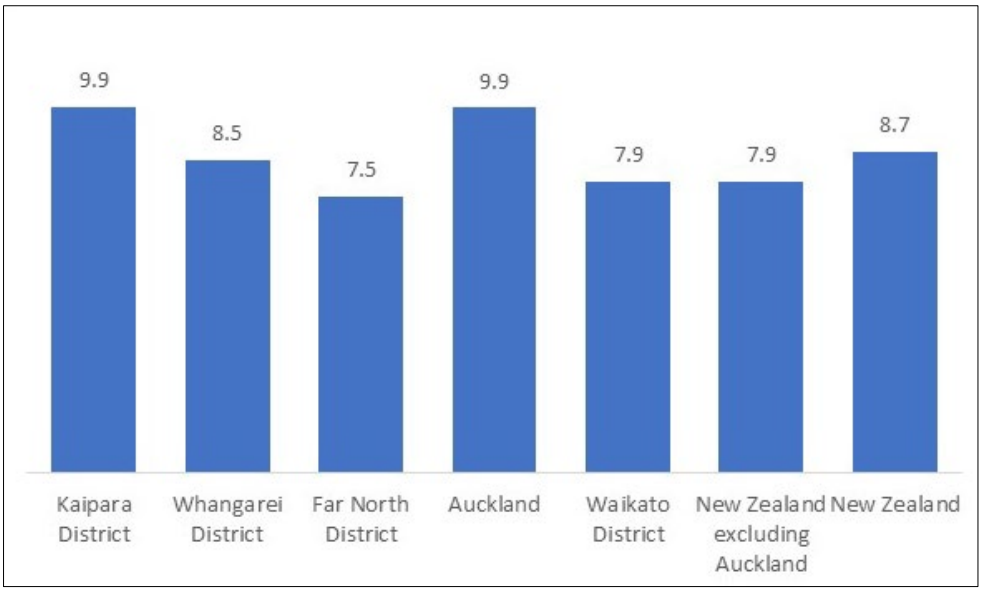


Figure 4.4.7: Comparison of housing affordability in 2022 (Infometrics, 2023a).

The affordability of renting can be considered in much the same way by comparing average annualised rents with annual average household income (Infometrics, 2023a). A higher ratio, therefore, suggests that average rents cost a greater multiple of typical incomes, which indicates lower rental affordability. Kaipara scored 25.2% on this rental affordability index suggesting rental accommodation is on par with the neighbouring Whangarei District but less affordable than Auckland (refer to Figure 4.4.8).

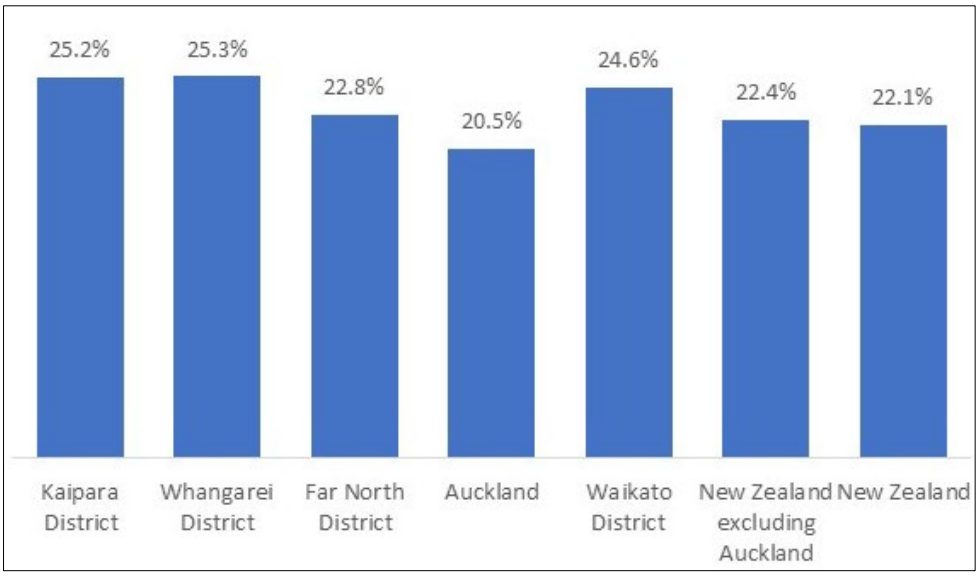


Figure 4.4.8: Comparison of rental housing affordability in 2022, higher numbers equal lower affordability (Infometrics, 2023a).

The average rent in Kaipara in 2022 was $447 per week. This compares to $424 in the Far North, $480 in Whangārei, $460 in Northland, $457 in New Zealand excluding Auckland, $500 in New Zealand overall, $578 in Auckland and $472 in Waikato district (Infometrics, 2023a).

Since COVID-19, the fastest rent increases have been in the provinces, in places similar to Kaipara that have a relatively small rental pool that can quite quickly get squeezed by any growth pressures (Patterson, 2020). Like Kaipara, many of these provincial centres have economies that rely heavily on agriculture, which have been relatively unaffected by the crisis, while other places offer a good lifestyle

proposition. The extensive field testing of remote working during the lockdown restrictions has taught people that working from the regions is an option. In Kaipara, these factors and proximity to Auckland are anticipated to combine to keep demand for housing high, even as the nation enters the COVID-19 induced recession (Patterson, 2020).

Crime

New Zealand's crime rate is low by international standards, with New Zealand being ranked second in the Global Peace Index 2022 behind Iceland (Institute for Economics & Peace, 2022). Recorded crimes continued to fall over the 12 months ending 31 December 2020, with total victimisations dropping 6.6.% from a year before. Over this period, there were 265,162 victimisations, down from 18,822 from the previous 12 months (New Zealand Police, 2020). Over the long term, New Zealand's crime rate has been continuing to fall. This decline in crime rate comes as police numbers have risen, reaching 9,011 sworn officers in 2018 (Infometrics, 2019).

Across New Zealand, metropolitan areas generally have a lower crime rate than provincial areas, with 2,877 crimes per 100,000 people in metropolitan areas in 2018, compared to 3,680 crimes per 100,000 people in provincial New Zealand (Infometrics, 2019). For the four years that detailed data is available, the provincial crime rate (3,680 in 2018) has never gone lower than the highest metropolitan crime rate (3,536 in 2015). However, this provincial crime rate is an average that varies between provincial centres. In particular, Kaipara's crime rate was 2,884 crimes per 100,000 people in 2017, lower than the 2017 national average (3,441 crimes per 100,000 people) (Infometrics, 2019).

In the 12 months till November 2022 there were 773 recorded crimes in Kaipara, 86 more than the previous 12 months (New Zealand Police, 2023). This equates to a crime rate of 2,842 per 100,000 people in 2022. However, this crime rate was not consistent across the district with 368 of Kaipara's crimes committed in Dargaville (up from 323 over the previous 12 months) with just 92 committed in Mangawhai (up from 80 over the previous 12 months). This equates to a Dargaville crime rate of 7,023 per 100,000 people compared to 1,312 per 100,000 people in Mangawhai. Of the crimes in Kaipara over the 12 months till November 2022, theft was the most common (385) followed by burglary (277) and assault (84) (New Zealand Police, 2023).

5 Economy – Our Livelihoods

[Section 5 has been prepared for Kaipara District Council by Infometrics]

A thriving local economy creates opportunities for communities and individuals to establish businesses, engage in employment and live prosperously. A strong local economy with plentiful job opportunities will help a district retain its population and attract new residents from other districts and abroad.

5.1 Global commentary

COVID-19 was the great disruptor

The COVID-19 pandemic drastically changed the global economic outlook overnight. International borders around the world closed swiftly and the global population was largely confined to their homes, as governments responded to the COVID-19 threat by attempting to limit the spread of the virus. However, strict measures aimed at limiting the spread of the virus are largely a thing of the past, with

most nations now favouring looser policies since the widespread adoption of vaccines which limit the seriousness of the virus. Figure 5.1.1 shows the strictness of containment and health measures in selected countries over time, as measured by the Oxford COVID-19 Government Response Tracker, which shows that even the remarkably strict measures enforced in China since late 2019 have started to ease in recent months.

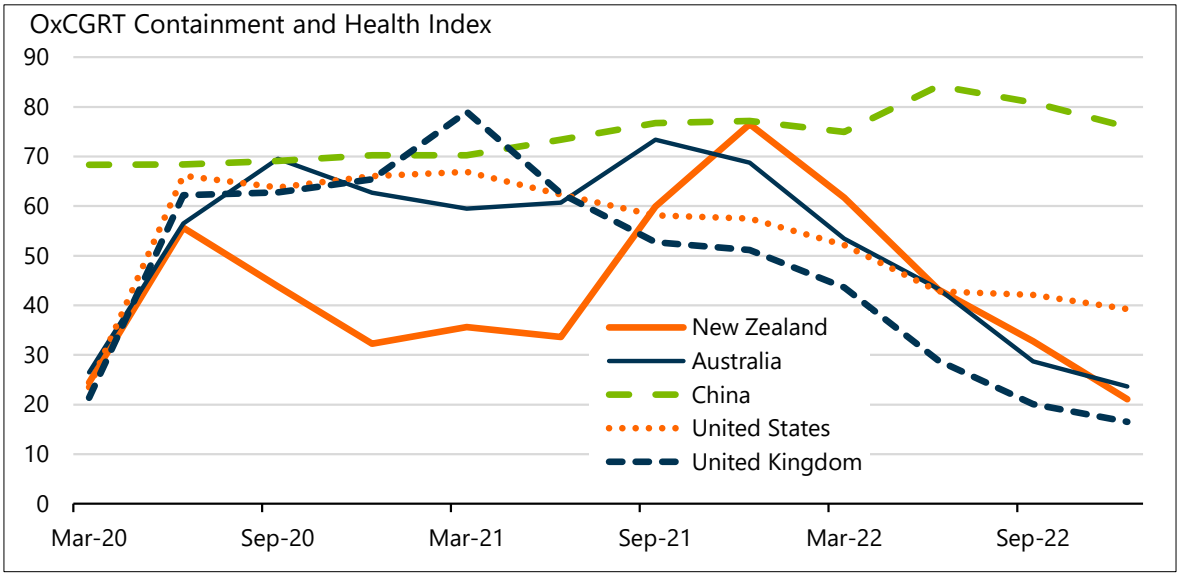


Figure 5.1.1: COVID-19 containment measures ease in 2022.

Higher vaccination rates coincide with a general easing in global pandemic restrictions, with around 57% of the global population fully vaccinated against the virus as of December 2022.

Initial containment measures enforced in early 2020 accelerated the adoption of technology in a variety of industries, as people tried to continue working where possible, despite being stuck at home. The adoption of technology which facilitates working remotely has continued to influence the global labour market, with a substantial increase in flexible working arrangements, such as fully remote or hybrid roles. The acceleration of this trend raises questions about the distribution of the workforce around the world and within New Zealand. The role of central business districts has been diminished more jobs can be performed from rural and provincial areas.

The ability for a significant portion of the global workforce to continue working from home, combined with hugely stimulatory fiscal and monetary policy, kept demand high despite the disruptions of the COVID-19 pandemic. Since people were generally confined to their homes, purchasing services became very difficult, so they bought goods instead. The substitution away from services towards goods put huge pressure on global supply chains, causing delays in shipping times and elevating shipping costs. The pandemic exposed vulnerabilities in global supply chains, which has resulted in a greater focus on supply chain resilience. For example, the weak supply chain for semiconductors, a crucial input for a wide range of products, was heavily disrupted during the pandemic, and has attracted international investment to become a key area of public interest.

High inflation returned for the first time in a decade

Loose fiscal and monetary policy, combined with supply chain disruptions and other capacity constraints, coalesced to elevate world prices. Inflation in the US peaked at 9.1%pa in June 2022,

leading the rest of the world, where inflation tended to peak later, such as the UK, where inflation peaked at 9.6%pa in October 2022, as shown in figure 5.1.2.

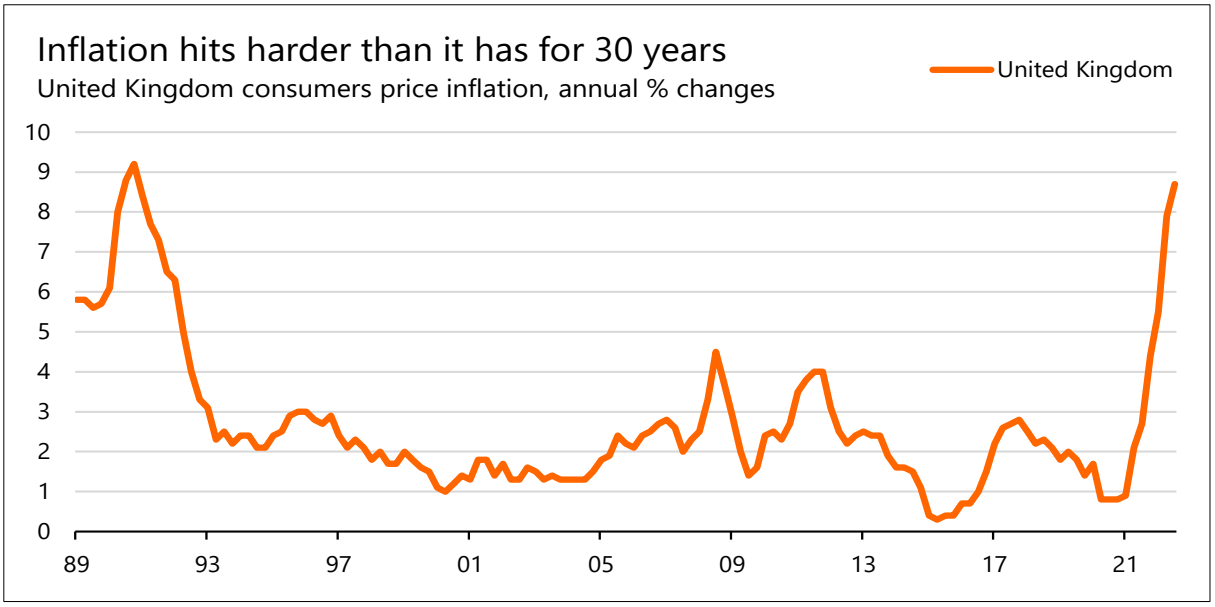


Figure 5.1.2: Inflation hits harder than it has for 30 years.

The global labour market has been tight in 2022, which when combined with rising prices, has led to increasing wages (in nominal terms). A wage-price spiral, where inflation drives higher wages which in turn drives inflation, seemed a realistic possibility at one point, but since then the general economic outlook has cooled.

Central banks respond to inflation with interest rate hikes

Rampant inflation drew the attention of central banks worldwide, with substantial increases in the level of prices soon followed by swift hikes to interest rates. The central bank policy rates (which determine market interest rates) in the US, UK, and Australia were around 0.1% at the end of 2021, but by the end of 2022 had risen to approximately 4.4%, 3.5%, and 3.1% respectively. The rapid increases in the US policy rate (the federal funds effective rate) are shown in figure 5.1.3.

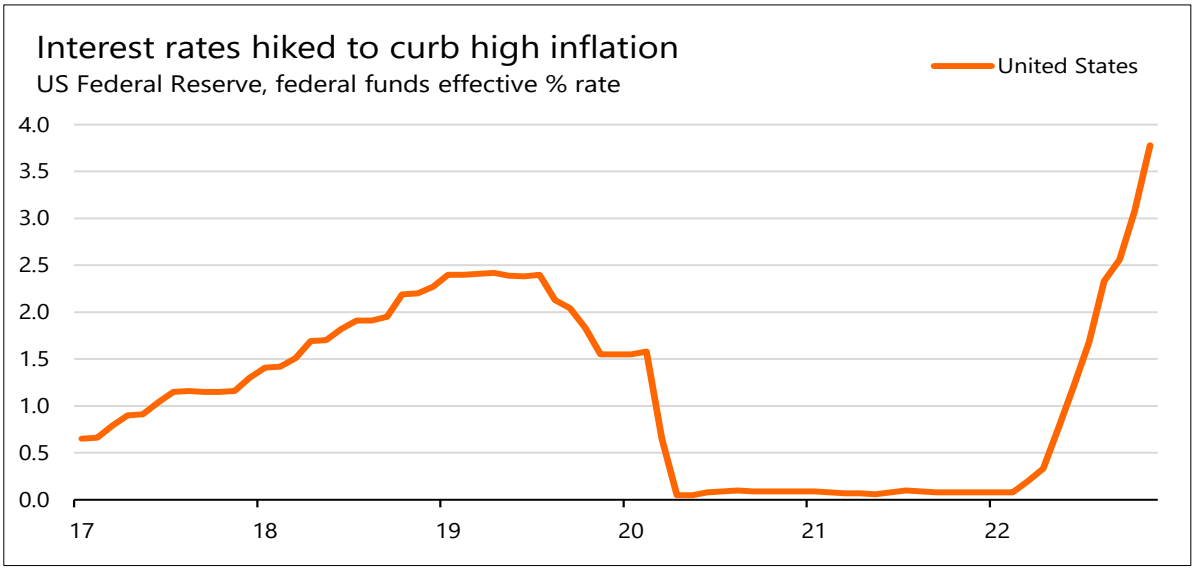


Figure 5.1.3: Interest rates hiked to curb high inflation.

Russia's invasion of Ukraine in early 2022 contribute to substantial increases in the prices for energy and food. Russian and Ukrainian wheat comprises about 25% of global wheat exports, with the invasion of Ukraine itself limiting Ukrainian wheat production and exports, and the economic sanctions imposed on Russia as a result of the invasion limiting Russian wheat production and exports. Russia also exports approximately 14% of the global oil supply, and supplies a huge proportion of western Europe's natural gas through the Nord Stream pipelines, with sanctions also restricting energy exports from Russia.

The higher interest rates have yet to seriously slow inflation, but central banks are committed to bringing inflation under control, even if it shrinks the global economy. A hard landing, where central banks engineer a recession to get inflation under control, looks increasingly likely. Consequently, the outlook for global economic growth has been slashed.

Economic headwinds and geopolitical tensions sour outlook

High inflation and rising interest rates will soften household spending and business investment over the next few years, as the economic headwinds set in motion by the onset of the COVID-19 pandemic reach full force to weaken the global economy.

Additional strain is going to be put on the global economy by heightened geopolitical tensions in the coming years, as the war in Ukraine looks set to drag on and relations between China and the Western world become more complicated than ever. The effect of the war in Ukraine on essential food and fuel looks set to continue, putting upwards pressure on prices, and weakening supply chains.

Heightened tensions in the Pacific are one of several challenges China faces, with its economic outlook looking increasingly bleak. Hospitalisations and death due to COVID-19 look inevitable as the country re-opens, given the low vaccination rates in China, particularly among the elderly. The economic outlook is also unfavourable, with falling demand and disruptions to supply softening anticipated economic activity in China.

5.2 New Zealand Commentary

New Zealand battles with COVID-19

New Zealand quickly and effectively contained the spread of the COVID-19 virus, and as a result has had very low levels of infection and death compared to many other countries. The government implemented strict lockdown measures and border controls early on, followed by widespread testing and contact tracing. New Zealand rapidly unwound its COVID-19 restrictions from late 2021. Figure 5.2.1 shows COVID-19 deaths per 100,000 population in New Zealand compared to selected developed nations.

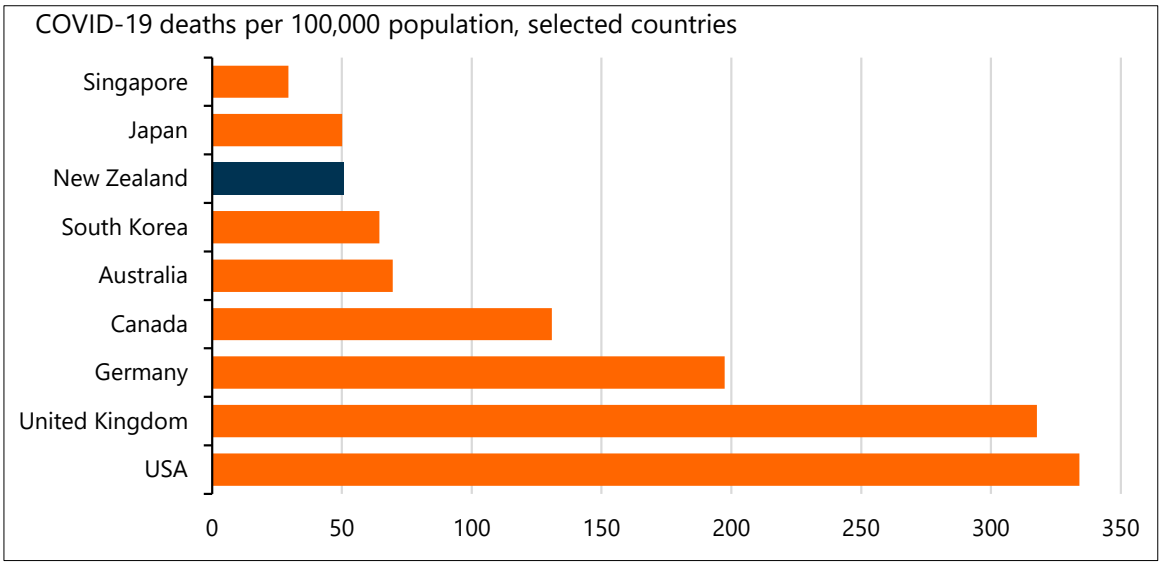


Figure 5.2.1: COVID-19 restriction try to limit the spread of the virus.

The relatively successful handling of the COVID-19 pandemic, combined by increased fiscal stimulus and loose monetary policy, drove a strong rebound in economic activity in 2021 and 2022. Figure 5.2.2 shows annual GDP from March 2017, highlighting the rapid economic recovery after the initial pandemic-driven contraction in early 2020.

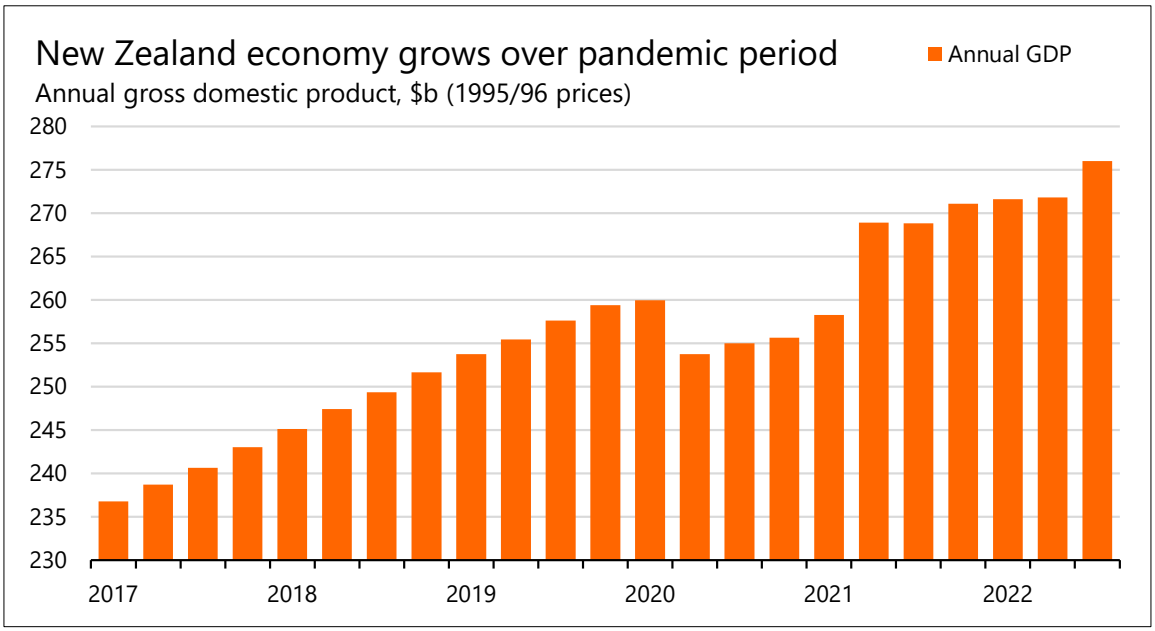


Figure 5.2.2: New Zealand economy grows over pandemic period.

