Kaipara, Place, People

and Key Trends

Kaipara District Environmental Scan 2020

Kaipara te Oranganui

KAIPARA DISTRICT

Two Oceans Two Harbours

Contents

1 Executive Summary

This Environmental Scan was compiled in November 2020. 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 while 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 technically 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.

Kaipara District Council has been advised to plan for a sea level rise of 1.5m above the 1986-2005 baseline over the next 100+ years. Sea level rise of this magnitude 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 a 2020 estimated resident population of 25,200 persons and is experiencing strong growth (20.6% from 2014 to 2019), driven by migrants leaving Auckland. Migrants to Kaipara are typically those nearing retirement age, though young families are increasingly represented as well. All areas of Kaipara are now growing strongly though most growth is centred on Mangawhai (60% increase from 2013 to 2018) and the Kaiwaka-Oneriri area (34% increase between 2013 and 2018). Employment growth is evident across the district; however, job creation has been limited in Mangawhai suggesting those moving to Mangawhai are typically either retired/semi-retired or commuting back to Auckland for work or working remotely.

Dargaville has seen 13% population growth between 2013 and 2018, far exceeding dwellings growth of 2% over the same period. Consequently, house prices climbed 60.5% over the three years to 30 June 2017 and the town now has a shortage of available rental properties. This disproportionately affects lower income families for whom rent represents a greater proportion of their total income.

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. Kaipara's economy has followed the national and global depression

following the outbreak of the 2019 Coronavirus Pandemic (COVID-19) and the measures taken to control it. While the impact of COVID-19 on the local economy should not be downplayed, Kaipara's economy has shown considerable resilience compared to other areas of New Zealand. Kaipara's GDP declined by 7.2% in the June 2020 quarter compared to the same quarter in 2019. However, this was mild compared to the decline of 12.6% in the national economy. Kaipara's resilience can be attributed to its foundation on the food production sector which was little affected by the Lockdowns and has seen continued demand for its exports. Kaipara's tourism sector is also likely to prove more resilient than most, though will still decline. This is because international tourists only accounted for 11.4% of tourism spending in Kaipara prior to COVID-19 compared to 40.5% nationally. Kaipara is also likely to benefit from additional visitors from Auckland due to lockdown restrictions which prevent Aucklanders holidaying overseas.

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 1,119km are unsealed and 450km 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. Consideration is currently being given to developing capacity at Northport to replace Auckland as one of two strategic North Island ports, together with associated rail and state highway upgrades and development. Such a development could be beneficial for the Kaipara district.

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 opening of 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 roof water 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 concerns are growing that the projected sea level rise could make defence of this area unviable. Kaipara District Council is committed to working with its communities to address this issue.

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 newly 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 1.

Figure 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 south western 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 Whāngārei 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 fresh water 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 salt water 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 (Integrated Kaipara Harbour Management Group [IKHMG], 2019). 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 2) (IKHMG, 2019).

Figure 2: Extent of the Kaipara Harbour catchment (IKHMG, 2019)

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 (IKHMG, 2019).

The Kaipara Harbour has suffered a prolonged period of degradation, primarily due to the release of sediment from the deforestation of its catchment (IKHMG, 2019). This degradation continues into the present with inputs of sediment from streambank and hill country erosion continuing to be the primary pollutant (IKHMG, 2019).

To address the ongoing environmental degradation of the Kaipara Harbour, Mana Whenua under the leadership of Ngāti Whātua, established the Integrated Kaipara Harbour Management Group (IKHMG) in 2005, of which Kaipara District Council is a participating partner (IKHMG, 2019). The IKHMG is a multiple-stakeholder partnership combining two approaches to environmental management: one indigenous (Mātauranga Māori) and the other derived from western science. This forms the basis for future research, planning, policy development and management of the Kaipara Harbour's ecosystems; harbour and

catchment (IKHMG, 2019). The IKHMG has recently been granted an additional $100 million by central government to improve the water quality of the Kaipara Harbour.

Mangawhai Harbour

The Mangawhai Harbour opens to the Pacific Ocean on 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 is also a key habitat and foraging ground for the New Zealand fairy fern/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 technically 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). In particular, 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 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 is 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.