A shortage of housing supply, combined with loose monetary policy as the Reserve Bank slashed the OCR in 2020, lifted house prices in 2020 and 2021, with national prices peaking in November 2021. REINZ's House Price Index is detailed in figure 5.2.3, showing the recent decline in house prices since the peak in November 2021.

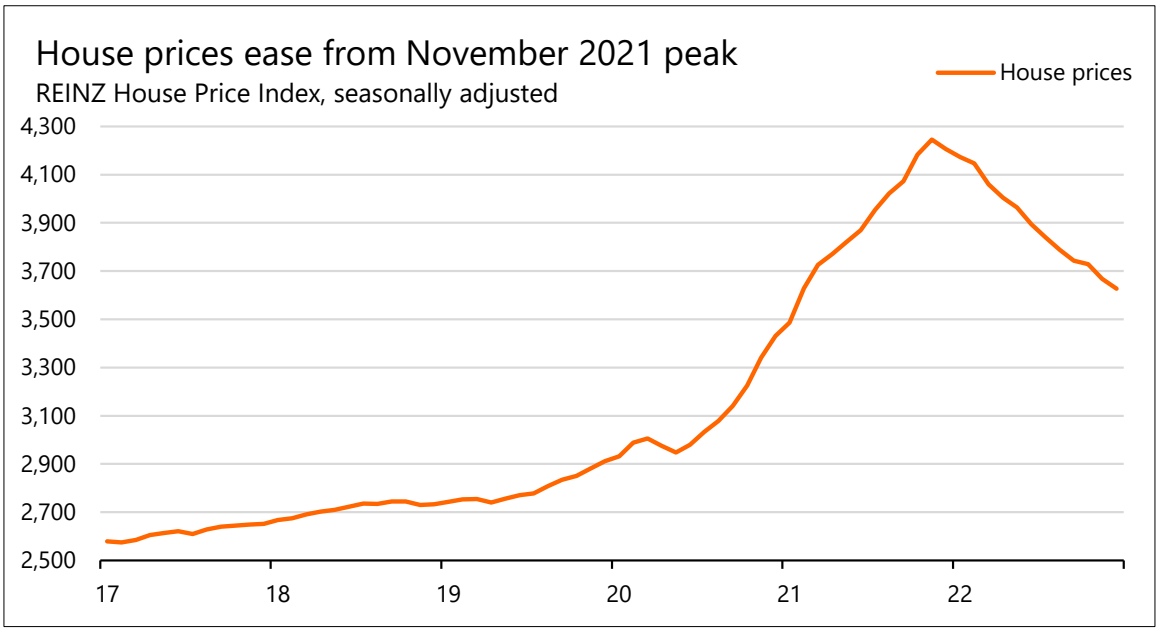


Figure 5.2.3: House prices ease from November 2021 peak.

Figure 5.2.3 shows the drop in net migrant arrivals from mid-2020, as New Zealand's closed borders limited arrival numbers, and as other countries began to open up in late 2021, departures from New Zealand began to climb.

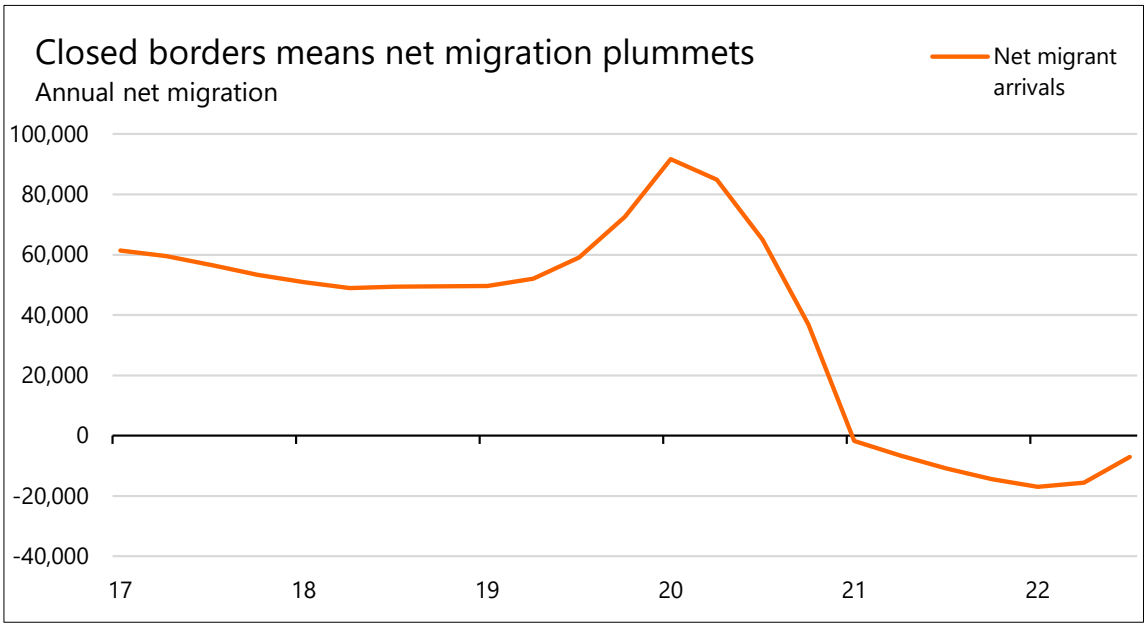


Figure 5.2.3: Closed borders means net migration plummets.

Broad-based inflation takes off

The strong economic recovery in 2021 and 2022 occurred while there were substantial capacity constraints on the supply of labour and raw materials, creating strong inflationary pressures on prices and costs. Figure 5.2.4 shows annual inflation, which reached its highest level in a generation.

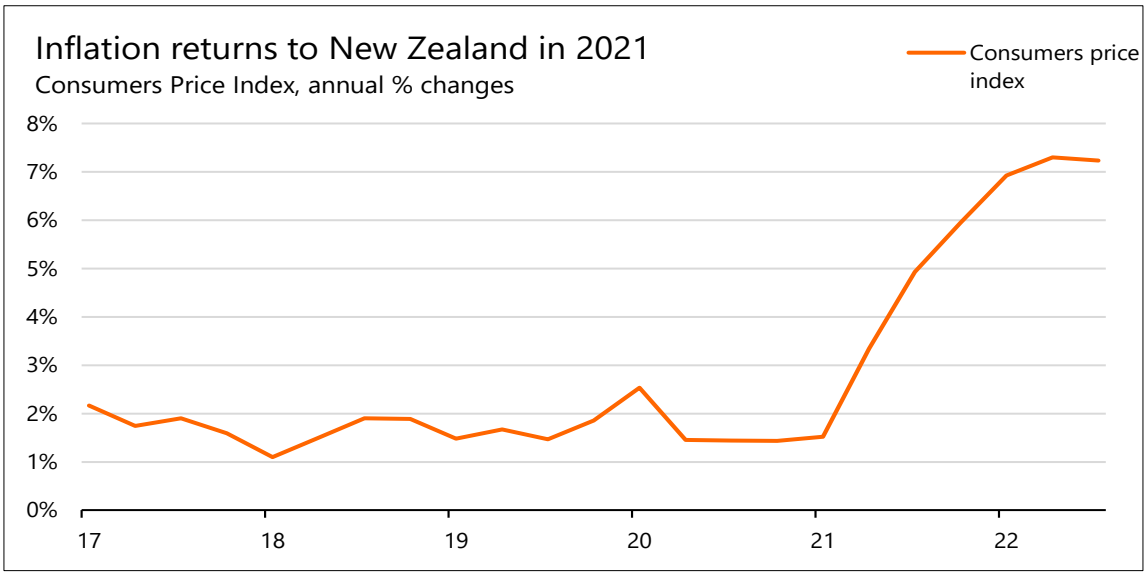


Figure 5.2.4: Inflation returns to New Zealand in 2021.

The Reserve Bank lifts interest rates to curb inflation

Widespread and persistently high inflation motivated the Reserve Bank of New Zealand to respond. The Bank began a series a rapid rate increase in late 2021, which took the Official Cash Rate (OCR) from 0.10% to 4.25% over the next 12 months. Figure 5.2.5 shows the OCR track, illustrating the substantial interest rate hikes enacted to tame inflation.

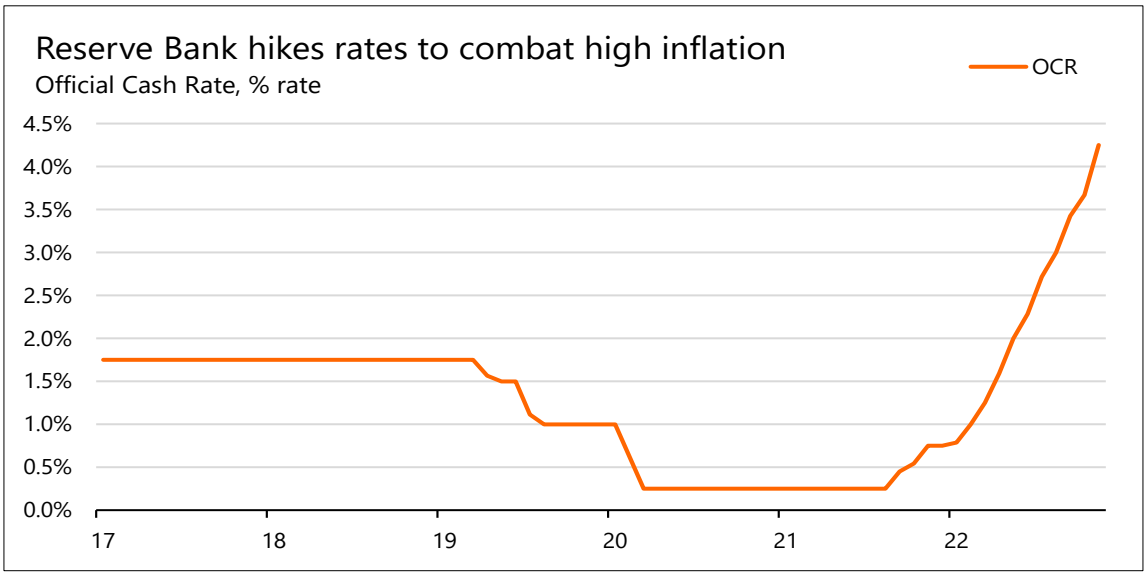


Figure 5.2.5: Reserve Bank hikes rates to combat high inflation.

The labour market and wider economy overheating

Closed borders limited the supply of labour in New Zealand, and demand for workers was kept high by the expansionary monetary and fiscal policies enacted at the onset of the pandemic. Consequently, New Zealand's labour market tightened quickly from mid-2020, with the unemployment rate plummeting to 3.2% by the June 2022 quarter on an annual average basis (see Figure 5.2.6).

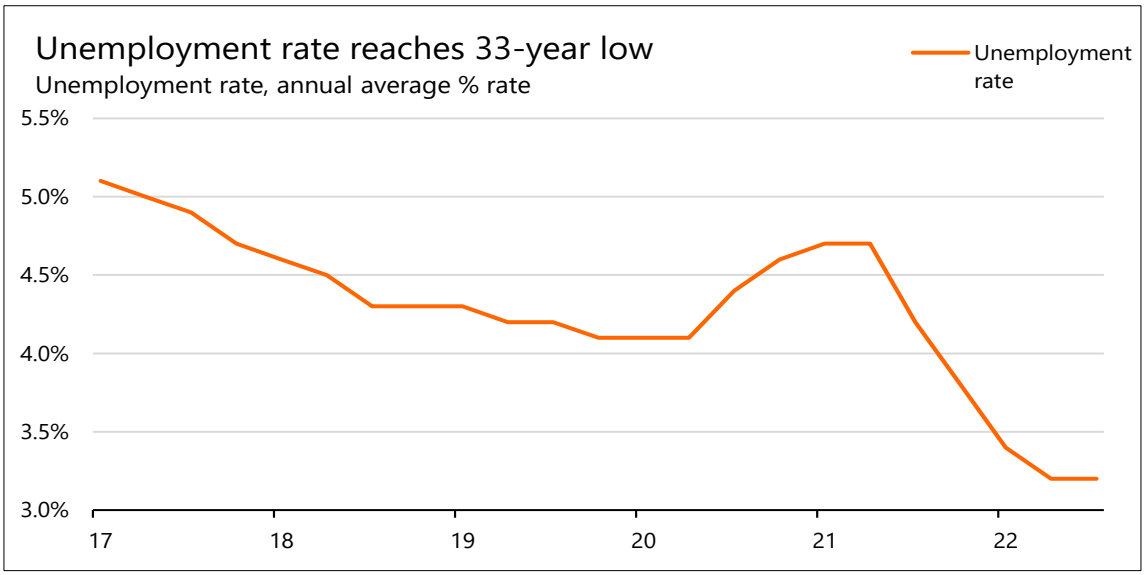


Figure 5.2.6: Unemployment rate reaches 33-year low.

Average hourly earnings increased from around $33/hour in early 2020 to $38/hour by late 2022. Figure 5.2.7 shows wage growth over time, with annual average earnings up 7.5%, noting that inflation was 7.2% in the same period.

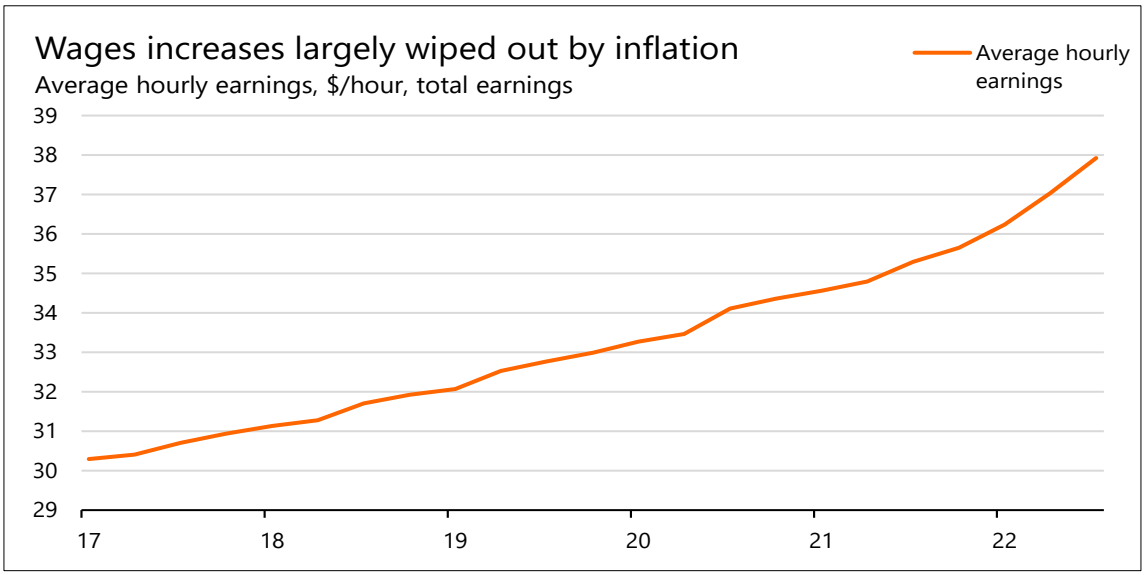


Figure 5.2.7: Wages increases largely wiped out by inflation.

Challenging outlook for 2023 and 2024

We expect that the persistence of inflation in New Zealand makes a recession inevitable. The Reserve Bank will be forced to lift the official cash rate to 5.75% in the first half of 2023 to cool demand. The higher interest rates will lift mortgage rates, squeezing household budgets, driving a decline in household spending. As spending falls, businesses will reassess their staffing needs, loosening the labour market, and lifting the unemployment rate to 4% by the end of 2023. We expect annual GDP will contract in the June 2024 year, and the economy will struggle to grow until mid-2025.

5.3 Northland's economy

Manufacturing was the largest industry in Northland in the year ended March 2021, comprising nearly 15% of the region's GDP. The strength of the manufacturing industry was driven by petroleum and coal product manufacturing (i.e. the Marsden Point oil refinery), which contributed 6.0% of Northland's economic activity. This is expected to plummet in the coming year as refining activities are replaced with import terminal operation.

Agriculture, forestry, and fishing was the second largest industry in Northland in the March 2021 year, making up 10% of the region's economy. Dairy farming was the largest segment of the industry, with Northland reporting over 250,000 dairy cows and exporting $468m of dairy products in the year to March 2021.

Figure 5.3.1 shows Northland's GDP by broad sector compared to New Zealand, emphasising the importance that primary and goods-producing industries play in Northland's economy.

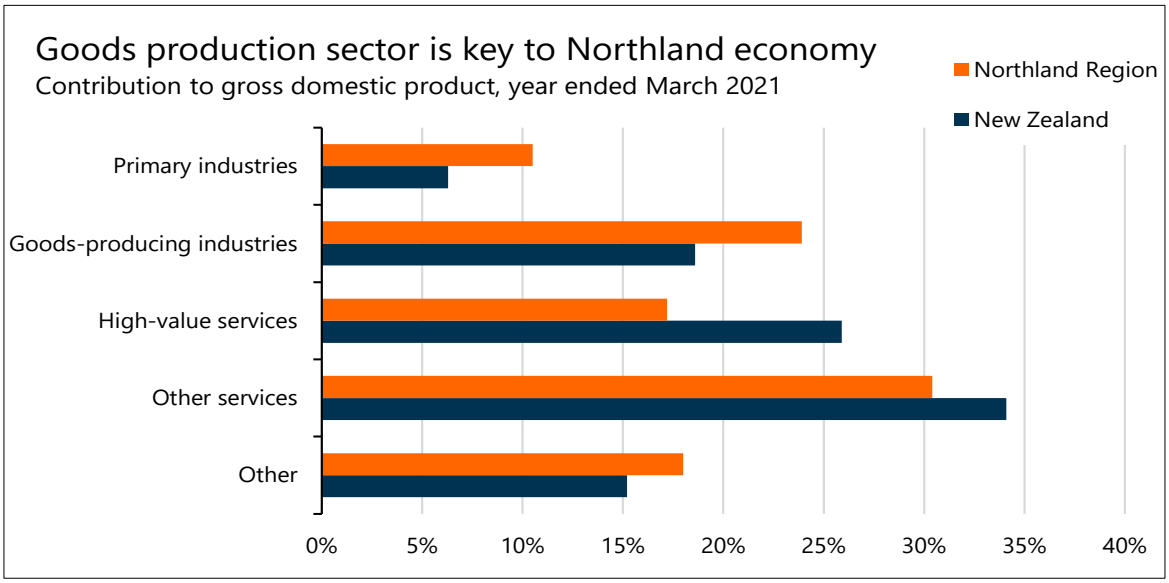


Figure 5.3.1: Goods production sector is key to Northland economy.

Tourism typically makes a strong contribution to Northland's economy, around 6.0% of GDP pre-pandemic, which is much higher than the New Zealand average, where it is approximately 4.0% of GDP.

Over one-third of Northland's labour market are employed in either the health care, construction, or agriculture industry, which employ 13%, 12%, and 11% of the region's workforce respectively. Unemployment in Northland fell 2.7 percentage points over the five years ended March 2021, averaging 5.0% over the March 2021 year.

5.4 Kaipara's economy

Agriculture, forestry, and fishing was the largest industry in Kaipara in the March 2021 year, totalling 24% of the district's GDP. Dairy farming was the largest segment of the agriculture industry, making up 12% of the district's total economy, with sheep, beef cattle, and grain farming comprising 4.5% of Kaipara's GDP.

The Kaipara Water scheme is improving Kaipara District's water storage and use facilities, with the construction of the Te Waihekeora reservoir ultimately supporting an additional 1,100ha of horticultural development. This new horticultural capacity, combined with a diversification of crops and a shift to higher value crops, will likely contribute $83m to GDP and add 437 full-time equivalent jobs in Kaipara District.

Kaipara District recorded 94,000 dairy cows in the March 2021 year, driving the aggregate dairy payout to $214m, a 5.1%pa increase. The higher dairy payout is primarily driven by higher farmgate milk prices, with our estimates indicating the payout rose despite milk solids production in Kaipara falling 17% between the March 2017 and March 2022 years. The strong dairy activity in the district resulted in dairy product exports reaching $130m in the March 2021 year.

Manufacturing was the second largest industry in the year ended March 2021, comprising nearly 12% of Kaipara District's economy. Meat and meat product manufacturing alone made up 2.6%, and wood product manufacturing made up 1.8% of the district's GDP. Figure 5.4.1 illustrates the contribution to Kaipara's economy made by different sectors, with primary industries making a much larger contribution in Kaipara, relative to other sectors, than in Northland region overall. Fonterra's Maungaturoto dairy processing plant in Kaipara, is estimated to contribute $13m to the district's economy and supports 127 jobs directly.

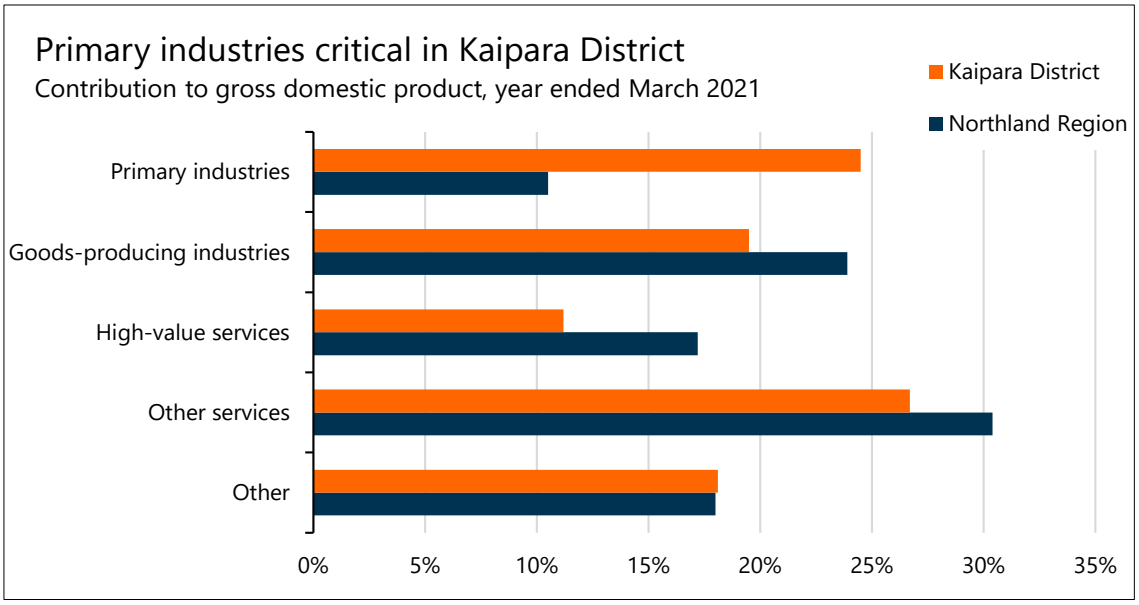


Figure 5.4.1: Primary industry critical in Kaipara District.

Kaipara District's productivity grew in line with Northland's productivity from 2009 to 2017, but the district's productivity has since declined below the average in Northland region. Figure 5.4.2 shows productivity in Kaipara District and Northland region since 2000, estimated using GDP per employed person. Northland's productivity has been broadly consistent since 2016 at around $113,000pa.

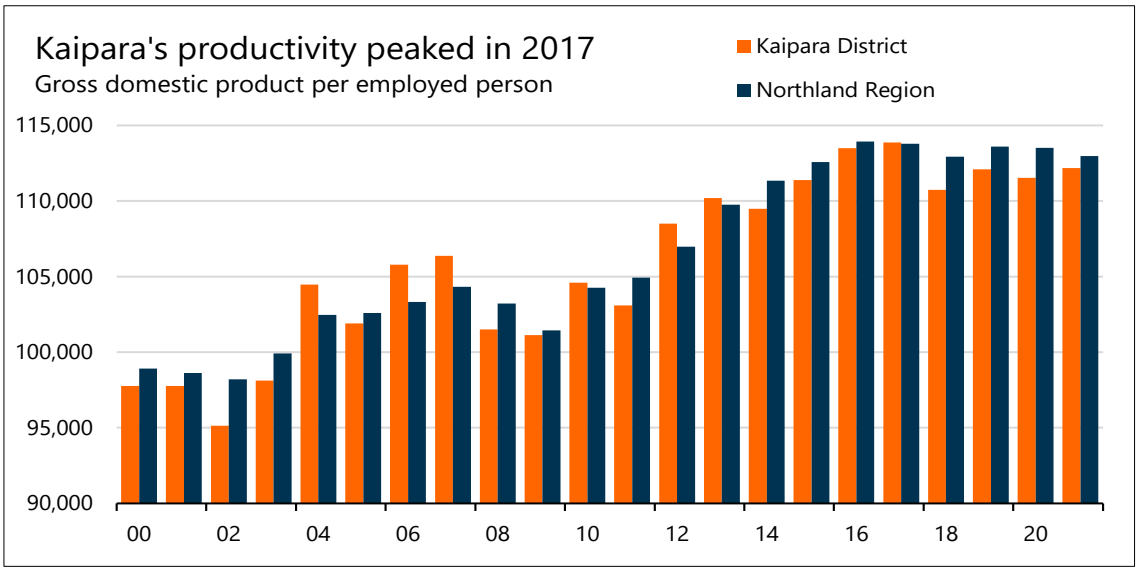


Figure 5.4.2: Kaipara's productivity peaked in 2017.

Figure 5.4.3 shows filled jobs in Kaipara District in each industry, as a proportion of total filled jobs, which continues to highlight the importance of primary and goods-producing industries to Kaipara's labour market and wider economy.

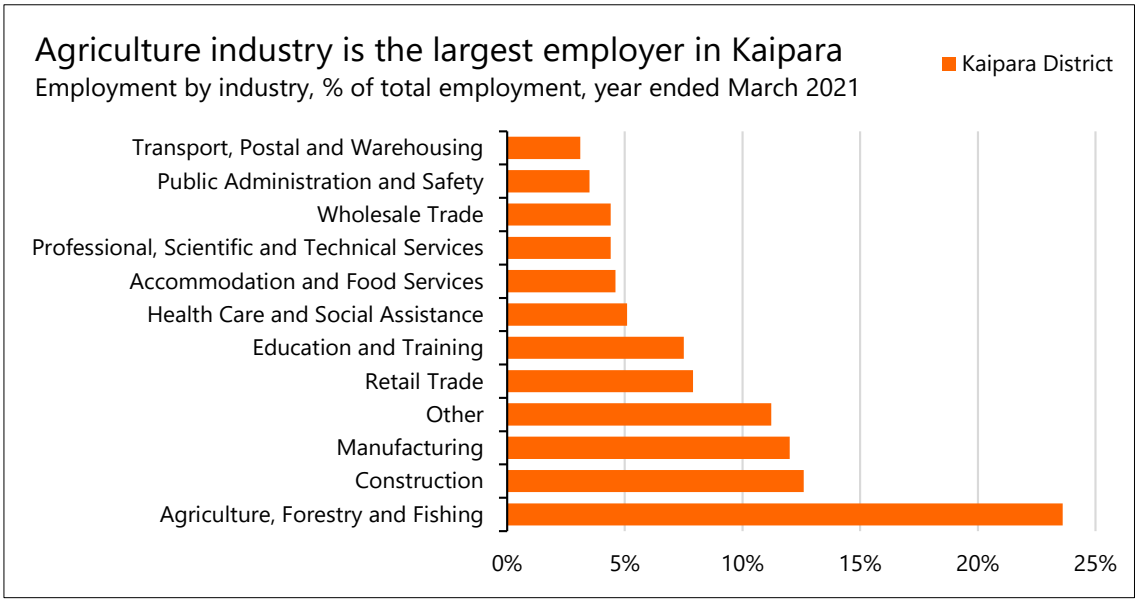


Figure 5.4.3: Agriculture indsutry is the largest employer in Kaipara.

The Kaipara District's agriculture, forestry, and fishing industry employed 24% of the district's workforce in the year ended March 2021. Construction and manufacturing also employed substantial segments of the workforce, employing 13% and 12% of total employed persons respectively.

Dargaville's economy

Dargaville's labour force is less concentrated than other areas of Kaipara District, with 13%, 11%, and 10% of the area's workforce in manufacturing, retail trade, and health care respectively. Figure 5.4.4 breaks filled jobs in Dargaville down by industry, highlighting the importance of manufacturing to the area.

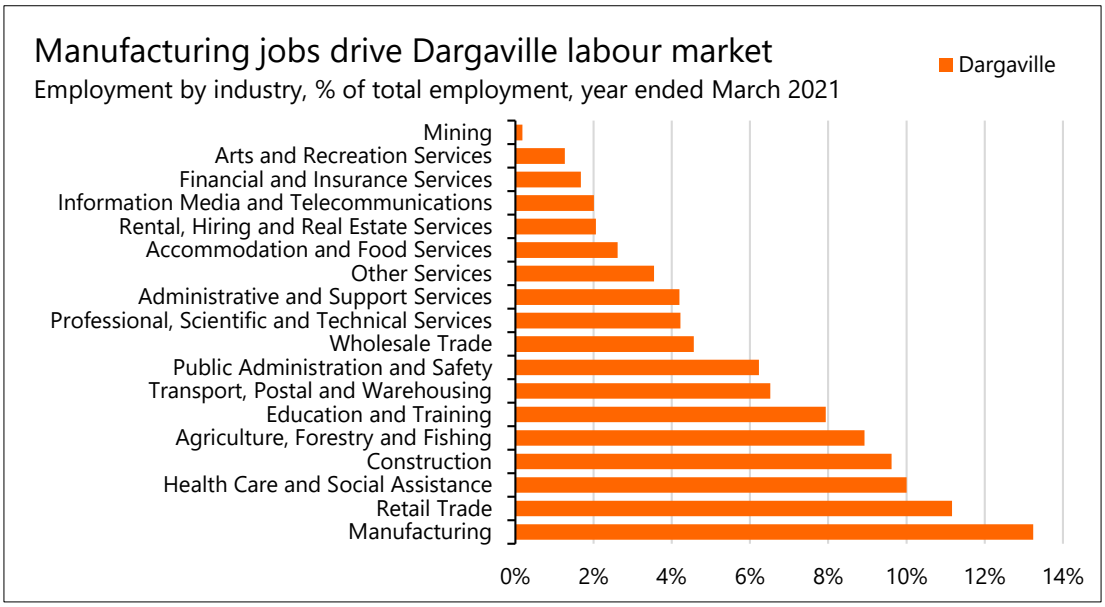


Figure 5.4.4: Manufacturing jobs drive Dargaville labour market.

Mangawhai's economy

Half of Mangawhai's workforce is employed in either construction, retail trade, or accommodation and food services, which comprise 21%, 15%, and 14% of total filled jobs in Mangawhai respectively, shown in figure 5.4.5. The high proportion of construction jobs indicates a high level of construction activity in Mangawhai and strong population growth. The importance of the retail trade and accommodation and food services industries suggest tourism is an important sector in Mangawhai.

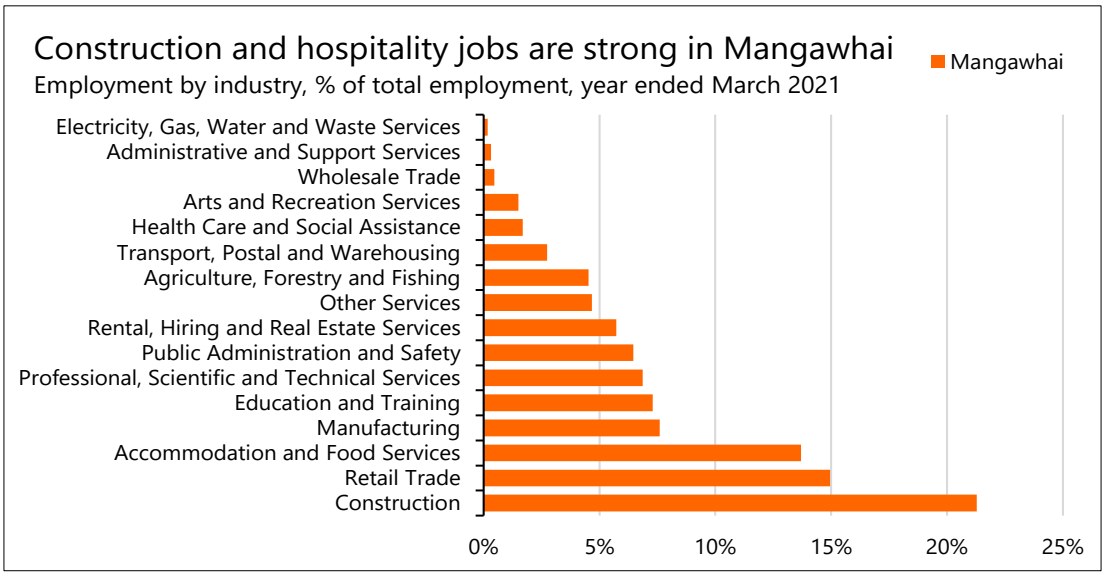


Figure 5.4.5: Construction and hospitality jobs are strong in Mangawhai.

Northwest Kaipara's economy

Northwest Kaipara (Kaipara Coastal and Maungaru SA2) has the most concentrated workforce, with 67% of the area employed in the agriculture, forestry, and fishing industry. Construction jobs make up an additional 14% of filled jobs, with remaining industries each employing less than 5.0% of the workforce. Figure 5.4.6 highlights northwest Kaipara's dependence on agricultural jobs.

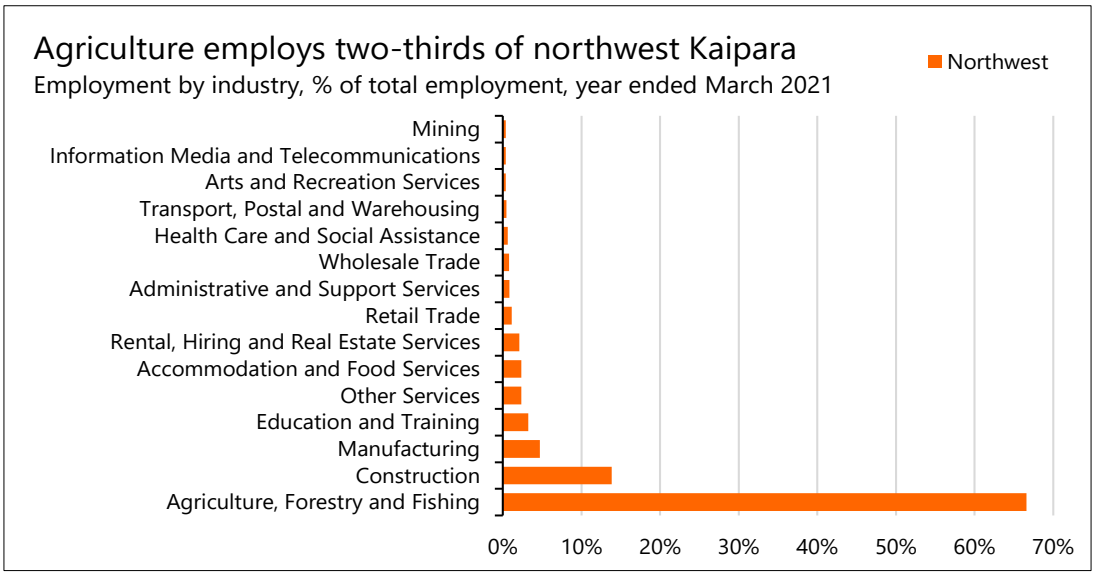


Figure 5.4.6: Agriculture employs two-thirds of northwest Kaipara.

Southeast Kaipara's economy

Like northwest Kaipara, southeast Kaipara (Kaiwaka, Maungaturoto, Otamatea and Ruawai-Matakohe SA2) has a large proportion of jobs in the agriculture, forestry, and fishing industry, totalling 24% of filled jobs. Southeast Kaipara also has strong manufacturing jobs, comprising 17% of total filled jobs. Figure 5.4.7 highlights the strength of southeast Kaipara's primary and goods-producing industries.

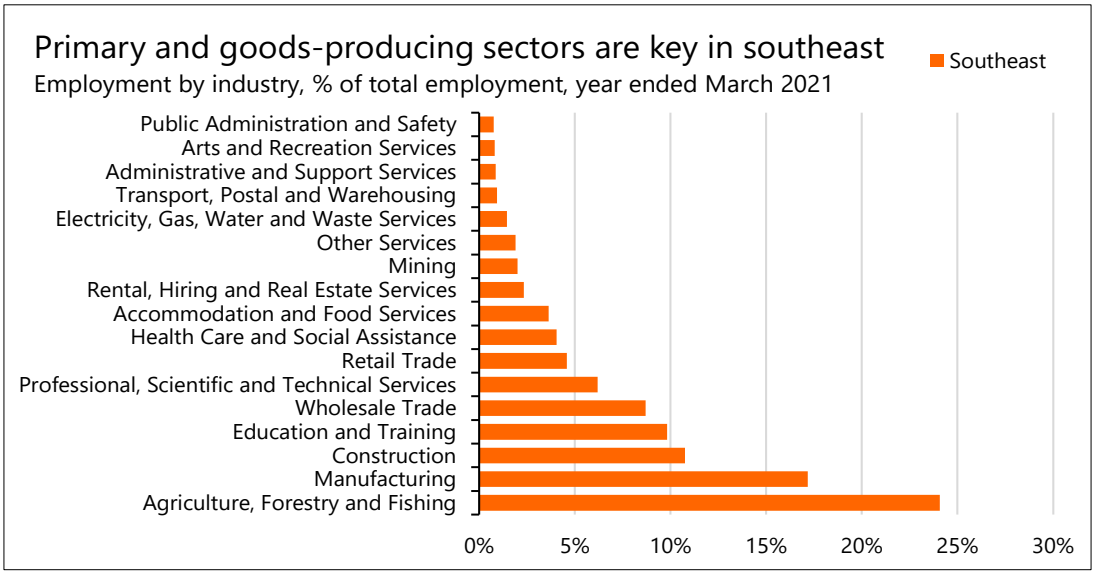


Figure 5.4.7: Primary and goods-producing sectors are key in southeast.

5.5 Kaipara's recent economic performance

Economic activity

Infometrics provisionally estimates that Kaipara District's GDP grew 1.5% in the September 2022 year, compared to a year earlier, totalling $1.0b (2021 prices). Kaipara's economic growth was slightly higher than the wider Northland region, where GDP grew 1.3%pa in the same period, but lower than the national average, with New Zealand's GDP up 2.6%pa. Figure 5.5.1 shows Kaipara District's GDP

since 2017, highlighting the strong growth in annual GDP since early 2021. Figures from June 2021 onwards are provisional.

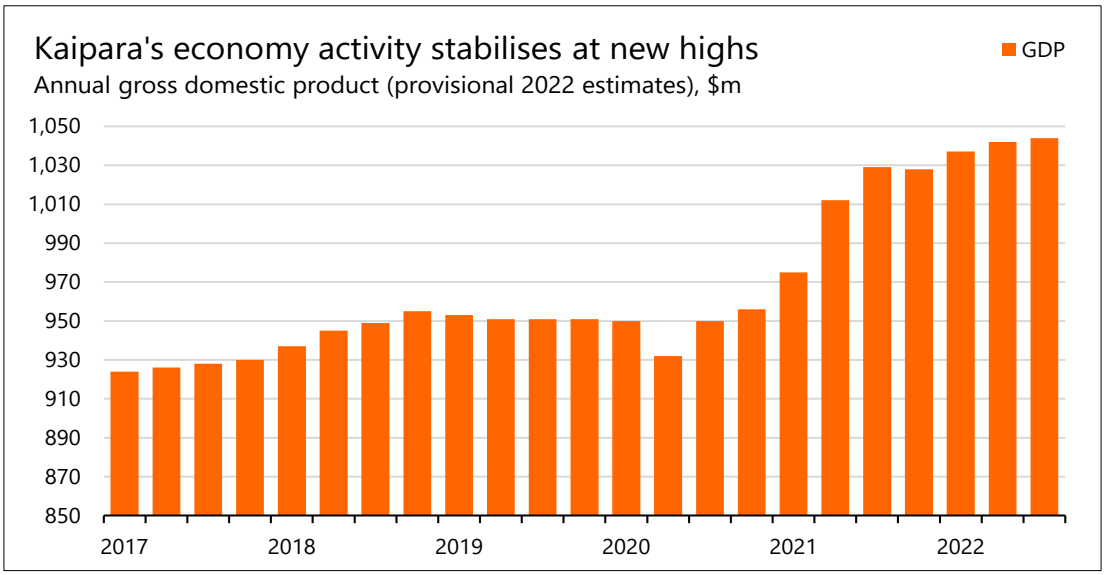


Figure 5.5.1: Kaipara's economy activity stabilises at new highs.

Consumer spending in Kaipara skyrocketed in 2022, increasing by an average of 15%pa in the September 2022 year. The rate of growth in consumer spending was much slower in Northland region, where spending increased 8.2%pa in the same period. Consumer spending across New Zealand increased by an average of 7.0%pa in the September 2022 year, much slower than Kaipara District. This likely reflects a combination of strong consumer confidence and strong population growth in Kaipara. Figure 5.5.2 highlights the consistent increases in Kaipara District's consumer spending over the last five years, with the rate of growth accelerating in the last 18 months.

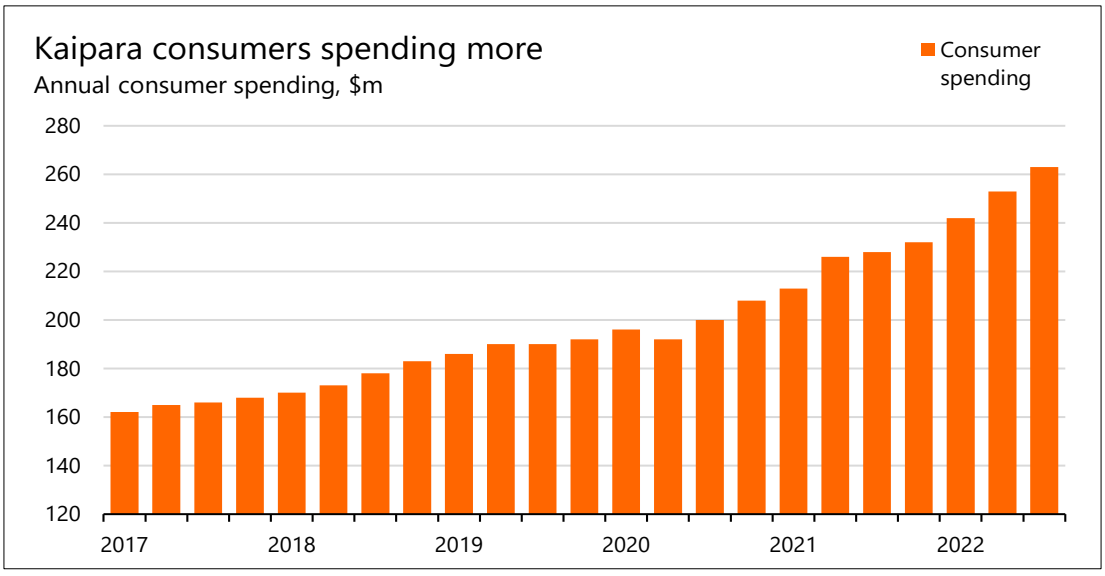


Figure 5.5.2: Kaipara consumers spending more.

Labour market and welfare

Employment in Kaipara District was up 3.2%pa in the September 2022 year, lifting the average number of employed persons to 7,350. Since the onset of the COVID-19 pandemic, employment growth in

Kaipara has grown at rates similar to the rest of Northland and New Zealand, where employment rose 3.6% and 3.1%pa in the September 2022 year respectively. Figure 5.5.3 shows the number of Kaipara District residents in employment.

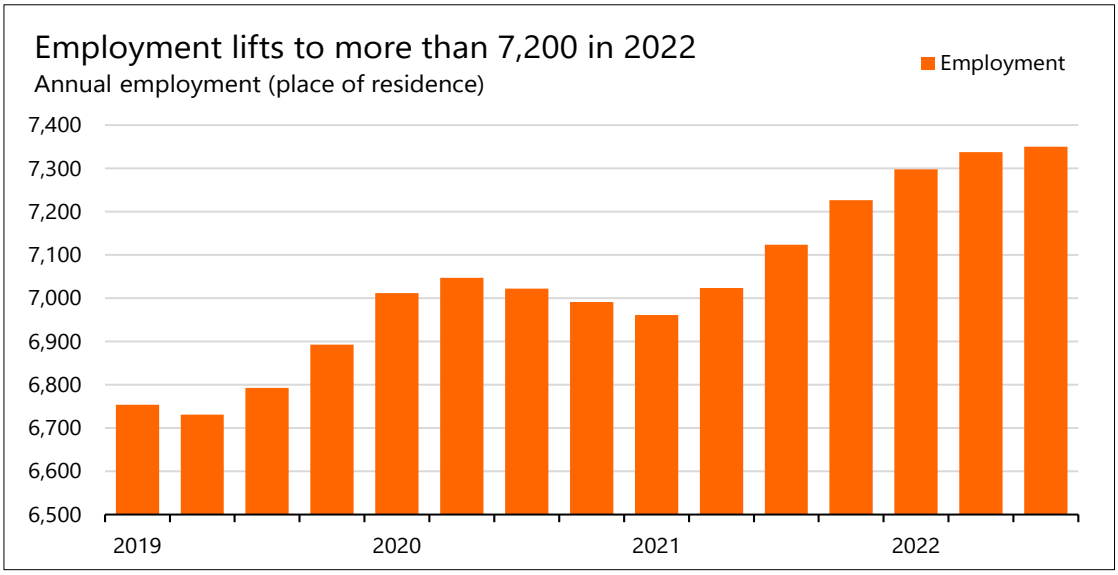


Figure 5.5.3: Employment lifts to more than 7,200 in 2022.

Kaipara's unemployment rate edged up 2.5% in September 2022 (on an annual average basis) but remains near a decade-low of 2.3%. Labour market tightness drove the unemployment rate down sharply in Kaipara since mid-2021, as pandemic border restrictions limited the supply of new workers and growing economic activity in the district led to strong demand for labour. Figure 5.5.4 shows the annual average unemployment rate for Kaipara, which highlights the longer-term decline in the district's unemployment rate since 2017.