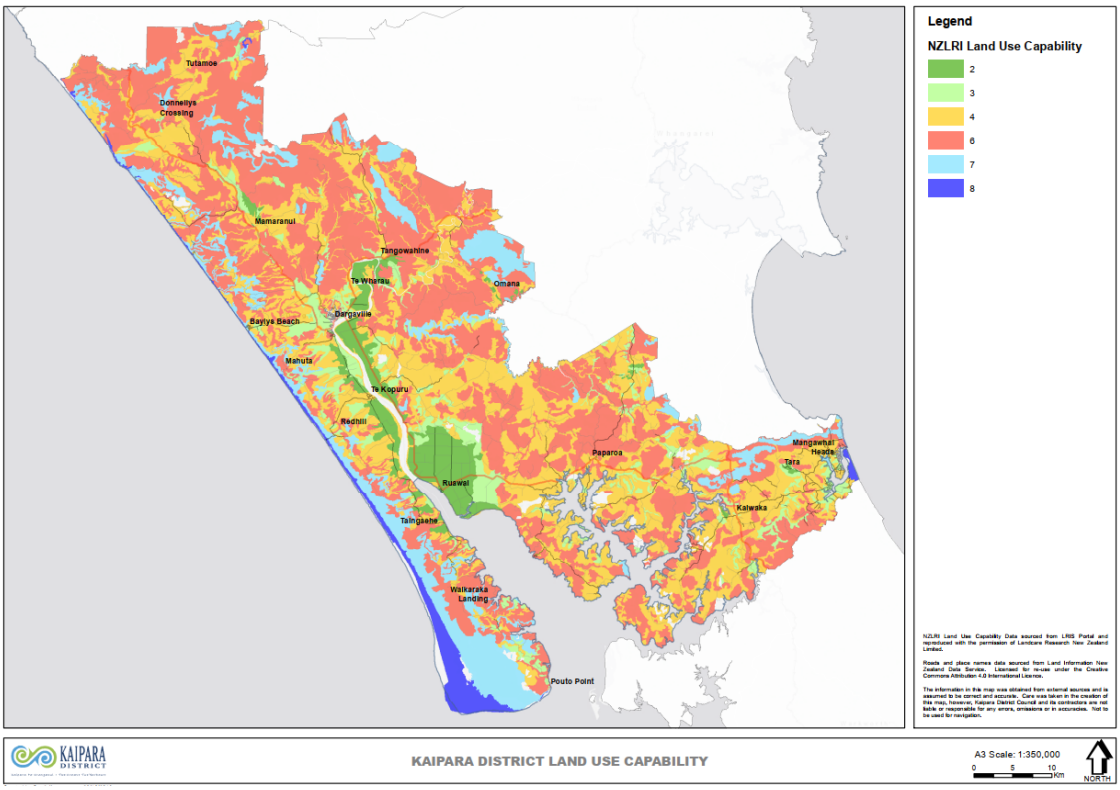

Figure 3: Land use capability in the Kaipara District (NRC, 2016)

Figure 4 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.