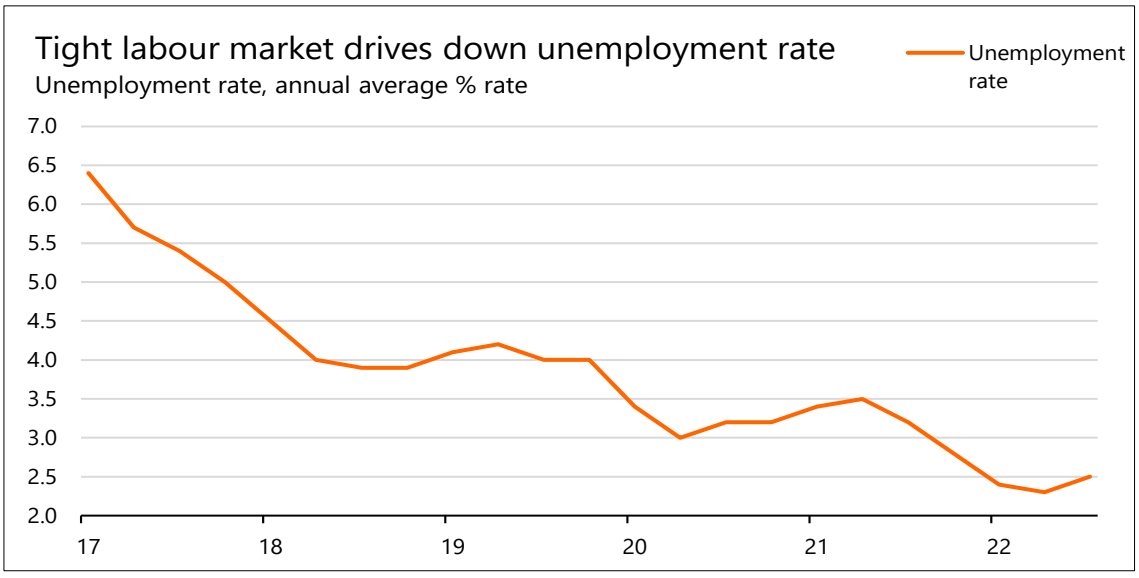


Figure 5.5.4: Tight labour market drives down unemployment rate.

Despite rising employment and a falling unemployment rate, the number of Jobseeker recipients in Kaipara District is much larger than pre-pandemic levels. Jobseeker Support recipients averaged 854 people in the March 2020 year, which rose to a peak of 1,185 people on average over the June 2021

year. Since mid-2021, the number of Jobseeker Support recipients has begun to ease, down 7.9%pa in the September 2022 year, but remains substantially elevated on pre-pandemic levels. Figure 5.5.5 illustrates the growth in Jobseeker Support recipients in Kaipara over 2020 and the first half of 2021.

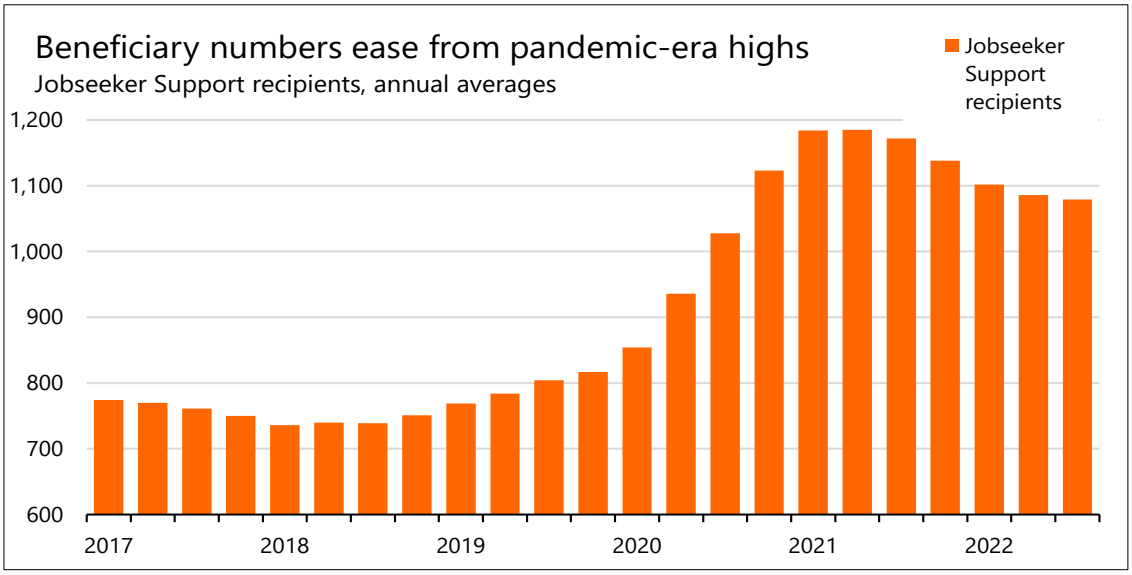


Figure 5.5.5: Beneficiary number ease from pandemic-era highs.

Housing and construction

The average house value in Kaipara District was $864,230 in the September 2022 quarter, a 7.8% increase from September 2021. Annual house value growth has eased from the 42%pa high in the December 2021 quarter, and at 7.8%pa is more consistent with the rate of annual growth in Kaipara between 2018 and early 2020. Figure 5.5.6 highlights the huge annual increases in house values throughout 2020 and 2021, and the subsequent slowdown in annual growth in 2022.

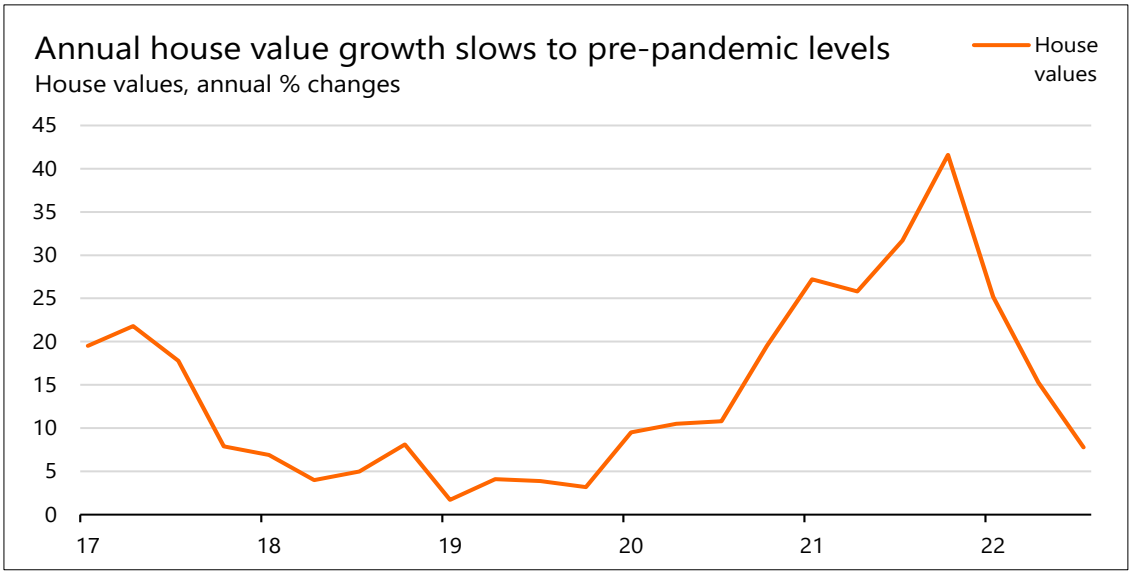


Figure 5.5.6: Annual house value growth slows to pre-pandemic levels.

House sales in Kaipara fell 45%pa in the September 2022 year, but house sales activity has been slowing since mid-2021. Kaipara District had 223 house sales in the year to September 2022, despite

sales activity typically being much higher, with an average 329 houses sold each year over the last decade. The annual number of house sales in Kaipara is detailed in figure 5.5.7.

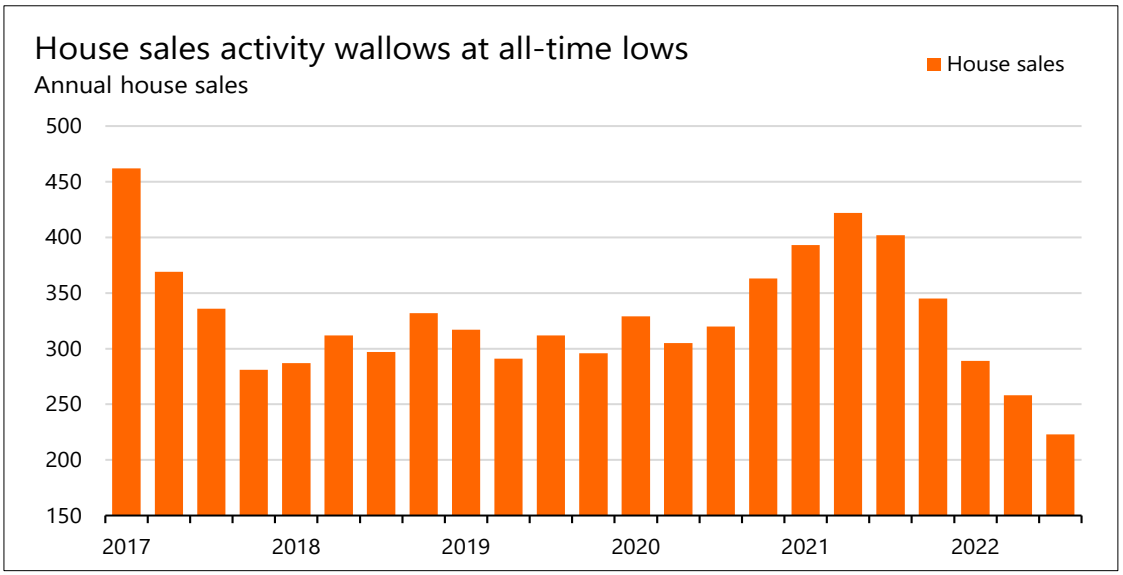


Figure 5.5.7: House sales activity wallows at all-time lows.

A total of 232 residential building consents were issued in the year to September 2022, with consents on a quarterly basis falling from a high of 75 in the March 2022 quarter, to 46 and 45 in the two subsequent quarters. Consents in the September 2022 year fell 7.6%pa in Kaipara, despite consents in Northland and New Zealand both increasing in this period, up 8.6% and 7.0%pa respectively. Figure 5.5.8 shows annual residential buildings consents in Kaipara District.

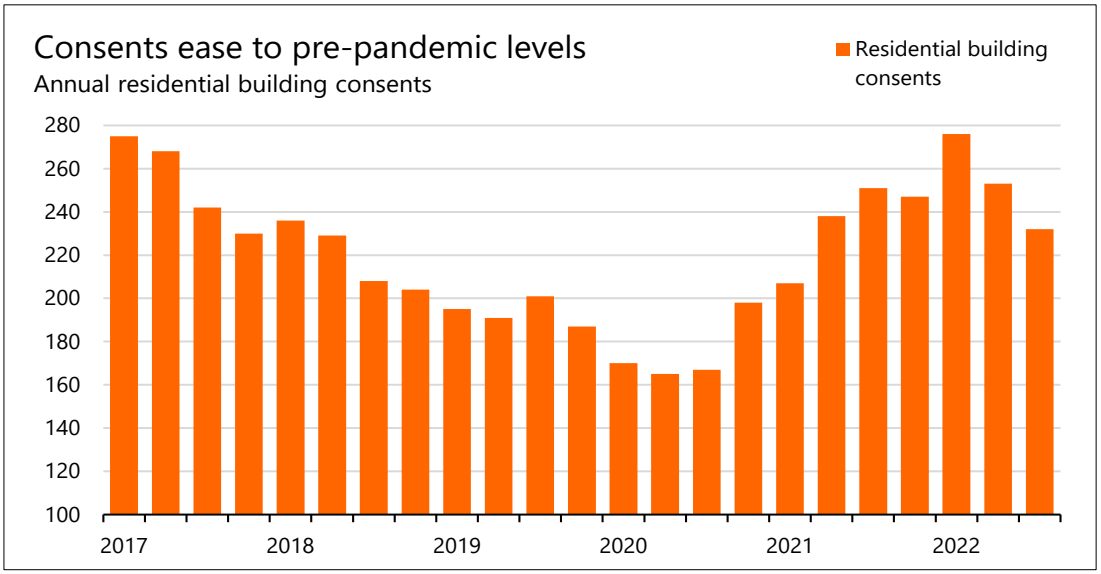


Figure 5.5.8: Consents ease to pre-pandemic levels.

Tourism sector

Tourism expenditure in Kaipara District increased 10%pa in the September 2022 year, lifting annual expenditure to $75m. Visitor spending across New Zealand picked up in the year ended September 2022, increasing 3.3%pa, but spending is growing more rapidly in Kaipara District, even though

Kaipara's tourism expenditure took less of a hit than many areas of the country. Figure 5.5.9 highlights the momentum of tourism expenditure in Kaipara District over 2022.

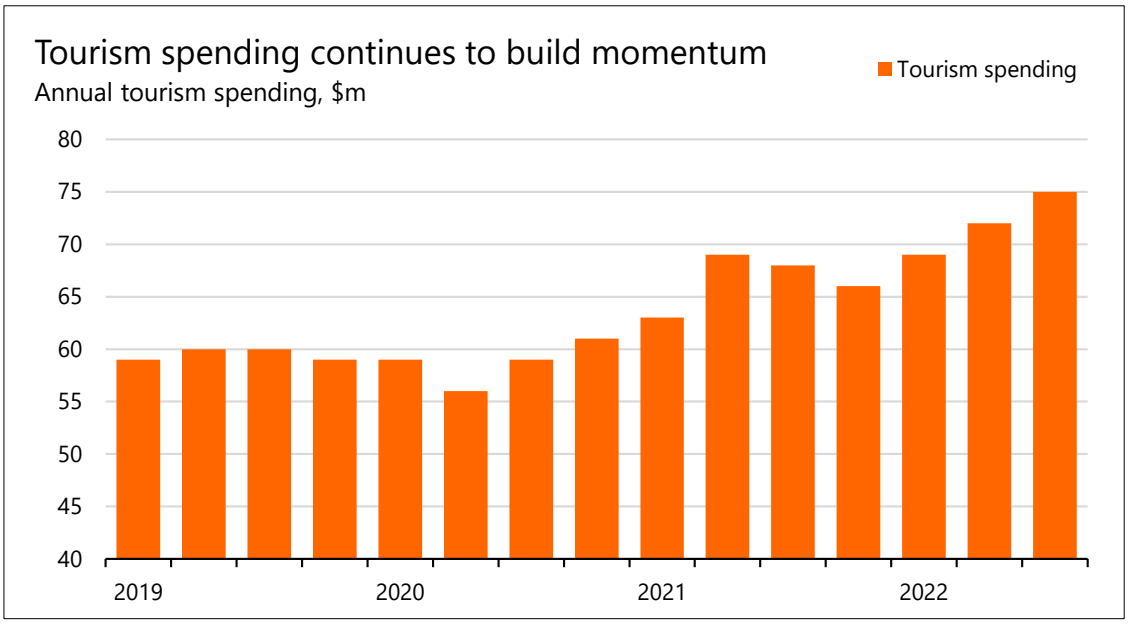


Figure 5.5.9: Tourism spending contines to build momentum.

Dairy sector

Infometrics estimates that the dairy payout in Kaipara for the 2022/23 season will total approximately $250m, a decline of $4m from our estimates for the 2021/22 season. Despite the decline from the previous season, the 2022/23 payout remains elevated on the typical level of dairy payouts over the last decade, except for the 2013/14 season where the payout totalled $265m. Figure 5.5.10 tracks Kaipara's dairy payout since the 2012/13 season.

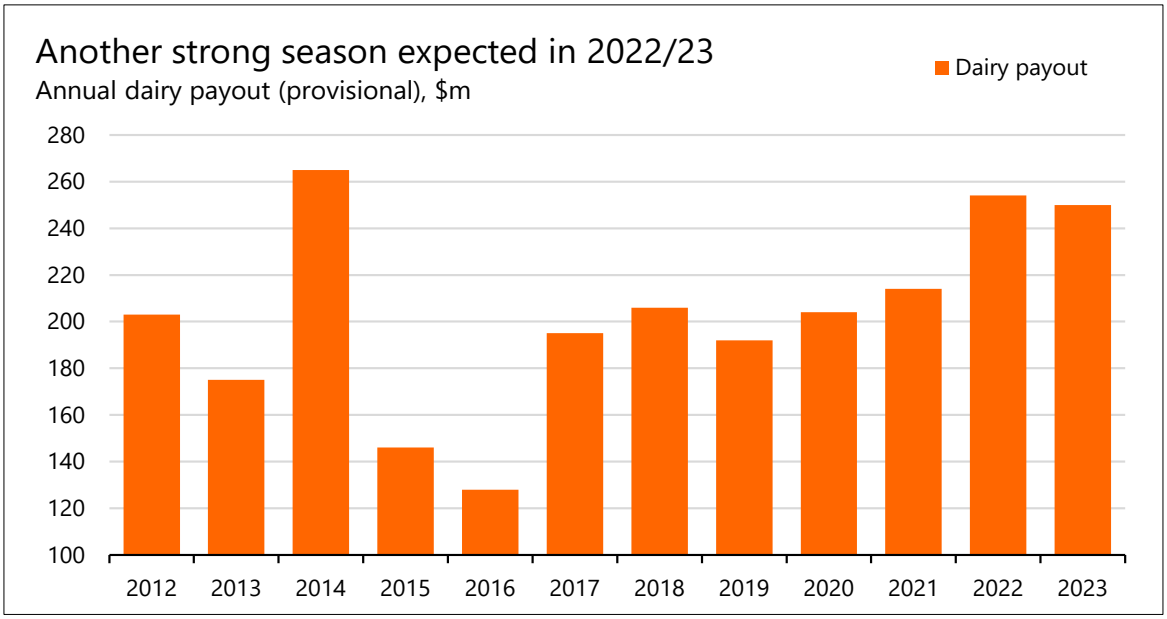


Figure 5.5.10: Another strong season expected in 2022/23.

6 Infrastructure

Infrastructure provision is key to the wellbeing of a district. In Kaipara, land drainage schemes protect large areas of productive land while provision of water and wastewater infrastructure is key for processing and manufacturing operations. Roads, railways and ports are key in getting goods to market. In addition, infrastructure also contributes to community health and wellbeing with services such as water supply, solid waste and wastewater contributing to public health.

6.1 Transport

Transport is key both for getting goods to market and for social connectivity. The following subsections look at the road, rail, port and air transport infrastructure which service Northland. In all, this section finds Kaipara and Northland has poor connectivity via land transport (road and rail), strong opportunities to utilise international and coastal shipping via Northport and currently limited use of air travel.

6.1.1 Road

The road network is the primary means of travel for both passengers and freight in Northland. Northland's roads are of two kinds; state highways and local roads. State highways provide the major connections between New Zealand's districts and regions. State highways are managed and funded directly by central government through Waka Kotahi the NZ Transport Agency (NZTA). Local roads provide for local connections within districts and link to the state highway network. Local roads are administered by local territorial authorities and funded through rates with a subsidy from NZTA's Land Transport Fund. Northland is unique among New Zealand's regions in that its local authorities have come together, with support from NZTA, to form the Northland Transportation Alliance (NTA), an organisation which is jointly responsible for managing the region's roads. This allows a more holistic approach to regional transport planning.

The Kaipara district has 1,579km of local roads of which 71% or 1,120kms are unsealed and 29% or 457kms are sealed. Given its small population and the large geographic extent of the district, Kaipara finds it challenging to fund the maintenance and particularly the upgrading of this extensive roading network. The consequence of this is a limited level of service, particularly on lightly trafficked rural roads.

The key state highway linkage between Auckland and Northland is the section of State Highway 1 from the start of the Auckland motorway network at Pūhoi to the intersection with Maunu Road in Whangārei (NZTA, 2018). This section of State Highway 1 is Northland's key route carrying 10,000 to 20,000 vehicles per day in some areas of the highway near Whangārei. This route is supported south of Wellsford by State Highway 16, providing a higher level of network resilience at this southern end. However, few alternative routes exist between Wellsford and Whangārei, resulting in lower resilience. Where alternative routes do exist, they are often not constructed to cope with the increased traffic in the event that a detour is put in place. This is particularly true of Cove Road between Mangawhai and Waipū and the Paparoa-Oakleigh Road which are commonly used as detours when incidents occur in the Brynderwyn Hills (NZTA, 2018).

Key points of low resilience between Whangārei and Auckland include the Dome Valley and Brynderwyn Hills, both of which are high crash areas and restricted to 80kms per hour as well as being prone to natural hazards such as slips (NZTA, 2018). A lot of work has been done to advance planning of a bypass route through the Dome Valley, however there are currently no plans to bypass the Brynderwyn Hills (AECOM, 2019). However, while the Brynderwyn Hills stifle transport into Northland generally, most areas of Kaipara are positioned such that they use alternative routes to access Whangarei; primarily Cove Road, the Paparoa-Oakleigh Road and State Highway 14.

From Whangārei, State Highway 1 continues to the Far North, Kaitaia and Cape Reinga.

State Highway 12, from Brynderwyn to the Hokianga and Kaikohe via Dargaville, is the key route linking most of the Kaipara district to State Highway 1 and Auckland beyond. In addition, State Highway 14 provides a key east to west link between Dargaville and Whangārei.

State Highway 15 between Kaikohe and Northport is Northland's key inland freight route and runs via the Mangakahia and Otaika Valleys. The route is key for freight traffic (particularly logging traffic) moving from the Mid-North and Far-North to Northport and experiences a high level of heavy vehicle traffic. The intersection of State Highway 15 and State Highway 1 at the mouth of the Otaika Valley has been upgraded to cope with the increasing freight volumes going to the port.

In addition to carrying freight and providing connectivity for the traveling public, Northland's state highway network is also essential for tourism in the region, allowing visitors to access the region's attractions. Northland's state highways form the basis of the Twin Coast Discovery Highway touring route which leads visitors around Northland's key attractions. This route, and Northland's wider state highway network is shown in Figure 6.1.1.1.

Figure 6.1.1.1: Route of Northland's Twin Coast Discovery Highway. Note that the route includes a number of "Byways", alternative tourist drives which can be included or excluded to tailor the trip to individual interests (Northland Inc. 2020).

The construction and maintenance of roads in Northland faces a number of challenges (NZTA, 2018). The region's challenging topography (particularly between Whangārei and Auckland), problematic geology and high impact seasonal rainfall present particular challenges for the maintenance and operation of the road network (NZTA, 2018).

Slope instability is a common problem along much of Northland's road network, resulting in random slips, debris and drop-outs (NZTA, 2018). Small slips can often be cleared quickly, but under-slips/dropouts (which undermine the road) and larger slips can be much more complex to fix (NZTA, 2018). Northland's hilly typography also results in tight terrain and narrow alignments. This combined with heavy vehicle crash involvement, can delay re-opening of routes as specialised equipment may be required to remove crash debris, particularly through the Brynderwyn Hills. Many sections of Northland's roads are also exposed to weather events, particularly flooding (NZTA, 2018).

In addition, roading aggregates available locally in Northland are of a lower quality than available elsewhere in the country. This means they degrade quicker, particularly when exposed to high levels of heavy vehicle traffic, resulting in more frequent repairs. Given the above challenges, undertaking renewals and improvements while at the same time keeping the corridor open and available to users presents an ongoing challenge to roading engineers; especially on the high-volume sections of the network (ARUP, 2018; NZTA, 2018).

Because of these roading challenges, Northland, despite its proximity, is poorly connected to Auckland and the upper North Island (AECOM, 2019). Northland's key connections are lengthy, have higher safety risks and provide less reliable journey times (ARUP, 2018). These poor connections include the condition of the strategic intra-regional and inter-regional highway connections, as well as the ability of passenger and freight vehicles to move through the increasingly congested Auckland network. This poor and worsening connectivity is having a negative impact on access for Northland goods to international markets. These connections are also getting less reliable, more time consuming and more expensive to use as Auckland (and its congestion) grows (AECOM, 2019; ARUP, 2018).

This is concerning as the amount of freight being moved on Northland's roads is increasing (AECOM, 2019). Northport is now the second largest sea port in New Zealand by tonnage and, in the absence of a rail connection, is wholly dependent on the road network for its land transport needs (NZTA, 2018). The total freight task generated in Northland in 2012 was estimated at 16,900,000 tonnes by the National Freight Demand Study (2014). Since then, this has seen a 1.1% annual average growth to bring the 2018 freight task generated by Northland to approximately 18,000,000 tonnes per annum, approximately 98.6% of which travels by road. By 2042 the region's freight is forecast to grow to 23.2 million tonnes, with indications it could grow even faster (AECOM, 2019).

It is widely considered that improved transport connections with Auckland would assist in bolstering the Northland Economy (AECOM, 2019; NZTA, 2018). Northland's relatively low population density and geographic remoteness have constrained growth of its place-based economy. The Tai Tokerau Northland Economic Action Plan (Northland Inc., 2016) identifies the opening up of transport corridors, especially with better connectivity to Auckland, as a key opportunity to the region realising its full economic potential (NZTA, 2018).

To address this poor connectivity and safety concerns, significant planning and investment in recent years has focused on road and highway investment in Northland (AECOM, 2019). Investment has generally been focused on better connecting the Auckland metropolitan area to the high-growth areas immediately to the north (AECOM, 2019). In particular, the Pūhoi to Warkworth four-lane 18.5km highway is under construction. This significant investment is located in the Auckland Region and will

improve the commutability of Warkworth and its surrounds with Auckland, while also improving travel between Auckland and Northland generally (NZTA, 2018). The new road is scheduled to open in the second quarter of 2023 (Northern Express Group, 2023).

6.1.2 Rail

Northland is connected to the rest of New Zealand by rail via the North Auckland Line (NAL). The NAL begins in Westfield in Auckland and makes its way north to Whangārei before continuing to Otiria in the Far North. In addition, the Dargaville branch links Dargaville to the NAL at Waiotira and an isolated section of railway links Kawakawa to Opua in the Bay of Islands. There is also a proposal to build a spur line to Northport at Marsden Point. These lines are shown in Figure 6.1.2.1 together with the state highway network. Collectively, the rail and state highway network form the region's core land transport network.

Figure 6.1.2.1: Northland's railway and state highway network; note this map includes all existing rail lines, including those which are currently unused or used only for tourism (AECOM, 2019).

However, not all of Northland's railways are currently operating. The isolated section of railway between Kawakawa and Opua operates as the Bay of Islands Vintage Railway (AECOM, 2019). Services on the Dargaville branch were suspended in October 2014 due to poor track conditions and low freight volumes. The line is now used by Dargaville Rail and River for a rail tourism business. The line could one day be reopened to freight trains but not without substantial investment and an anchor freight customer.

The remainder of Northland's rail system is currently undergoing its most significant upgrade since the mid-1950s when the line was upgraded to allow the use of diesel locomotives. This follows a report released by the Ministry of Transport in 2019 which revealed Northland's rail system was not fit-for-purpose to meet 21st century requirements for moving people or freight and had been maintained in a state of 'managed decline' for some years (AECOM, 2019).

To date, the NAL from Auckland has been reopened as far as Fonterra's dairy factory at Kauri (just north of Whangārei). The current upgrade programme is focussed on bringing the rail link from Northland up to a modern standard. The line is now capable of accommodating high-cube containers, heavier loads, newer locomotives and permitting improved train speeds. The programme includes replacement or upgrading of about 54km of the 181km track; replacement of over 100 thousand sleepers, adding tens of thousands of cubic metres of ballast; replacing ageing bridges; increasing tunnel heights in 13 tunnels; carrying out overdue maintenance work on tunnels; clearing ditches and stabilising embankments (Kiwi Rail, 2023). Freight volumes on the reopened section between Kauri and Auckland are already increasing even as upgrade works continue.

The remainder of the line from Kauri to the Far North is currently in the process of being reconditioned and reopened, with a new container terminal and road-rail interchange to be built at Otiria. Work on upgrading the line to the Far North includes replacing rail and sleepers and strengthening some bridges before the line can be re-opened to regular freight services by the end of 2024 (Kiwi Rail, 2023).

However, to truly meet the needs of freight customers in Northland and the Upper North Island, the NAL will need to be connected to Northport via a spur line to Marsden Point (AECOM, 2019). The network has not been port-connected since Whangārei's port was decommissioned and operations moved to Marsden Point. As one of New Zealand's few regional ports without a rail connection, rail freight volumes in Northland fell substantially with over a million tonnes of freight moving to road transport. Compounding the decline in volumes, the line was under-maintained and saw no substantial investment for over fifty years. Consequently, just over 110,000 tonnes of freight was moved on the NAL in 2019 (prior to the upgrades beginning), with the majority of this being processed dairy volumes from Northland, along with logs from northern Auckland. This was just 1.4% of Northland's total freight (AECOM, 2019).

As such, the region has been almost completely dependent on road transport for moving freight (AECOM, 2019). Rail freight volumes are now increasing with some containers even being trucked from NorthPort to Whangarei to be transferred to rail, however the burden on Northland's roads remains excessive. Furthermore, each tonne of freight carried by road results in 70 per cent more greenhouse gas emissions than that carried by rail (Kiwi Rail, 2023).

Designation (DNZRC 2) for the Oakleigh to Marsden Point Line was approved following the relocation of the port, and the Government has recently worked to purchase the land needed for the proposed line. There is however still no commitment to begin construction of the new line. Without being connected to the port, Northland's railways are unlikely to play a significant role in moving the region's freight (AECOM, 2019).

6.1.3 Ports

The Northland region is serviced by Northport at Marsden Point. This is a natural deep-water port with flexible facilities capable of handling large multipurpose vessels (NZTA, 2018). In addition, New Zealand's key fuel import terminal, Channel Infrastructure (formally Refining New Zealand), has its own wharves adjacent to Northport where it receives shipments of refined petroleum products from overseas and exports these to other New Zealand ports via coastal shipping. In addition, Channel Infrastructure also exports diesel, petrol and jet fuel via a pipeline from the refinery to the Wiri fuel terminal in South Auckland. As New Zealand's northern most port, Northport is the closest port to New Zealand's international markets (New Zealand Government, 2019a).

Northport occupies 49ha with an additional 180ha of commercially zoned land for port use outside the Northport boundary (New Zealand Government, 2019a). This allows ample room for expansion and opportunities for other industries to establish alongside the port (New Zealand Government, 2019a).

Northport has ambitions to grow into a major port servicing not only Northland, but also Auckland and the Upper North Island. While much has been said in the media about relocating the Ports of Auckland to Northport, Northport does not envisage this happening. Rather, Northport recognises that freight volumes are growing and that it is well positioned to accommodate this growth while the Ports of Auckland is constrained. If this vision for growth is realised, Ports of Auckland would continue to operate in its current location without expansion while Northport would progressively expand to accommodate the growing freight demands of Auckland and the Upper North Island.

Northport already has resource consent to expand its linear wharf 270 metres eastwards. However, modelling makes it clear that this is not sufficient to cater for the projected growth in demand for container storage, handling and transportation at Northport. Consequently, Northport has submitted a further application for resource consent to extend its berths a further 250 metres towards the east, together with an additional 11.7ha reclamation. This proposed eastern development will extend the existing port eastwards to accommodate a modern, efficient, container terminal capable of handling and storing expected increases in freight volumes. The expansion will also enable Northport to integrate the port with KiwiRail's proposed Marsden Point spur line (Northport, 2023).

Provision of a rail link to the port is important to reduce the impact of increasing freight volumes on Northland's roads (AECOM, 2019). In the year ended June 2018, there were 144,827 single truck movements to Northport, already placing considerable pressure on Northland's roads (New Zealand Government, 2019a).

Even in its current form, Northport is already a key port servicing the Upper North Island, together with the other Upper North Island ports of Auckland and Tauranga. The upper North Island ports are critical to the New Zealand freight task. Together they account for approximately half of New Zealand's total export volume and two-thirds of its import volume (in tonnes) (New Zealand Government, 2019a).

Port of Tauranga handles the highest volume of all New Zealand ports in tonnes, is New Zealand's largest container port and is New Zealand's largest container exporter (approximately 40% of New Zealand's total export) (New Zealand Government, 2019a). Port of Tauranga accounted for 35% of New Zealand's total export volume in the year ended June 2018. Even some freight from Northland

is railed to Port of Tauranga for export. In addition to containers, Port of Tauranga handles bulk goods such as logs (New Zealand Government, 2019a).

Ports of Auckland is New Zealand's second largest container port, after Port of Tauranga. Together, Port of Tauranga and Ports of Auckland handle 62% of New Zealand's total containers. This includes the handling of both full and empty containers (New Zealand Government, 2019a).

Ports of Auckland, being located in Auckland City, is significant for imports due to the population that it supplies however its export volumes are low at approximately 6% of New Zealand's total exports in the year ended June 2018 (New Zealand Government, 2019a). Figure 6.1.3.1 below compares the different exports and imports of key New Zealand ports, including the Upper North Island Ports.

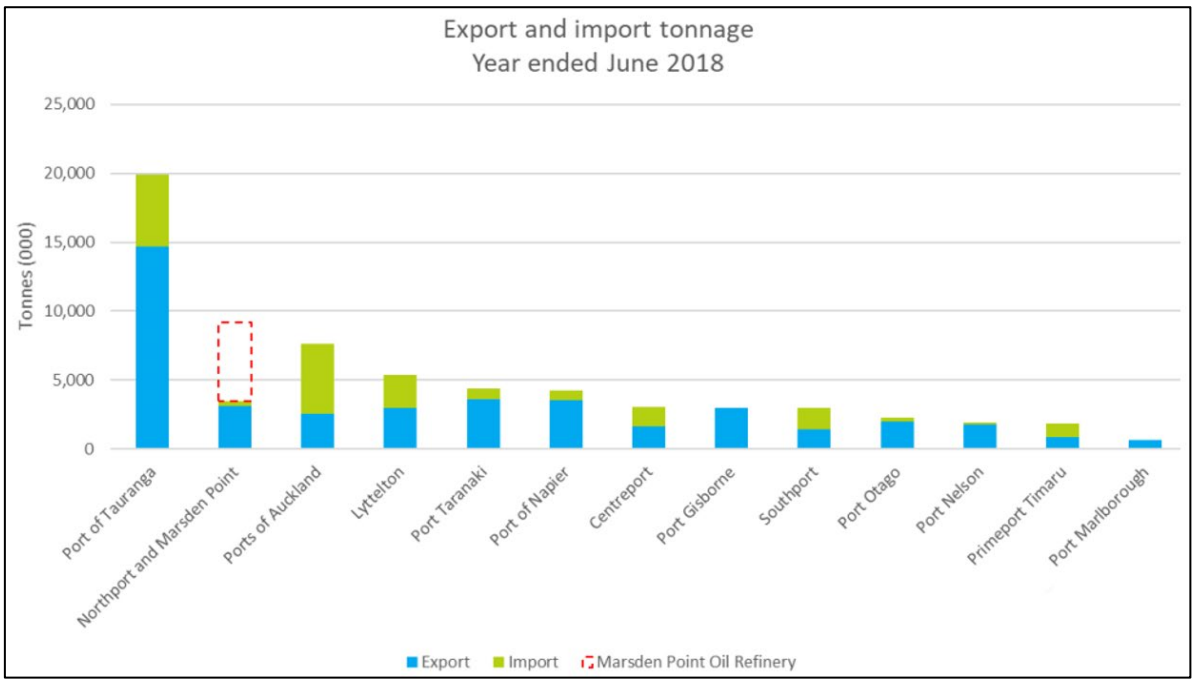


Figure 6.1.3.1: Comparison of export and import tonnage through New Zealand's key ports for the year ended June 2018. Note: the graph includes the 5,425,000 tonnes of import and 271,000 tonnes of export fuel oil products through Marsden Point Oil Refinery as a red dotted line (New Zealand Government, 2019a).

Ports of Auckland occupies 77ha on the Auckland Central Business District waterfront. Its current location is generating concerns over social licence and is prompting public debate about whether there are better alternative uses for this prime waterfront land. This built-up inner-city location also constrains the movement of freight in and out of the port by land as well as the port's ability to expand (New Zealand Government, 2019b; Sapere, 2020).

While location of port infrastructure remains a topical debate, it is a fair assumption that Northport will continue to grow in importance as one of three strategic ports servicing the Upper North Island (together with Tauranga and some form of Ports of Auckland). This is anticipated to result in a high level of economic development for Northland and will likely attract existing Auckland industry and businesses to relocate to Northland (AECOM, 2019; New Zealand Government, 2019b). In addition, the development of the state highway and rail networks to service an expanded Northport will result in a much more connected Northland.

All this will have a high impact on the Northland community, particularly the already fast growing areas of Waipū, Mangawhai, Kaiwaka and Maungaturoto which are within commuting distance of Northport. By contrast, if road and rail infrastructure to support Northport are not provided, both the port and Northland will remain constrained (AECOM, 2019).

6.1.4 Air

Northland is serviced by three commercial airports, none of which are in Kaipara.

Whangārei Airport is located in the suburb of Onerahi, a 10 minute drive from the Whangārei city centre. It is jointly owned by the Ministry of Transport and Whangārei District Council and managed by Northland Aviation (Whangārei District Council, 2019).

The airport is currently certified to take aircraft of around 50 seat capacity. Apart from the services provided by airline operators, the airport also caters to many recreational users.

Issues associated with Civil Aviation rules, runway length, and significant costs for extending the existing runway, mean the current airport may have to close to airline services in about 10 years. Whangārei District Council is currently further investigating a site at Ruatangata, near Kokopu Road, as its preferred location for a future Whangārei District airport, should this be required. Domestic air travel is currently undergoing significant changes with new aircraft, electric airplanes and even ground effect seagliders potentially about to appear on the scene. Relocating Whangārei airport may therefore not be necessary, depending on aircraft runway length requirements. However, Whangārei District Council want to be prepared by identifying and protecting an alternative site. If the airport does shift to this location, it will move airline services about 10 minutes closer to Dargaville.

Bay of Islands Airport is a 10 minute drive from Kerikeri and is connected to Auckland Airport by regularly scheduled passenger flights. The Bay of Islands Airport has a modern terminal which opened to passengers in June 2019.

By comparison, Kaitaia Airport is small, with limited passenger facilities and is typically only staffed 30 minutes before each scheduled flight. That said, the airport is serviced by regular flights to Auckland Airport operated by Barrier Air. As such, Kaitaia Airport could be a model for establishing other provincial services.

Auckland Airport is the closest international airport to Northland. In addition to receiving passengers from overseas and acting as a hub for domestic flights, Auckland Airport is also used to export high value and time critical exports from Northland, such as cut flowers (NZTA, 2018).

While Kaipara does not have any airports, it does have a number of airfields, the largest of which is located in Dargaville and operated by the Dargaville Aero Club. Dargaville Airfield has a 1,000m runway paved in rolled limestone and a second 931m runway that is maintained in grass. Dargaville Airfield has refuelling facilities and regularly receives recreational flights from around New Zealand, particularly on weekends.

As mentioned previously in this section, the domestic aviation sector is expected to face considerable changes over the coming decade. This is driven by a desire to reduce greenhouse gas emissions from aircraft, and the emergence of small first-generation electric aircraft.

Perhaps the most significant of these changes is the Ocean Flyer programme that will start operating fully electric seagliders in New Zealand from 2025 (Ocean Flyer, 2023). The seaglider is a wing-in-ground-effect craft that operates about 10m off the water's surface and couples the high speed of an airplane with the low operating cost of a boat. The seaglider begins its journey with the hull in the water, rising onto foils as the speed increases before eventually generating lift so that the seaglider begins to fly in-ground-effect at about 10m above the water. Though traveling at speeds of around 300kpm and flying above the water, these craft will operate as if they were ferries and be regulated by Maritime New Zealand rather than by the Civil Aviation Authority (Ocean Flyer, 2023). This creates the ability for services to depart from town wharves and ferry passengers direct into Auckland's central business district waterfront. This overcomes a long-standing criticism of air travel that it requires departure and arrival at airports on the outskirts of towns and cities, airports that are not always well connected by public transport and often require excessive time for check-in and baggage claim.

The ocean flyer programme will be limited in what routes it can offer due to the 300 kilometre range of its sea gliders and their requirement to fly over water or unused flat land e.g. a Dargaville to Britomart Ferry Terminal service would not be possible due to the need to fly over land, though a Dargaville to Onehunga wharf service would be possible. Conversely, the electric sea planes being trialled by Harbour Air in Canada can fly over land and would be able to offer the Dargaville to Britomart service (Harbour Air, 2023). While such first generation electric aircraft are still a few years from operating commercially, it appears likely that opportunities to improve short distance domestic air travel will open up over the coming decade.

Already, Ocean Flyer have alluded to a Whangārei to Auckland service with an estimated flight time of 30 minutes and a ticket price considerably cheaper than that currently offered by airlines on the same route. Fifteen 12 seaters and ten 100 seater seagliders have been ordered for service in New Zealand. Ocean Flyer state that the low operating cost of these aircraft and basic supporting infrastructure requirements (i.e. they can depart and arrive at existing town wharfs) might see services brought to areas that currently do not have airline services (Ocean Flyer, 2023).

6.2 Electricity

Electricity generation in New Zealand increased slightly in 2021 (MBIE, 2022). Electricity generated from renewable sources in 2021 was 82.1% of total generation, an increase from 81.1% in 2020. The majority of New Zealand's electricity continues to come from hydro dams with geothermal and wind making increasingly greater contributions. Due to the intermittent and sometimes unreliable nature of most renewable electricity sources (other than geothermal) the fossil fuel burning Huntly Power Station is used to provide baseload, back-up, and peak supply electricity for the nation (i.e. New Zealand uses renewable sources of electricity production first, resorting to fossil fuels when there is insufficient water stored in hydro dams, the wind is not blowing enough, etc.). The Huntly Power Station is preferentially run on natural gas with coal as a second choice, as coal has a higher carbon footprint. The ongoing decrease in natural gas supply from Pohokura, one of the country's largest natural gas fields, led to an increase in coal use for electricity generation in 2021. This, along with decreased hydro inflows in the first half of 2021 contributed to temporary higher wholesale electricity prices (MBIE, 2022).

With the commissioning of the Waipipi and Turitea wind farms, an additional capacity of 223MW was available to the market in 2021 (MBIE, 2022). Electricity generated from wind in 2021 was the highest on record, increasing by 15%. This rise in wind generation appears due to new fields being commissioned rather than wind conditions being particularly favourable in 2021 (MBIE, 2022). Further wind farm developments are in the pipeline. Of note for Kaipara, Mercury Energy has gained consent for a 73MW wind farm near Ōmāmari, north of Dargaville. The new wind farm will supply electricity to the Dargaville substation via a new 66kV line (Mercury Energy, 2023).

Geothermal plants in New Zealand operate as baseload generation, as there is usually little flexibility to intentionally reduce or increase electricity generation via this medium (MBIE, 2022). Electricity generation from geothermal sources in 2021 increased by 1.7%. This was despite a 44-day unplanned outage at Kawerau, one of the country's largest geothermal power stations. Northland's Ngāwhā geothermal power station's expansion project (OEC4) was completed in December 2020. This meant that 2021 was the first full year with Ngāwhā generation. This new Ngāwhā expansion brings an additional capacity of 32MW and has a further expansion (OEC5) of 32MW consented (MBIE, 2022).

Solar (photovoltaic cells) remain a small contributor to New Zealand's electricity generation providing less than 0.5% of electricity generation and 0.2% of final energy consumption (MBIE, 2022). However, this does not consider the amount of electricity saved by solar water heating panels and passive heating by orientating homes towards the sun, the value of which should not be understated (MBIE, 2022). Photovoltaic cells are becoming increasingly affordable as technology and manufacturing practices improve. In May 2021, Lodestone (a privately-owned renewable energy firm) announced plans to roll out 229 megawatts of utility-scale solar capacity throughout New Zealand over the next four years for a total project cost of $300m. It expects to generate up to 350 gigawatt-hours each year and sell directly into the wholesale market (MBIE, 2022). Lodestone's plans include a 120 GWh solar farm located near Dargaville. The farm will contain at least 125,000 panels and include 170ha of farming operations. Electricity produced by Lodestone One will be used by the 5,000 residents living along the Wairoa River, with surplus electricity flowing through to Whangarei (Lodestone Energy, 2023). Lodestone also have plans for a 55 GWh solar plant near Kaitaia, expected to be operational near the end of 2023 (Lodestone Energy, 2023).

In July 2020, Rio Tinto announced the planned wind-down of operations and eventual closure of New Zealand's Aluminium Smelter located on Tiwai Peninsula, across the harbour from Bluff in Southland (MBIE, 2022). Closure is presently scheduled for December 2024, though it remains uncertain exactly when the smelter will close. The smelter is supplied with renewable electricity from the Manapouri hydroelectric power station equivalent to that needed to supply 776,000 households (about 13% of New Zealand's electricity). When the smelter closes, this electricity will become available for New Zealand's general use, greatly boosting New Zealand's national supply and reducing the need for fossil fuel based generation (MBIE, 2022).

In terms of local generation (other than the Lodestone and Mercury Energy projects near Dargaville which are in the pipeline), there are two power stations connected directly to the local distribution network which supplies power to the Kaipara and Whangārei districts. These are Northpower's 5MW Wairua hydro power station and Trustpower's 9MW diesel powered peaking plant. In addition, as of

September 2022, there were approximately 1,698 small, privately owned solar photovoltaic generators (average installed capacity 3.7kW) connected to the local network (Northpower, 2023).

Once generated, electricity is moved around the country via the “national grid” (the high voltage transmission network connecting areas of generation with towns and cities across New Zealand), before being distributed to households and businesses via the local distribution lines.

Transpower is the state-owned enterprise that operates the national grid, which conveys electricity from most of the major power stations around the country to local distribution lines. It also conveys electricity directly to some major industrial users (MBIE, 2022).

The distribution of electricity from the national grid to individual homes and communities is undertaken by Northpower in the Whangārei and Kaipara districts and Top Energy in the Far North. These local distributers operate and maintain the local distribution networks. Northpower’s electricity distribution network includes 5,803km of overhead lines and underground cables, including 3,809km of high voltage lines and cables (Northpower, 2023).

Northpower’s electricity network is supplied from three Transpower grid exit points (GXP’s) at both 110kV and 33kV, namely, Bream Bay, Maungatapere and Maungaturoto, as well as from the Wairua hydro power station and Trustpower’s diesel peaking plant as mentioned previously (Northpower, 2023). It then distributes this power to smaller “zone substations” via its “sub-transmission network” before redistributing it to customers, via a network of smaller local power lines. Northpower’s sub-transmission network is shown schematically in Figure 6.2.1, it comprises regional substations and zone substations interconnected by 110kV, 50kV and 33kV lines and cables (Northpower, 2023).

A key feature of the sub-transmission network is a 33kV ring between Maungatapere and Kensington regional stations, which allows load to be transferred between the 110/33kV transformer banks at these stations (Northpower, 2023).

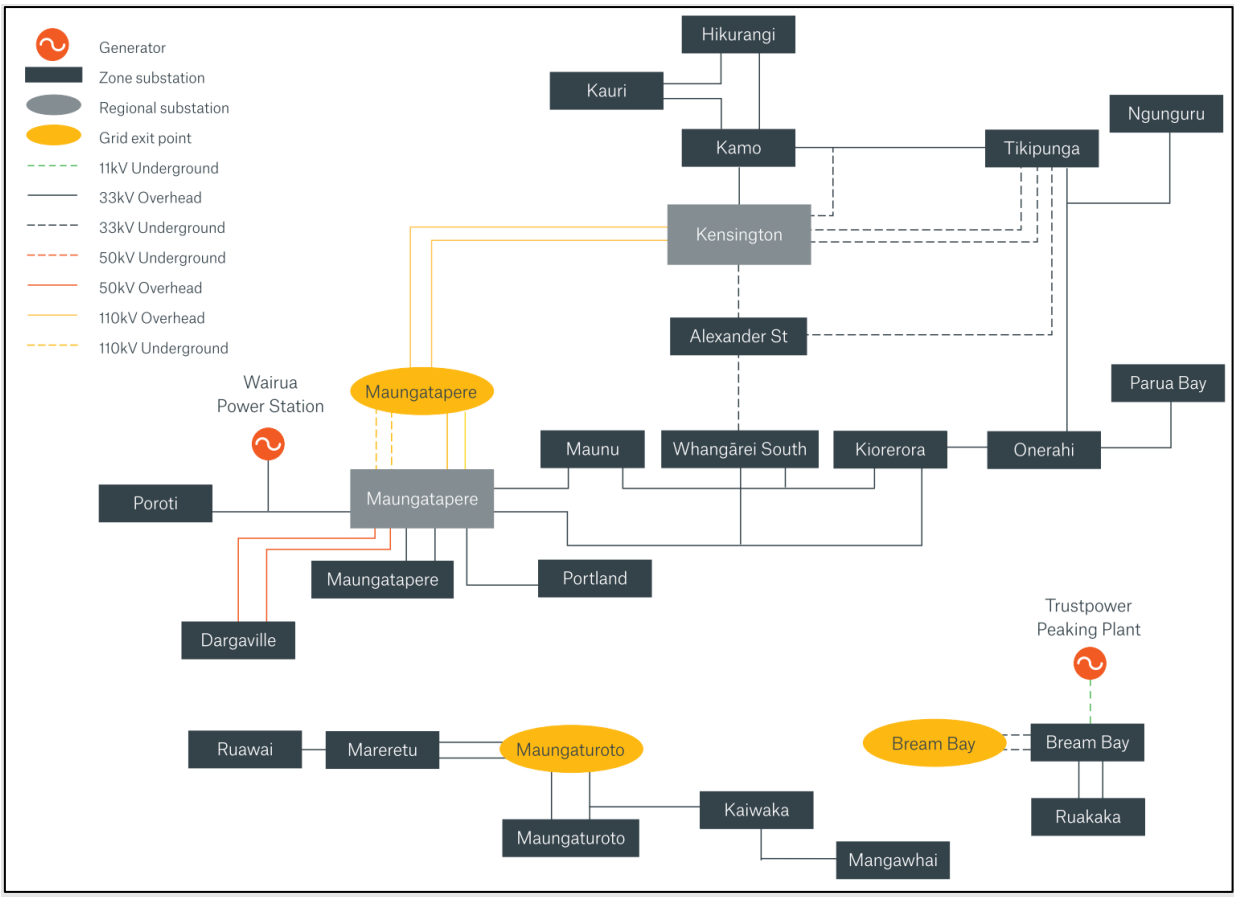


Figure 6.2.1: Northpower sub-transmission network (Northpower, 2023).

Figure 6.2.2 shows the Northpower distribution area and geographic location of zone substations (Northpower, 2023). Most remote zone substations are fed by a single 33kV line with varying levels of back-feeding capability on the 11kV network. Mobile generation can be deployed for voltage and load support where back-feeding capacity is not adequate (Northpower, 2023).

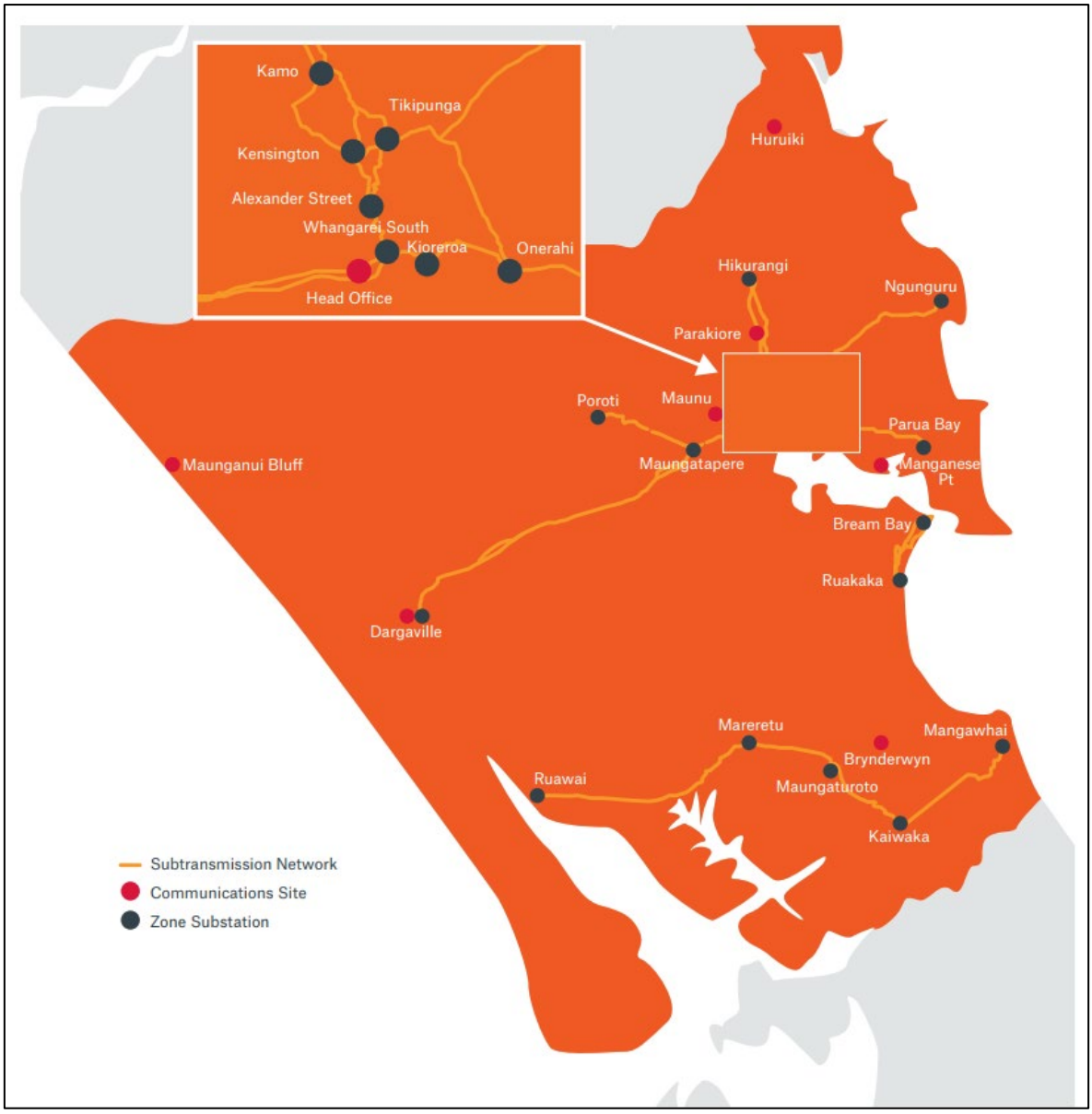


Figure 6.2.2: Northpower sub-transmission network, site locations (Northpower, 2023).

The high voltage distribution network originates from the zone substations and includes 98 x 11kV distribution feeders and associated low voltage reticulation. Most customers are supplied from 11,000/415 Volt distribution transformers however some are supplied directly at 11 kV. There are also several large industrial customers supplied direct from the 33 kV sub transmission network (Northpower, 2023).

The Northpower low voltage (LV) network is a mixture of overhead and underground circuits operating at 400/230V. The LV feeders distribute power from distribution transformers (connected to the 11kV network) to customers' service lines, generally from poles or pillars near property boundaries (Northpower, 2023).

Over the last five years, Northpower have seen an average increase of around 1.2% growth in peak demand per year. In 2021, Northpower had seen a sudden drop in consumption and demand due to the Covid-19 pandemic which limited the operations of their large industrial customers as well as some

commercial establishments. The demand growth averaged across the entire network is expected to be approximately 1.5% per annum for the ten-year forecast period (Figure 6.2.3) (Northpower, 2023).

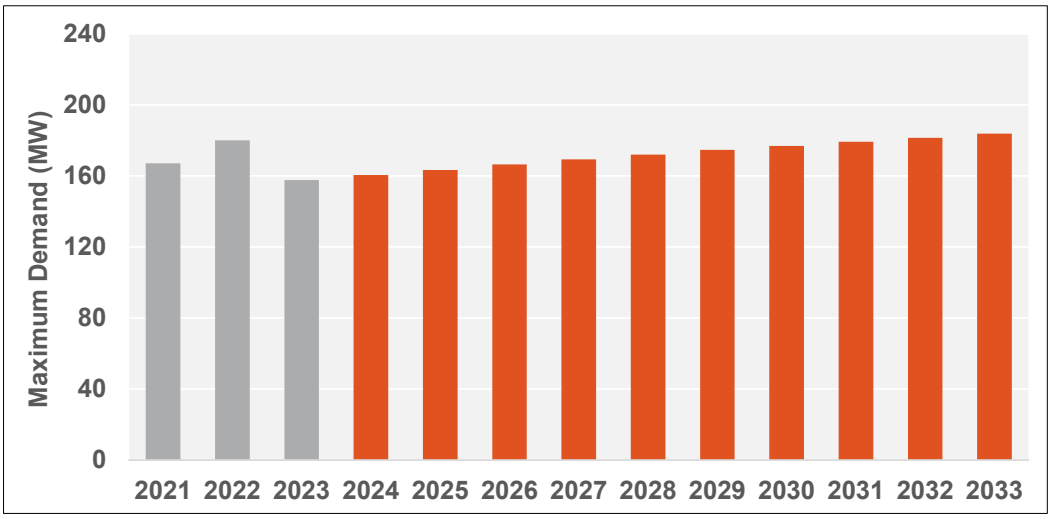


Figure 6.2.3: Northpower ten-year network load forecast 2023-2033 (peak demand) (Northpower, 2023).

As the network grows, Northpower need to ensure that its assets continue to be operated within their designed operating limits and appropriate security of supply is maintained. Northpower forecast demand on the network using a range of inputs from local councils, Statistics NZ and historical growth in the region. Network development projects are then planned and carried out to keep up with the projected demand.

Northpower have seen significant unexpected growth in connection applications in the Mangawhai area and with the current level of approved applications, cannot approve any more connections until the supply capacity is increased. Three network development projects are currently underway to increase the capacity and improve the security of supply to Mangawhai.

a) The first of these projects will improve back-feed capability from Kaiwaka substation and is expected to be completed mid-end 2023. This project will create more capacity to accommodate connection applications in the short term.

b) A new substation build project is underway that will significantly increase the capacity and improve the security of supply to the Mangawhai area and is expected to be completed early to mid-2024.

c) A new line project, running from Maungaturoto to Mangawhai, is currently in the design phase and will further improve the capacity and security of supply to the Mangawhai area.

These three projects will ensure that future growth in the Mangawhai area is able to be accommodated.

The weighted average domestic electricity price in Northland was 38.7c/kW in November 2022. This is a 0.2c/kW fall since August but is 0.7c/kW (2%) higher than in November 2021. During the past five years, the average domestic electricity price in Northland has risen by 2% per annum, the same rate of increase as the national annual average. But electricity prices in Northland are 19% higher than the national average. Assuming 8030kW of power is used per year, the current price equates to an annual household power bill of $3,110 in Northland compared to a national average of $2,612. This is equivalent to an additional $9.57 per week. (NRC, 2023).

6.3 Telecommunications

Northland has historically had poor telecommunications infrastructure with limited broadband coverage and extensive areas of mobile phone 'black spots' (areas with no mobile phone reception). This has particularly plagued areas along Kaipara's west coast including Pouto, Ripiro Beach and adjoining settlements, and the Kai Iwi Lakes. This is because rural and remote areas are generally more expensive for commercial telecommunication network providers to serve than cities and suburban areas due to difficult terrain, geographical isolation and low population/customer densities (Crown Infrastructure Partners, 2019).

To address this infrastructure short fall, central government through Crown Infrastructure Partners has partnered with the private sector to build additional cell phone towers in rural areas, thereby reducing mobile phone black spots and extending access to mobile broadband. Importantly, all three New Zealand mobile operators (2degrees, Spark and Vodafone) have services available from these new, government-funded towers. This allows locals, tourists and the travelling public to have reception in areas serviced by these towers, regardless of which company they are with (Crown Infrastructure Partners, 2019). The towers themselves are being constructed, maintained and operated by the Rural Connectivity Group, an independent entity established to be the infrastructure provider for this new open access network (Rural Connectivity Group, 2019).

The Rural Connectivity Group, through completion of the Mobile Black Spot Fund programme and Rural Broadband Initiative, will make enhanced broadband available to approximately 99.8% of New Zealand's population, improve mobile coverage to ~1,400km of State Highways and ~168 tourism sites nationwide (Crown Infrastructure Partners, 2019). There will also be increased broadband availability to 271 Marae. This work is scheduled to be completed in 2023 (Crown Infrastructure Partners, 2019).

Improving mobile phone coverage in these rural areas is not only important for business opportunities, tourism and social connectedness but also for safety, allowing persons in distress to contact emergency services when needed.

The Government has also been contributing funds to the expansion of fibre-optic infrastructure to facilitate ultra-fast broadband (UFB) access in the regions (Northpower, 2020). Whangārei's UFB network was completed in May 2014 by Northpower Fibre and now has one of the highest uptake levels among New Zealand UFB networks with more than 22,700 end users now able to connect (Northpower, 2023).

The Government has since chosen Northpower Fibre to build UFB fibre networks in 11 towns throughout the Kaipara and Whangārei districts between April 2017 and the end of 2021 (Northpower, 2023). Fibre optic broadband infrastructure has been installed in Dargaville, Mangawhai, Mangawhai-Kaiwaka Road, Kaiwaka, Maungaturoto, Paparoa and Ruawai providing access for another 9,000 Northlander's (figure 6.3.1) (Northpower, 2023). In 2022 Northpower were awarded six additional build stages, construction is underway which will allow 400 more customers to connect when works are completed in 2023.

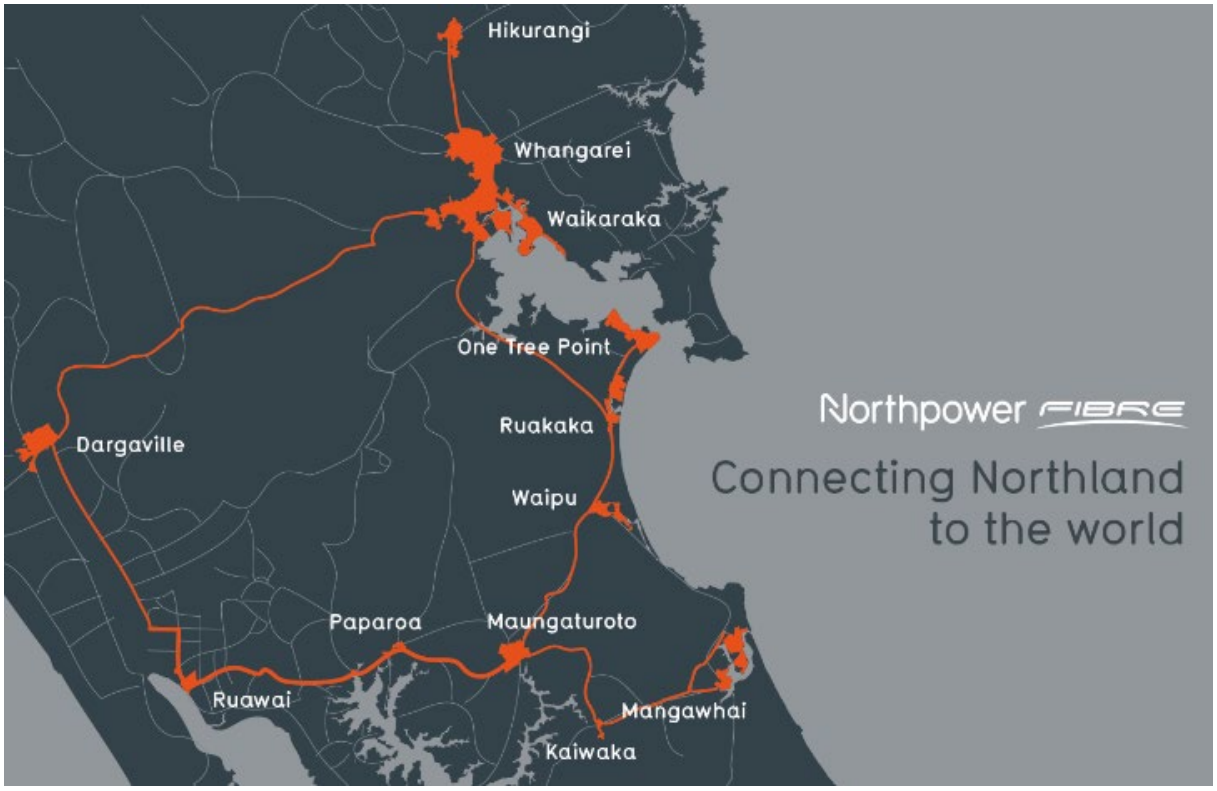


Figure 6.3.1: Northpower Fibre's expanding network (Northpower, 2023).

As well as increased coverage the entry level product speed on Northpower's fibre optic network has increased from 30/10 to 300/100 Mbit/s (Northpower, 2023)

In light of the above it can be concluded that, while Northland's telecommunications continue to have their limitations, they are steadily improving with black spots decreasing and broadband coverage increasing.

Finally, no review of Kaipara's telecommunications infrastructure would be complete without mentioning the Hawaiki submarine cable which comes ashore at its Mangawhai landing station. This is a new fibre-optic cable linking Australia, New Zealand, American Samoa, Hawaii and the United States West Coast, with branching units in place to further connect the Pacific Islands of New Caledonia, Fiji and Tonga (Hawaiki, 2020). It is presently the largest and fastest telecommunications link between Australasia and the United States (Hawaiki, 2020).

Commercial operations started in July 2018, with a guaranteed design life of 25 years, meaning the cable will be in service until at least 2043. The cable is carrier-neutral and independently owned, with capacity to double New Zealand's international communications capacity (Northland Inc., 2020).

Having both the Hawaiki submarine cable landing station and local UFB network infrastructure creates opportunities for digital industries to establish in Mangawhai and Maungaturoto.

6.4 Water

Kaipara District Council is presently the key agency responsible for the delivery of four different kinds of water services in the district. These are potable water (also called drinking water or municipal water supply), wastewater (also known as sewage), stormwater and land drainage. Of these, potable water, wastewater and stormwater are anticipated to be delivered by a new "Entity A" from July 2024 onwards under the central government's three waters reforms. Land drainage is anticipated to remain with the Kaipara District Council. In addition, the Northland Regional Council has responsibilities for river management and flood control. Regardless of which agency delivers them, these water services are essential to ensure people have access to clean, safe water for drinking, cooking and washing, provide for sanitation and prevent flooding. The following sections provide an overview of this key infrastructure around the district.

6.4.1 Potable water

Council operates separate municipal water supply schemes in the Dargaville (including Baylys), Glinks Gully, Ruawai, Maungaturoto and Mangawhai communities. In addition to supplying potable (treated) water, there are also a number of raw water supplies for agricultural purposes on the Kaihu (Dargaville) and Maungaturoto raw water mains.

Dargaville and ***Baylys*** townships are predominantly supplied with water from the Waiparataniwha Stream near Kaihu which is piped to a water treatment plant in Dargaville and then distributed to Baylys, Dargaville township and Silver Fern Farms' Dargaville meatworks (the latter uses about one third of the water and is also an anchor local employer). During periods of prolonged dry weather, the Waiparataniwha Stream dries up and Council begins taking water direct from the Kaihu River at Rotu. As the weather becomes drier still and the river level begins to fall, Council is able to release water from its Waiatua Reservoir to supplement river flows. The water released from the reservoir does not provide water to the town directly, however by providing water to the river for ecological benefit, the Council is able to meet the conditions of its resource consent and continue taking water from the river despite the low flow conditions. When dry weather continues and the river level drops lower, Council is forced to introduce water restrictions to try and reduce the amount of water it takes from the river. This system is shown in figure 6.4.1.1.

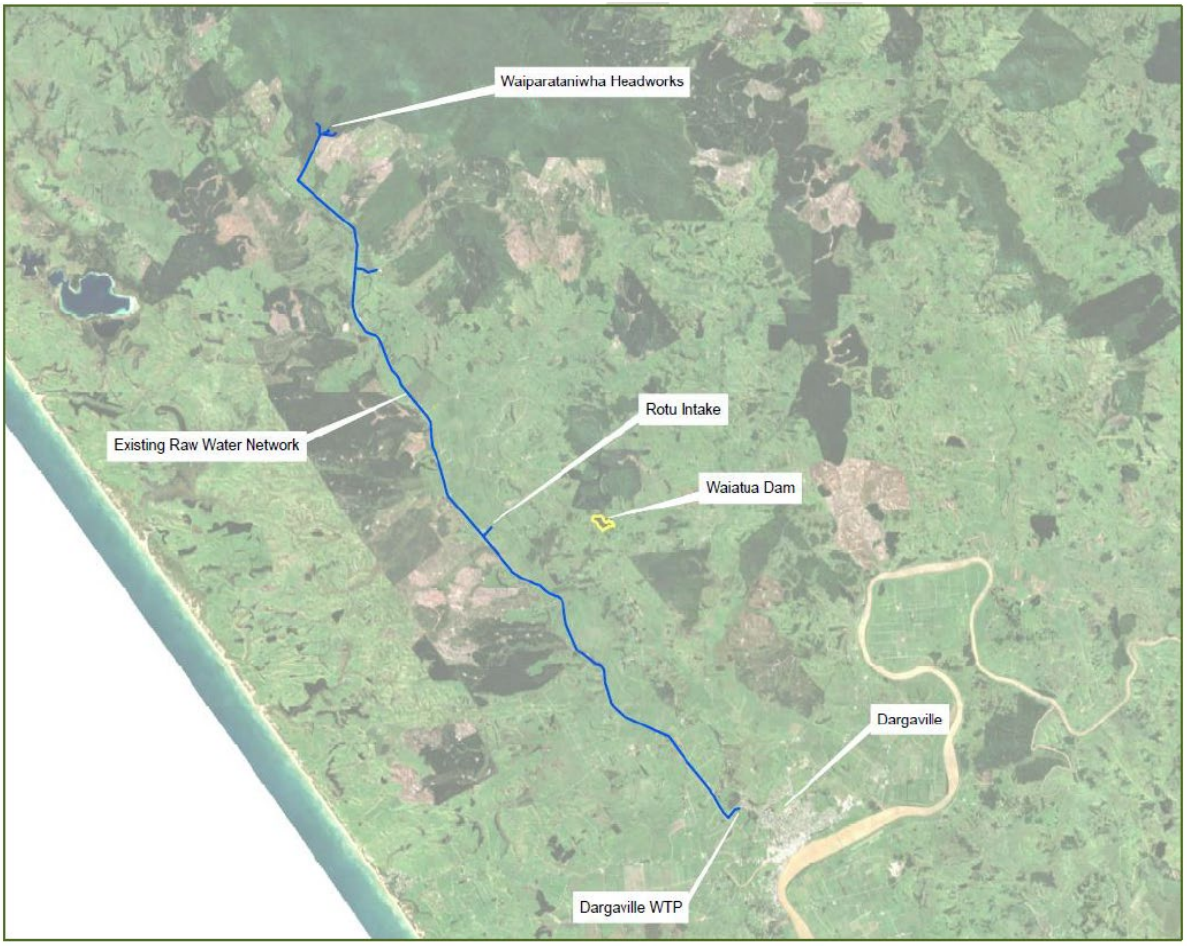


Figure 6.4.1.1: Schematic showing the layout of Council's current raw water network for Dargaville (Awa, 2021).

Dargaville's regular water restrictions inconvenience local residents and compromise back yard permaculture endeavours, however this is only the surface of the issue. The lack of water makes Council cautious of allowing additional connections to or extensions of the municipal supply network. This constrains growth of the township which has a perceived housing shortage. The lack of water for industry has also resulted in potential large-scale employers choosing to locate elsewhere, stifling the economic development of this area. The town's current major employer, Silver Fern Farms, is forced to reduce production during times of water shortage. This results in less hours for staff, particularly casual staff, resulting in less employment and reduced earnings for a town already experiencing high levels of deprivation. The cost to an individual employee can be in the order of $200-$300 per week and even in excess of $400 per week in some cases. Farmers are also impacted as they are unable to destock their farms in response to drought conditions. This forces them to carry more stock than planned with resulting impacts on feed and farm profitability. At times there can even be difficulties watering stock as the meat works is forced to place farms on a waiting list. Customers and supply chains are also implicated as meat production is disrupted.

To address this, Council is currently investigating improvements to its Waiatua Reservoir to increase the volume of water stored and to better utilise it. This includes investigating constructing a pipeline to link the reservoir directly into the network. If completed, this project is projected to supply ample water for Dargaville's projected future population, including allowing for industrial expansion.

Maungaturoto's water is sourced from two streams in the Brynderwyn hills and from the Brooklands Dam. The Brooklands Irrigation Dam is currently compromised due to an algal bloom. As the Maungaturoto water treatment plant is unable to treat water contaminated by algae, this makes Brooklands Dam unavailable as a water source at present.

The Maungaturoto Water Supply Scheme provides water to three groups of users:

- Maungaturoto Township via the Maungaturoto water treatment plant – average daily demand in the order of 650m^3/day
- Fonterra Maungaturoto via the raw water network – demand of 1200 to 2,400m^3/day (with 2,400m^3/day required during peak operational periods)
- Private Farm Irrigation and Stock Watering Users via the raw water network – approximate demand of 40m^3/day

The existing arrangement allows for raw water to be extracted from any one of the three takes described above (while noting the Brooklands take has been offline since 2020 due to algal blooms). Raw water is then conveyed via a trunk raw water main to the Maungaturoto water treatment plant. Along this pipeline, a series of offtakes supply raw water to a number of private farms, and Fonterra Maungaturoto. Following treatment at the water treatment plant, treated water is distributed to households and businesses in Maungaturoto via a reticulated pipe network. This local distribution network consists of approximately 35km of pipes. The Maungaturoto municipal supply scheme is shown in figure 6.4.1.2.

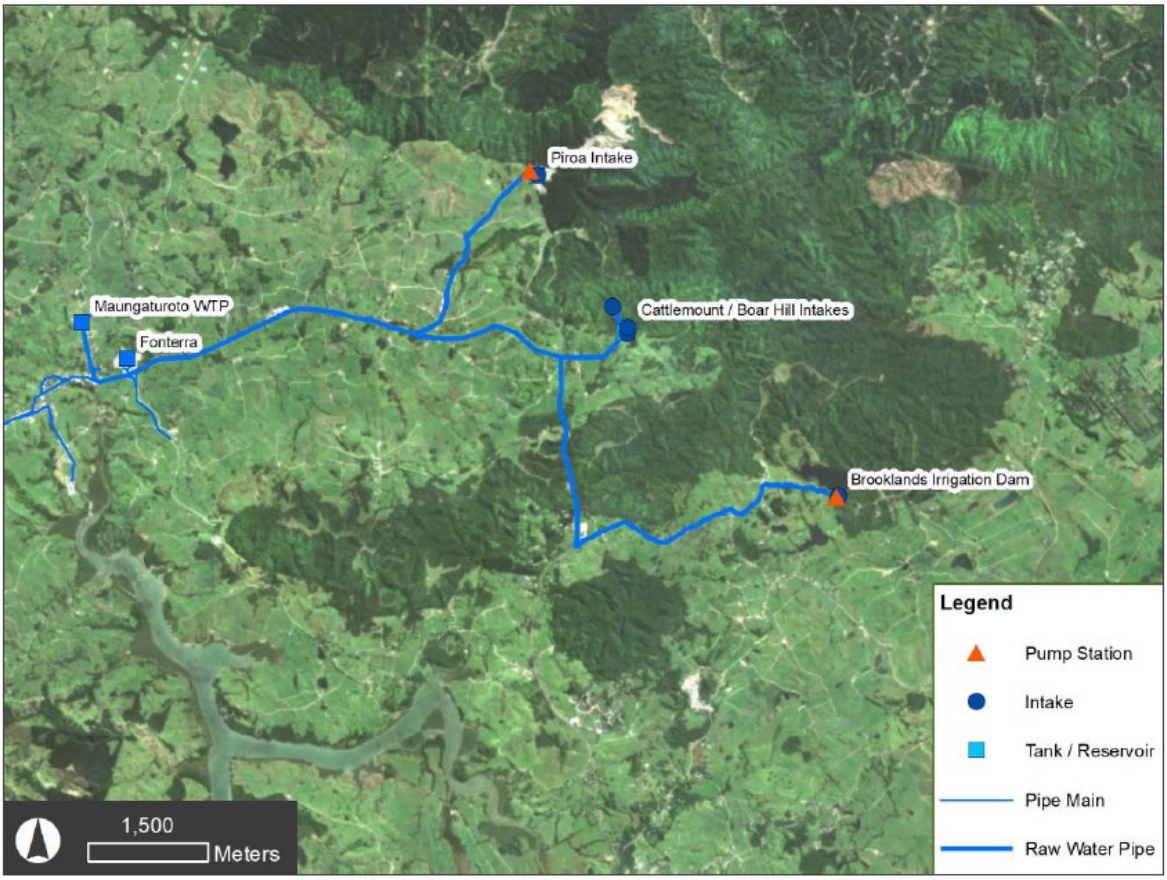


Figure 6.4.1.2: Schematic showing the layout of Council's water network for Maungaturoto (Awa, 2022a).

The Brooklands Irrigation Dam consists of a 1.3 million cubic meter reservoir formed by an earth bund on Cook Creek. The dam is privately owned but Council has an agreement with the dam owners to abstract water from the dam for the purposes of supplying Maungaturoto. Thanks in part to co-investment in raw water infrastructure by Fonterra, Maungaturoto is much less prone to water restrictions than Dargaville, but still experienced restrictions during the severe drought of 2019/20. The ability to draw water from the Brooklands dam during times of drought is essential to de-risk Fonterra Maungaturoto's operation. Fonterra and Council are currently working together to find a solution to the algae bloom issue.

Council's Maungaturoto water treatment plant is in need of substantial renewal works if it is to continue serving this community into the future. Work is underway to design and plan the works required.

Ruawai is supplied with water from a series of boars located next to the Wairoa River. Water is treated and distributed to local residents via approximately 6.7km of pipes. Much of Ruawai's water supply infrastructure is aged, though renewal works are underway.

The extent of Ruawai's water supply network is shown in figure 6.4.1.2.

Figure 6.4.1.2: The extent of Ruawai's water supply network.

The ***Glinks Gully*** scheme supplies water to 85 properties. The scheme is old and in need of asset renewal work. While the scheme will continue to comply with its 'Take Consent', maintaining this ageing system for a small number of users represents a high level of investment per property.

The extent of the Glinks Gully water supply scheme is shown in figure 6.4.1.3.

Figure 6.4.1.3: The extent of Glinks Gully's water supply network.

Mangawhai has a very small water scheme that primarily provides potable water to Mangawhai Heads Campground, Wood Street shops and community housing. Maintaining water services for a small number of users means high costs with relatively little benefit for the wider community. Mangawhai is a relatively new system, has an acceptable asset profile and is not an issue at this current stage.

The extent of the Mangawhai water supply scheme is shown in figure 6.4.1.4.

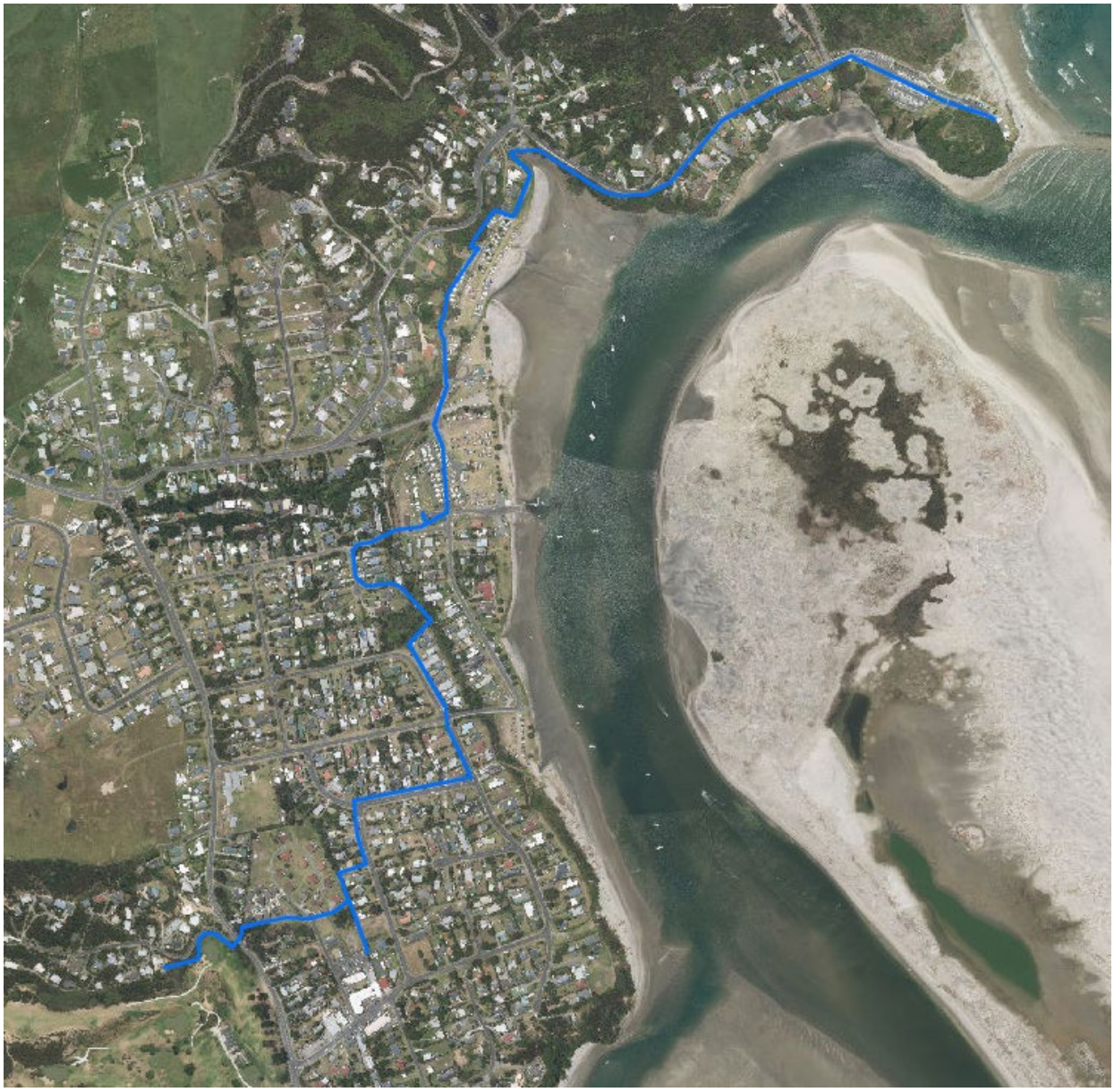


Figure 6.4.1.4: The extent of Mangawhai's water supply network.

By far the majority of Mangawhai, along with much of the district, are therefore dependent on private rainwater tanks and to a lesser extent bores for their potable water needs. This means many households must take responsibility for the provision and quality of their own water supplies.

The Northland District Health Board has submitted to Council that they would like to see Council increase the public water supply to more properties. Council's ability to do this varies with some schemes such as Dargaville and Mangawhai already constrained in their ability to supply additional customers.

Water for agricultural purposes can also be in short supply in Kaipara with droughts a risk to agribusiness. Recognising this, the government through Kānoa Regional Economic Development and Investment Unit is supporting the construction of a large-scale water storage and distribution scheme in the Dargaville – Te Kopuru area. The scheme aims to facilitate large scale land use conversion to horticulture and higher value crops. When completed, the scheme could provide water for irrigation to an area stretching from Baylys Beach to Ripia and Te Maire south of Te Kopuru.

The proposed Kaipara Water Scheme is based on the construction of the 3.3 million cubic metre Te Waihekeora reservoir at Redhill on the northern Pouto peninsula. Situated in a natural basin 75 metres above sea level, on top of rolling sand dunes, the reservoir is being constructed in two stages. Stage one is already complete, and stage two is under construction. Once completed, the reservoir will hold sufficient water to support around 1100ha of new horticultural development. The scheme is designed with the potential for additional reservoirs to be added as demand requires.

It is estimated that the Kaipara scheme could create up to 437 new jobs and lift the value of output in the region by $220m. Orchardists are already developing land adjacent to Te Waihekeora reservoir.

6.4.2 Wastewater

Council operates six community wastewater schemes in order to protect public health and the environment. These schemes service the communities of Dargaville, Glinks Gully, Kaiwaka, Maungaturoto, Te Kopuru and Mangawhai.

Dargaville is currently the largest of Kaipara's wastewater schemes, servicing just under 5,000 people. The wastewater system in Dargaville is aged and subject to frequent blockages, overflows, and extremely high levels of Inflow and Infiltration (I&I) of stormwater, groundwater and potentially river water.

The existing scheme is made up of approximately 40km of gravity pipes, 14 pump stations and 9km of pressure pipes, conveying wastewater flows from the town to the Dargaville Wastewater Treatment Plant (WWTP). The majority of the system operates by gravity, with wastewater flowing down to a series of pump stations near the Northern Wairoa River. These then pump the wastewater parallel to the river to reach the treatment plant on the town's east. Treated effluent is discharged to the Northern Wairoa River by seeping through the ground. The extent of Dargaville's wastewater network is shown in figure 6.4.2.1.

Figure 6.4.2.1: The extent of Dargaville's wastewater network (Awa, 2022b).

Te Kopuru's wastewater treatment system and pipelines are also old and there is a backlog of renewal work to be undertaken. To its benefit, the township is built on a revetment above the Northern Wairoa River and the wastewater system uses the benefit of the elevation of the revetment to develop a reticulation network that discharges to the treatment plant without the need for pump stations or rising mains. The extent of Te Kopuru's wastewater network is shown in figure 6.4.2.2.

Figure 6.4.2.2: The extent of Te Kopuru's wastewater network.

The wastewater scheme servicing ***Glinks Gully*** is designed to service a peak period population of 72 people and the system connects to 18 septic tanks serving 24 houses located on private properties. The wastewater treatment system and pipelines are ageing and replacement work will be needed. The small population and small number of properties mean a high level of investment per property will be required. The extent of Glinks Gully's wastewater network is shown in figure 6.4.2.3.

Figure 6.4.2.3: The extent of Glinks Gully's wastewater network.

Maungaturoto's wastewater scheme consists of a piped collection network which conveys wastewater to the Maungaturoto Wastewater Treatment Plant (WWTP) prior to discharging to the Otamatea River. The system us made up of around 11km of gravity pipes, 3 pump stations and 1km of pressure pipes. A schematic overview of the system is presented in figure 6.4.2.4.

Much of the Maungaturoto Wastewater system has high levels of inflow and infiltration of stormwater and/or groundwater. Whilst the system largely meets the demands of the town in its current state, there are several capacity issues which have the potential to result in overflows during wet weather. The network is predominantly in "average" to "good condition". Network projects are therefore driven by capacity constraints rather than condition.

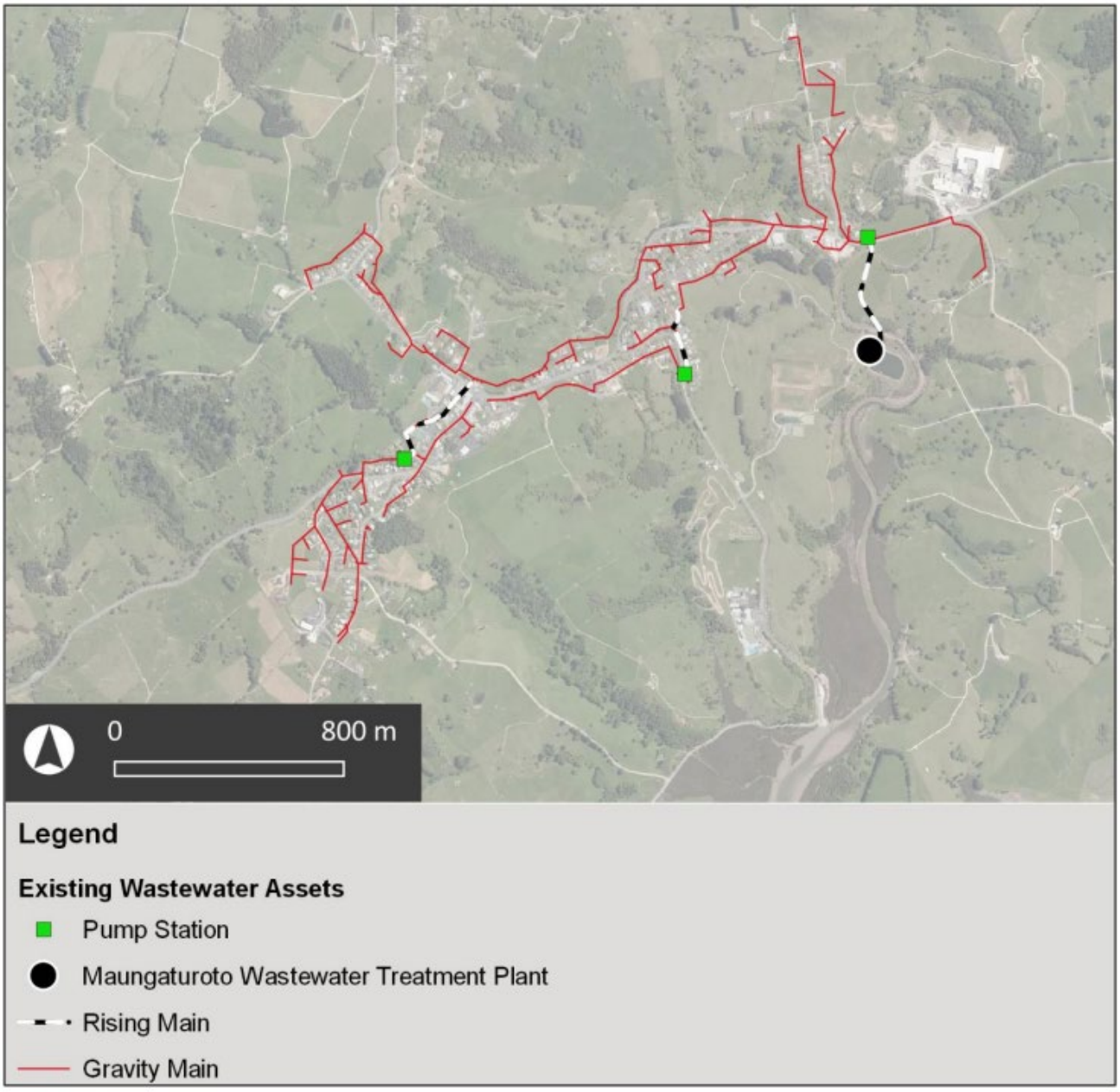


Figure 6.4.2.4: The extent of Maungaturoto's wastewater network (Awa, 2022c).

Maungaturoto Station Village is serviced separately by a small scheme comprised of a series of septic tanks which discharge to a wetland that drains to a stream.

Kaiwaka's wastewater system consists of 4km of gravity pipeline, 1 pump station and a single treatment plant. The majority of the network operates by gravity, draining to a pump station from where it is pumped to the wastewater treatment plant. A significant upgrade to the treatment plant was constructed in 2019. Nonetheless, Kaiwaka's wastewater system is ageing and will require further upgrades. The extent of Kaiwaka's wastewater network is shown in figure 6.4.2.5.

Figure 6.4.2.5: The extent of Kaiwaka's wastewater network.

Mangawhai's wastewater system is comparatively new, having been opened in 2010. This 'state of the art' collection, treatment and reuse system treats wastewater to a very high standard before irrigating it over a Council-owned farm.

As Mangawhai continues to grow, the wastewater treatment plant can be progressively upgraded and expanded to accommodate the additional flows. However, disposal of the treated wastewater is a constraint. The existing Brown Road Farm disposal area is nearing capacity. Council is currently undergoing projects to increase capacity at the treatment plant and is investigating different disposal options to cater for the continued growth of Mangawhai. The present extent of Mangawhai's wastewater network is shown in figure 6.4.2.6.

Figure 6.4.2.6: The extent of Mangawhai's wastewater network.

The biggest threat to Kaipara's wastewater systems is climate change, the majority of our treatment systems are located in areas at risk from sea level rise.

In addition, the historic failure to renew or repair our wastewater systems due to financial costs has created a large backlog of work to be completed and costs have only risen in subsequent years. While Dargaville has the biggest backlog, renewals will also be due in other schemes in 10 plus years.

6.4.3 Stormwater

The five Council-operated community stormwater schemes in Baylys, Dargaville, Te Kopuru, Kaiwaka and Mangawhai protect the communities from localised surface flooding by removing stormwater, collecting contaminants, and then discharging the stormwater in a manner that protects the environment and public health.

In addition, stormwater systems predominantly incorporated into the road network are provided in Glinks Gully, Kelly's Bay, Pahi, Whakapirau, Tinopai, Paparoa, Matakohe and Maungaturoto. There is also a Ruawai scheme that is operated under the Raupo Land Drainage scheme.

Baylys township is serviced by a reticulated system consisting of a piped network with manholes and kerbside sumps discharging to the streams that flow onto the beach. It is also at the lowest point of a larger catchment which reaches back towards Baylys Basin Road. This has the ability to add a large amount of water runoff into the existing streams and flow paths causing scouring and other issues at the lowest point which is the Baylys Township. Many properties discharge to soakage and open drains. There is approximately 3.2km of stormwater pipeline in Baylys, and 10m of open drains.

Dargaville's urban area is serviced by a stormwater network containing 36km of piped and 35km of open drains, it is protected from river flooding by 66 floodgates and various stopbanks. A series of floodwalls were installed to protect low-lying areas in the southernmost part of Dargaville exposed to the Northern Wairoa and the Kaihu Rivers. Investigations are currently underway to assess what upgrades

will be needed to prepare Dargaville's flood protection works for the effects of climate change. This will include looking at the stormwater network which delivers water down to the river. Stormwater collecting in this network is not able to drain to the river at high tide due to the floodgates which prevent back flow from the river. As the sea level rises, pumping may become necessary.

Te Kopuru's stormwater is primarily managed through the 4.7km of open drains associated with the roading network. There is also around 43m of stormwater pipeline in Te Kopuru.

Kaiwaka has approximately 1.65km of stormwater pipeline, and 262m of open drains.

Mangawhai has over 24.8km of stormwater pipeline, and 7.3km of open drains.

6.4.4 Land drainage

Much of Kaipara's most productive land is located on the alluvial flood plains around the Northern Wairoa River and its tributaries. Protecting this land from inundation and flooding is achieved by a series of land drainage schemes consisting of drains, stopbanks, floodgates and one flood pump. The schemes were designed and built in the early to mid-1900's to a high standard for the time, as is demonstrated by their resilience to this day. Kaipara now has the second largest area of land protected by land drainage schemes in New Zealand (after the Hauraki plains). Figure 6.4.4.1 shows the land drainage areas in Kaipara.

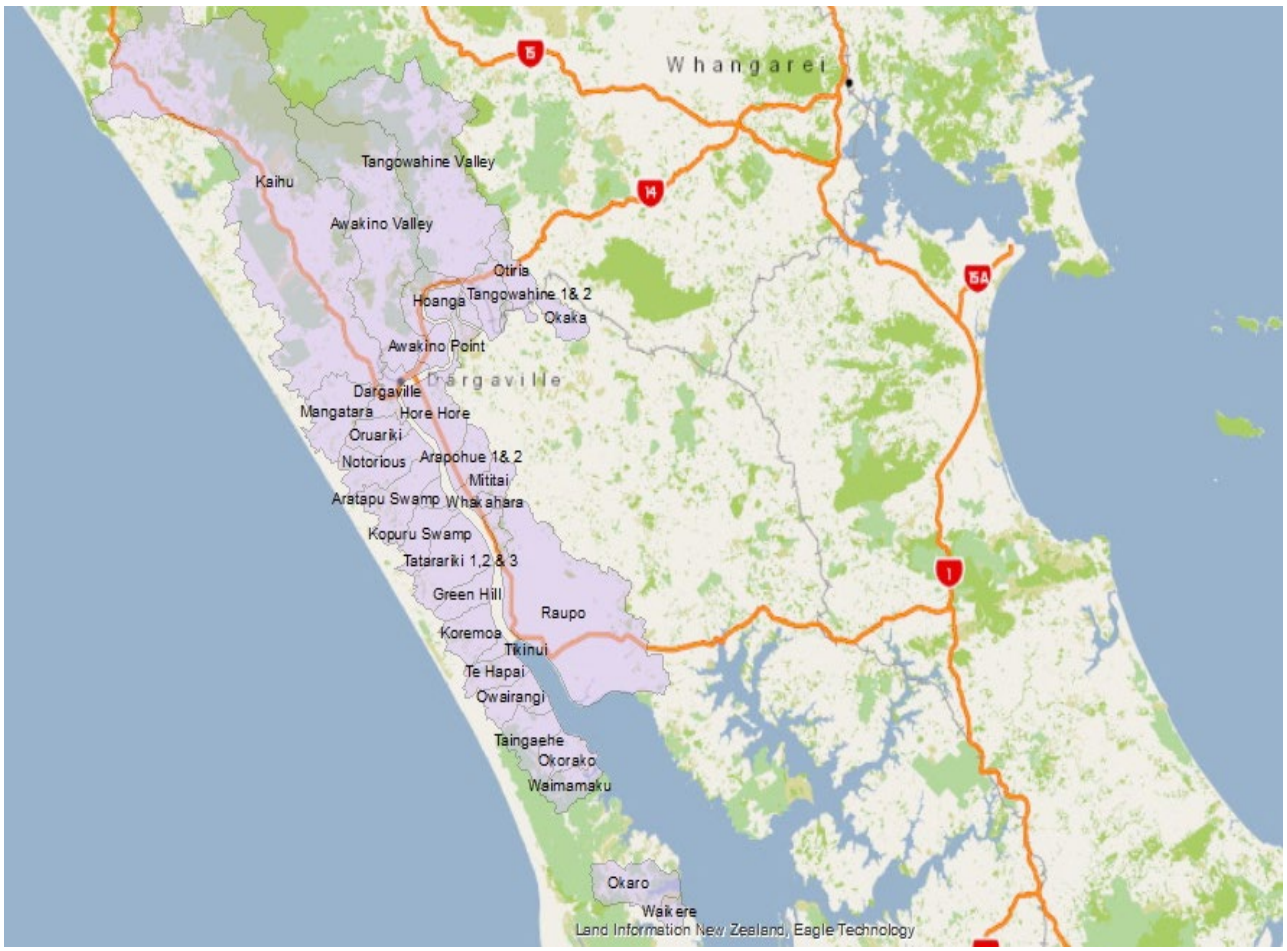


Figure 6.4.4.1: Spatial extent of land drainage districts in Kaipara.

Council does not operate but rather facilitates the operation and maintenance of 30 land drainage schemes within the Kaipara district. Governance of these schemes is via a number of drainage boards comprised of representatives from the landowners protected by each scheme, with support from Council. Funding is likewise provided by the beneficiaries of each scheme via a targeted rate which Council levies on the local drainage board's behalf. This means both the cost and governance of each scheme rests directly with those whose properties are protected by it.

In all, the 30 drainage schemes include 255.67km of drains (not counting adjoining private drains) and 123 floodgates. The largest of the land drainage schemes is Raupo which alone consists of 70km of tidally affected stopbanks, 52 floodgates, 137.6km of drains and canals and 1 pump. It should be noted that the drainage of individual paddocks is the responsibility of the property owner. Drainage network drains provide a connection to the drainage network only. Likewise, all floodgates located on the boundary between drainage board drains and private drainage are the responsibility of the property owner.

The greatest risk to all of the land drainage schemes within Kaipara is sea level rise and other impacts of climate change, including the possibility for more high intensity rainfall events. Currently, the schemes work by using stopbanks to prevent water from the river overflowing onto the land behind. Concurrently, rain falling on the land or flowing down from the catchment behind the stopbanks is channelled to the river via drains and released to the river at low tide via floodgates. These gates close as the tide rises to prevent water flowing back onto the land.

However, this system will no longer work if sea level rises to the extent predicted (1.5m - 1.66m higher than the 1986-2005 average over the next 100 years). The stopbanks already overtop in some places when a flood flow and a storm surge coincide with a king tide. Overtopping events will become more frequent and more destructive as sea level rise progresses. Heightening the stopbanks to the extent necessary to prepare for the projected sea level rise would require them to be re-engineered and would come at a considerable cost. Furthermore, as sea level rises, the period of time at which the tide is low enough to allow the floodgates to open and water to flow out of the drains will decrease, eventually resulting in the need to pump water over the stopbanks. This will result in both a capital cost as pumps are installed and an operational cost as the pumps draw power.

Responding to sea level rise is therefore a major challenge facing the drainage boards and is of critical importance to the wider district, with much of Kaipara's most productive land lying just above or just below present sea level, together with a considerable length of State Highway 12, Pouto Road, Ruawai township and Dargaville's central business district.

The land drainage schemes represent a major investment by the community and are of vital importance to the district's economy and the quality of life of the district's residents. The community's expectation is that this investment in land drainage assets is secure and will be maintained into the future. However, the investment in land drainage is likely to need to increase dramatically if sea level rise is to be addressed. Council is working with its communities through an adaptive pathways programme to respond to these challenges.

6.5 Social Infrastructure

Schools, medical centres, halls, parks and cinemas are some examples of the social infrastructure which enrich our lives and wellbeing. This section looks at what social infrastructure and services are available in Kaipara.

6.5.1 Libraries

There are five libraries in the Kaipara District: Dargaville Library, which is the only public library service, and four community libraries at Paparoa, Kaiwaka, Maungaturoto and Mangawhai which are run by volunteers. The community libraries receive support from Council by way of grants and provide basic book lending services. Dargaville Public library is well undersized for the population and needs of the district.

To address the disparity in library services, Kaipara District Council is planning to build a new library/community hub in each of Dargaville and Mangawhai. Planning for the new facilities is underway, with these facilities to be constructed over the next five years.

An improved Library/Community Hub service will be seen as a destination, with cultural and learning activities associated with it. It will be valued as a civic, non-commercial space at the heart of a community. The hubs can provide access to digital tools and tech creating employment and recreational opportunities and is seen as important in catering for a wide diversity of needs, abilities and cultures. These improved services meet the criteria for the four wellbeings defined by the Local Government Act 2002 and are anticipated to broaden the user base of the libraries to significantly improve peoples' lives.

In the interim, a mobile library service has been proposed to bridge the geographical gap for many of our residents in a cost-effective manner. The proposed mobile service would deliver books, Wi-Fi and library related services.

6.5.2 Education Infrastructure

The topography of Kaipara means that there are three distinct schooling networks; Mangawhai, Otamatea, and Dargaville (Ministry of Education, 2022). The figure 6.5.2.1 shows the schools available to service students in these areas. Not shown are supporting schools outside the district which also accommodate students from Kaipara. In particular, it should be noted that Otamatea High School and Rodney College are important for providing secondary school facilities to the Mangawhai area.

In addition a significant number of children travel long distances each day to attend the Blomfield Special School base site in Whangārei (Ministry of Education, 2022).

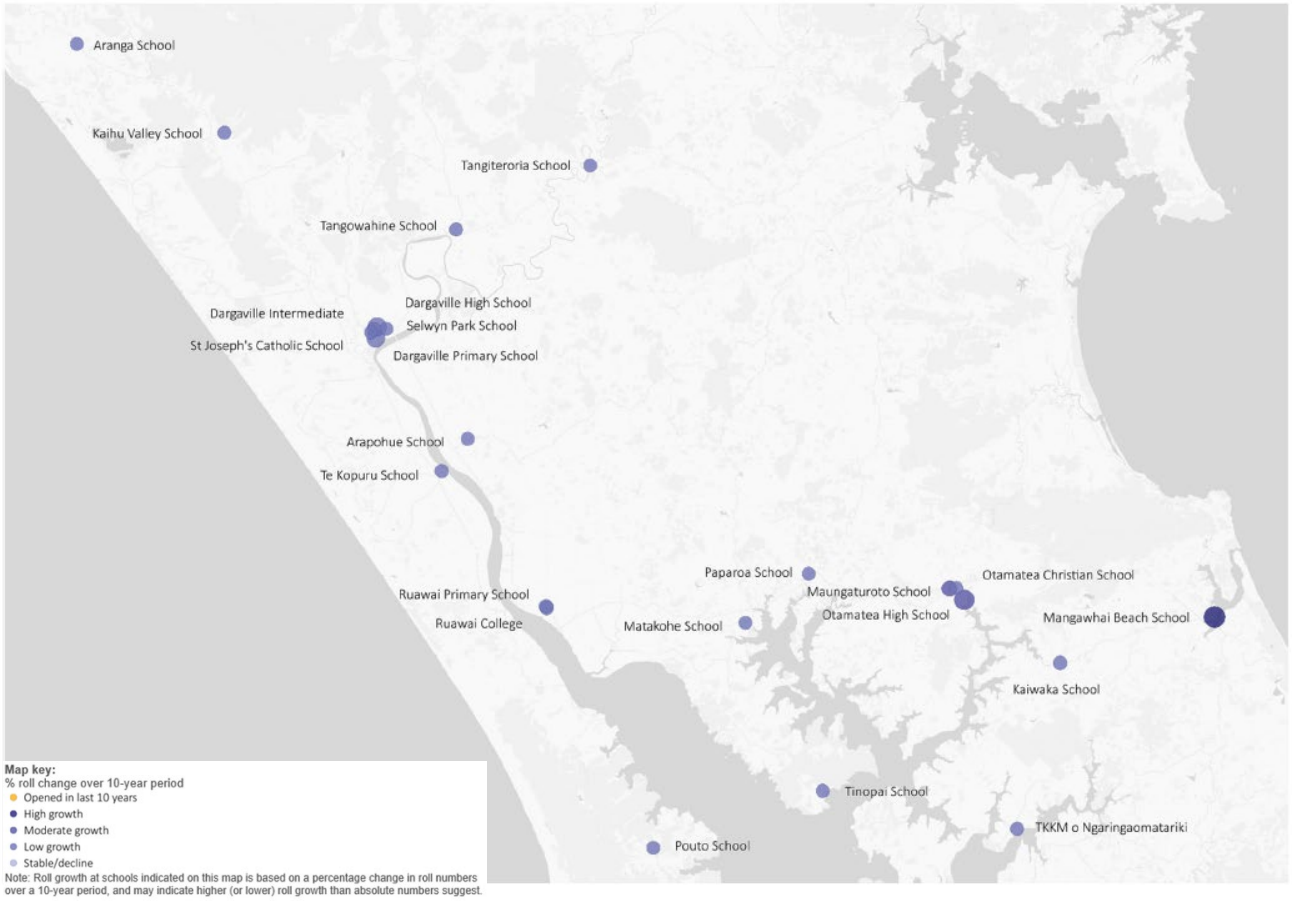


Figure 6.5.2.1: Locations of schools in the Kaipara District and changes in student rolls (Ministry of Education, 2022).

Recent population growth within the Kaipara schooling catchment continues to be concentrated in the east (Ministry of Education, 2022). This has led to the allocation of roll growth funding to schools in the Mangawhai area for additional teaching space. In contrast, potential rationalisation of surplus teaching space is being considered in other parts of the district (Ministry of Education, 2022).

There is no secondary provision at Mangawhai, and children in that area attend either Otamatea High School or Rodney College (Ministry of Education, 2022). There is a community desire for local secondary provision, however current analysis of projected demand supports the continuation of the Otamatea and Rodney pathway for secondary students.

Additional teaching spaces are being provided at Mangawhai Beach School (11 new teaching spaces) and Maungatūroto School (1 new teaching space) to address roll growth pressure (Ministry of Education, 2022). The Ministry of Education are working with Kaipara District Council in their long-term planning for population growth at Mangawhai. The Ministry will continue to monitor population projections and roll growth (Ministry of Education, 2022).

Redevelopment of Dargaville High School is being considered to address ageing building infrastructure and surplus property issues (Ministry of Education, 2022).

Funding has recently been announced for additional teaching spaces at Blomfield Special School in Whangarei (Ministry of Education, 2022). In addition, planning has started for a satellite unit at Selwyn Park Primary School in Dargaville (Ministry of Education, 2022).

Four of Kaipara's schools are geographically isolated. As a result, it is more difficult to attract and retain quality teachers, to attend professional learning and development opportunities, and to manage maintenance of school property (Ministry of Education, 2022). Rural Kaipara has a high proportion of teaching principals which places extra pressure on them to lead as well as teach. The Ministry of Education is working to provide more collegial support in relation to professional learning and development of staff across the catchment. They will continue to assist schools to strengthen governance, leadership and teaching capability, to improve engagement and student outcomes (Ministry of Education, 2022).

The Ministry of Education has acquired a site for the relocation of Te Kura Kaupapa Māori o Ngaringaomatariki as a new kura onto a permanent site in Kaiwaka (Ministry of Education, 2022). Census 2018 data shows that the population of under 15 year olds that identify as Māori has increased from 32% to 40% between 2006 and 2018. This has prompted initiatives to create more choice and more access to instruction in tikanga Māori and te reo Māori across the entire Tai Tokerau region (Ministry of Education, 2022).

Tertiary education opportunities are limited in the Kaipara District with most students leaving the district to pursue higher education. That said there is a small Northtec campus in Dargaville. NorthTec Dargaville's programmes are tailored to the needs of the community and have a focus on trades skills and environment management (Northtec, 2023).

6.5.3 Health Care

Kaipara District currently suffers from a lack of healthcare services with residents regularly required to travel to neighbouring Whangarei or Auckland to access the full range of services they require, particularly diagnostic and specialist appointments (Chiang & Exeter, 2019).

Kaipara is serviced by the Whangarei base hospital which is the key hospital servicing all of Northland. In addition, the Dargaville Hospital provides some services to the north and west of the District. However, the range of services offered is limited.

Medical centres/doctors' clinics are located in most centres in the District but have limited capacity and services. Other health care offerings such as dental services, optometrists etc. are also limited in the Kaipara District.

6.5.4 Recreation and sporting facilities

Council manages and maintains a diverse range of open space and facilities assets, including public open space for aesthetic, passive and active uses, public cemeteries, campgrounds playgrounds, coastal structures to access the rivers or coast, as well as public toilets to meet the needs of visitors and the traveling public.

The dispersed nature of the district's population makes it difficult to provide a consistent level of service and access to sporting opportunities across the district's communities (RSL, 2021). Relatively long travel times are required to access the full range of recreation facilities in the district and to access sport and recreation facilities in the wider Te Tai Tokerau region. Many Kaipara residents regularly travel to Whangarei for active recreation and sport opportunities, including for training (RSL, 2021).

The Kaipara District also has some specific challenges and opportunities (RSL, 2021). For example, a high number of non-Council owned sport and recreation assets such as sports fields and facilities that are owned and maintained by clubs or community organisations. This brings strong community input and feelings of ownership and value. However, it also creates challenges around inconsistent standards of maintenance and levels of access for different communities in the district (RSL, 2021).

Data on participation rates for the Kaipara population shows that most participation is through recreation rather than traditional team sports (RSL, 2021). This, along with demographic trends, indicates that provision of a variety of safe walking, jogging/running and bike/cycle routes is an important way to support people in the Kaipara being active. Access to both natural and built swimming facilities and demand for gym/work out options, along with group exercise classes will continue to be important in the district (RSL, 2021).

The facility inventory of the district identifies 32 main sport and recreation sites, providing approximately 80 play, sport and recreation facilities including playgrounds, sports fields, pools, a variety of courts and club room buildings (RSL, 2021). It is positive that the district already has a large number of multi-use sport and recreation facilities, with 13 of the main sites providing for two or more sport and recreation facilities and activities. Overall, there are sufficient facilities to meet most identified needs in the district. The key challenge is maintaining play, active recreation and sport facilities at appropriate standards as they age. There are opportunities to maximise use of facilities through provision of features such as lighting (e.g., outdoor courts and sports fields) and increased partnerships between sport, recreation and community groups, including schools, marae and iwi both for multiuse facilities and also activation through locally led programming (RSL, 2021).

6.5.5 Marae

There are 24 Marae in the Kaipara District. Details of these are given in table 6.5.5.1.

Table 6.5.5.1: Details of the Marae facilities in Kaipara.

Marae	Location	Associated Iwi Authority	Notes
Pananawe	Tiopira Roadway, Waipoua River Road	Te Roroa Whatu Ora Trust	Pananawe Marae is in an isolated location. Access to the Marae is through both forestry and private roads. There is limited cell reception, no internet available at the Marae. Electricity is supplied through a water turbine generator. The Marae has a single land line phone which is used to service the whole of this small Waipoua community.
Matatina	Nathans Road (Waipoua River Road), Waipoua Forest	Te Roroa Whatu Ora Trust	Access to Matatina Marae is through using both forestry and private unsealed roads. No internet is available and electricity is supplied through a wind turbine and diesel generators. Cellphone reception at the Marae is limited.
Waikarā	333 Waikarā Road, Waikarā	Te Roroa Whatu Ora Trust and Te Rūnanga Ā Iwi Ō Ngā Puhi	This isolated Marae has limited cell phone reception but does have internet access and mains powered electricity and landline phones. Access is via a private road off a dead-end unsealed road.
Waikaraka	166 Kaihu Wood Road, Kaihu	Te Roroa Whatu Ora Trust	Waikaraka Marae is on the route of the Kaihu Valley Trail.
Tama Te Uaua	5 Kaihu Wood Road, Kaihu	Te Rūnanga o Ngāti Whātua	Tama Te Uaua Marae is on the route of the Kaihu Valley Trail. Access is via a private road off a sealed road.
Ahikiwi	202 Ahikiwi Road, Kaihu	Te Rūnanga o Ngāti Whātua	Ahikiwi Marae is on the route of the Kaihu Valley Trail.
Taita	1968 State Highway 12, Mamaranui	Te Rūnanga o Ngāti Whātua	Taita Marae is on the route of the Kaihu Valley Trail. Taita Marae is
Te Houhanga a Rongo	498 Station Road, Dargaville	Te Roroa Whatu Ora Trust and Te Rūnanga o Ngāti Whātua	Te Houhanga a Rongo Marae is on the route of the Kaihu Valley Trail. Te Houhanga a Rongo Marae is vulnerable to flooding. The high water table is also affecting the Marae's septic tank system. Council is working with this Marae on a solution to their wastewater problems.
Oturei	Oturei Settlement Road	Te Uri o Hau Settlement Trust	Oturei Marae has limited cellphone reception.

Marae	Location	Associated Iwi Authority	Notes
Ripia	1627 Pouto Road Pouto Peninsula	Te Uri o Hau Settlement Trust	
Waikaretu	6424 Pouto Road Pouto Peninsula	Te Uri o Hau Settlement Trust	
Tirarau	Pukehuia Road Tangiteroria	Te Uri o Hau Settlement Trust	
Kapehu	Off Sills Mititai	Te Rūnanga o Ngāti Whātua	Access to Kapehu is via a steep one lane gravel driveway that is compromised during wet weather. The Marae has a shared urupā with Naumai marae.
Naumai	S H 12, Naumai	Te Uri o Hau Settlement Trust	Naumai Marae is located within the Raupo Drainage district and is vulnerable to flooding and the effects of climate change. The Marae has a shared urupā with Kapehu marae.
Te Kowhai	Te Kowhai Road, Ruawai	Te Uri o Hau Settlement Trust	The Marae is situated on an elevated site but has a steep access that can be cut off by flooding of the valley below. Parking at the Marae is limited.
Parirau	87 Tana Road, Parirau	Te Uri o Hau Settlement Trust	
Ngatai Whakarongorua	37 Chadwick Road, Tinopai	Te Uri o Hau Settlement Trust	Ngatai Whakarongorua Marae has limited cellphone reception.
Waiohou	Tinopai Peninsula	Te Uri o Hau Settlement Trust	
Waiotea	End of Ngatoto Road, Tinopai	Te Uri o Hau Settlement Trust	Access is by private road and across the beach at low tide. The Marae has no water supply or electricity. This is also a single dwelling on site.
Waihaua	449 Arapaoa Road, Matakohe	Te Uri o Hau Settlement Trust	
Rawhitiroa	91 Karakanui Road, Tinopai	Te Uri o Hau Settlement Trust	There are currently no buildings on site and the Marae is presently inactive.

Marae	Location	Associated Iwi Authority	Notes
Otamatea	97 Tanoa Road, Whakapirau	Te Uri o Hau Settlement Trust	
Te Pounga	130 Nathan Road, Oneriri	Te Uri o Hau Settlement Trust	
Oruawharo	959 Oruawharo Road, Wellsford	Te Uri o Hau Settlement Trust	This Marae is closely associated with Kura Kaupapa o Ngāringaomatariki

6.5.6 Halls, Theatres etc.

The district's halls (with the exception of the Northern Wairoa War Memorial Hall) are community owned, having been handed back to community ownership between 2009 and 2015 (previously they were owned, operated and maintained by the Council). In addition, there are a number of hall and clubroom facilities available for hire for functions and events that are owned by sports clubs, interest groups and Churches e.g. the Lighthouse Function Centre at the Dargaville Museum.

The Northern Wairoa War Memorial Hall (Dargaville Town Hall) has significant issues and planning is underway to demolish part of the facility and rebuild it as a community hub. The adjoining municipal chambers building was built in the early 1920's by one of Council's predecessors and provides a heritage contribution to the civic area of Dargaville. Whilst it is no longer used directly by Council, it now houses a community cinema, gallery spaces and has some areas (upstairs) which are leased to the Dargaville Arts Association.

The District has insufficient performing arts spaces with the District's two main centres, Dargaville and Mangawhai, not having any adequate performing arts spaces.

Council supports the operation of 14 community halls. These are:

a) Mangawhai Library Hall
b) Mangawhai Senior Citizens Hall
c) Mangawhai Domain
d) Kaiwaka Sports Association
e) Kaiwaka War Memorial Hall
f) Archie Bull Hall Kaiwaka
g) Arapohue Hall
h) Maungaturoto Centennial Hall
i) Tinopai Community Hall
j) Paparoa War Memorial Hall
k) Ruawai Tokatoka Hall
l) Dargaville Dalmation Hall
m) Te Kopuru Coronation Hall
n) Tangiteroria Sports Complex.

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