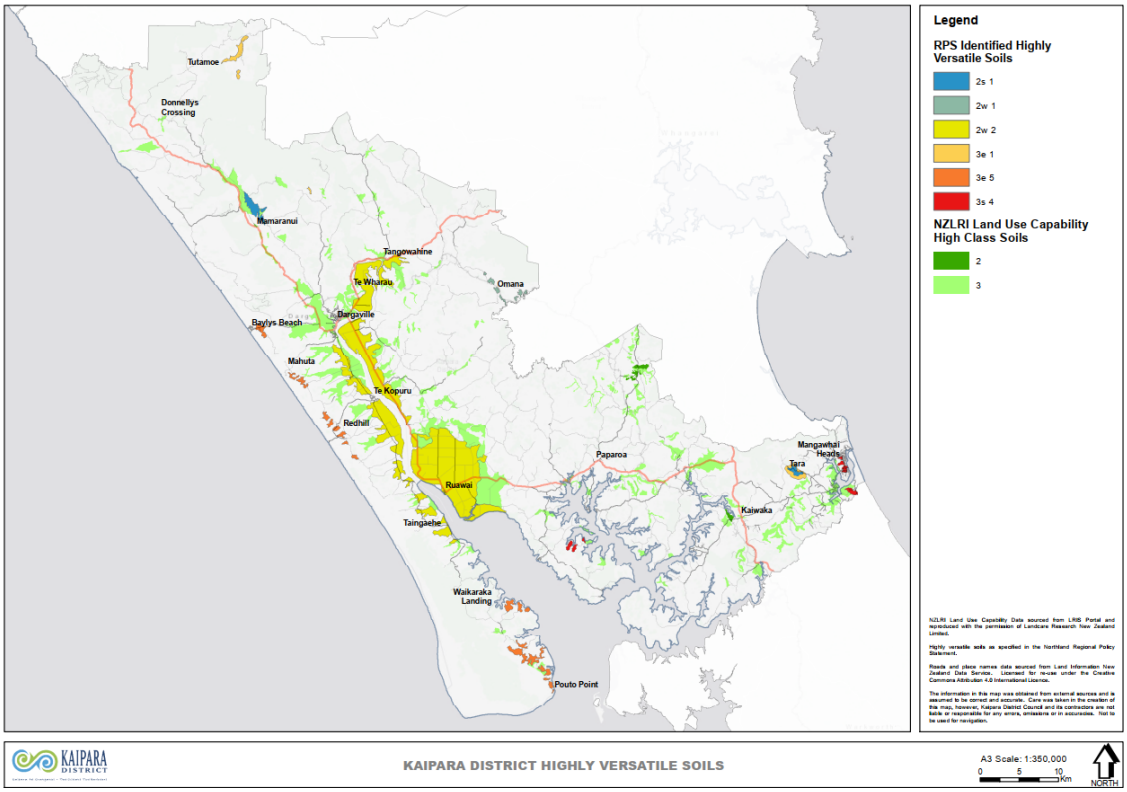

Figure 4: Kaipara's highly versatile soils as identified in the Northland Regional Policy Statement (NRC 2016)

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 16˚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 5 below shows the median annual average temperature as it varies across Northland.

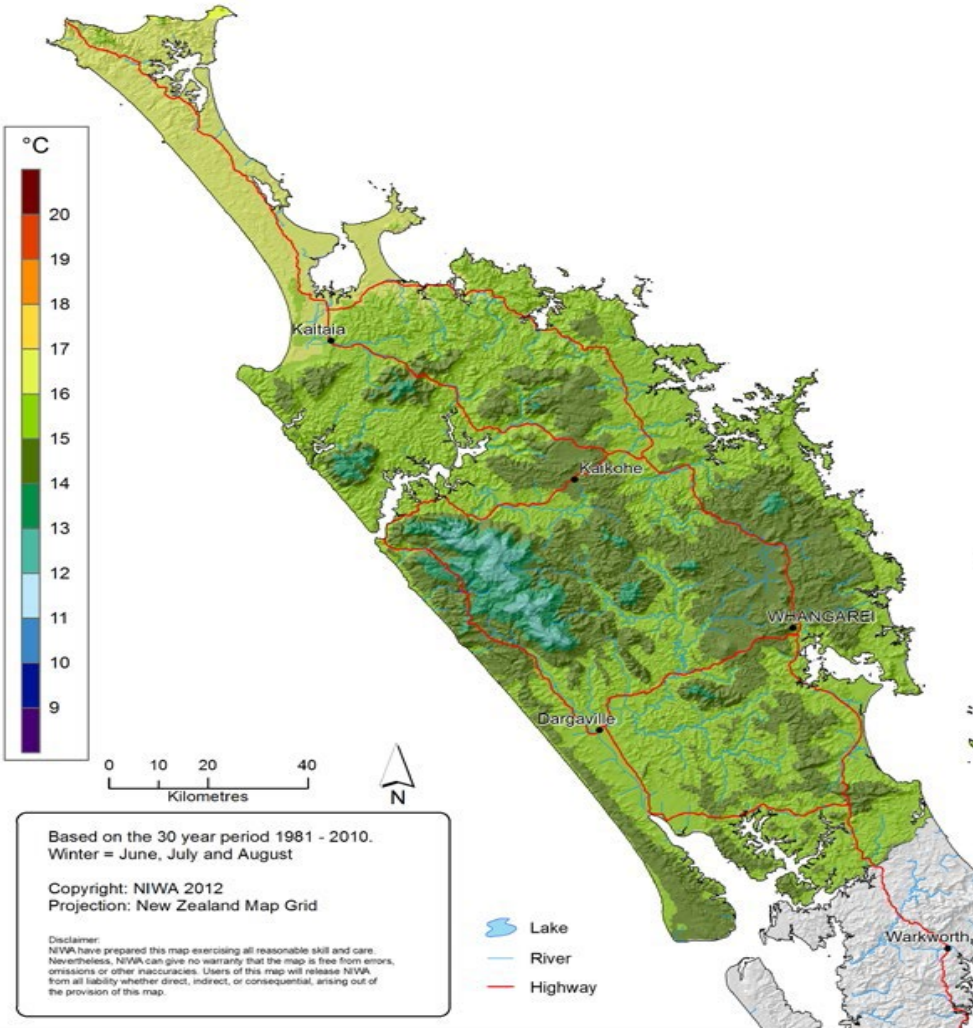

Figure 5: Northland median annual average temperature (NIWA, 2014)

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

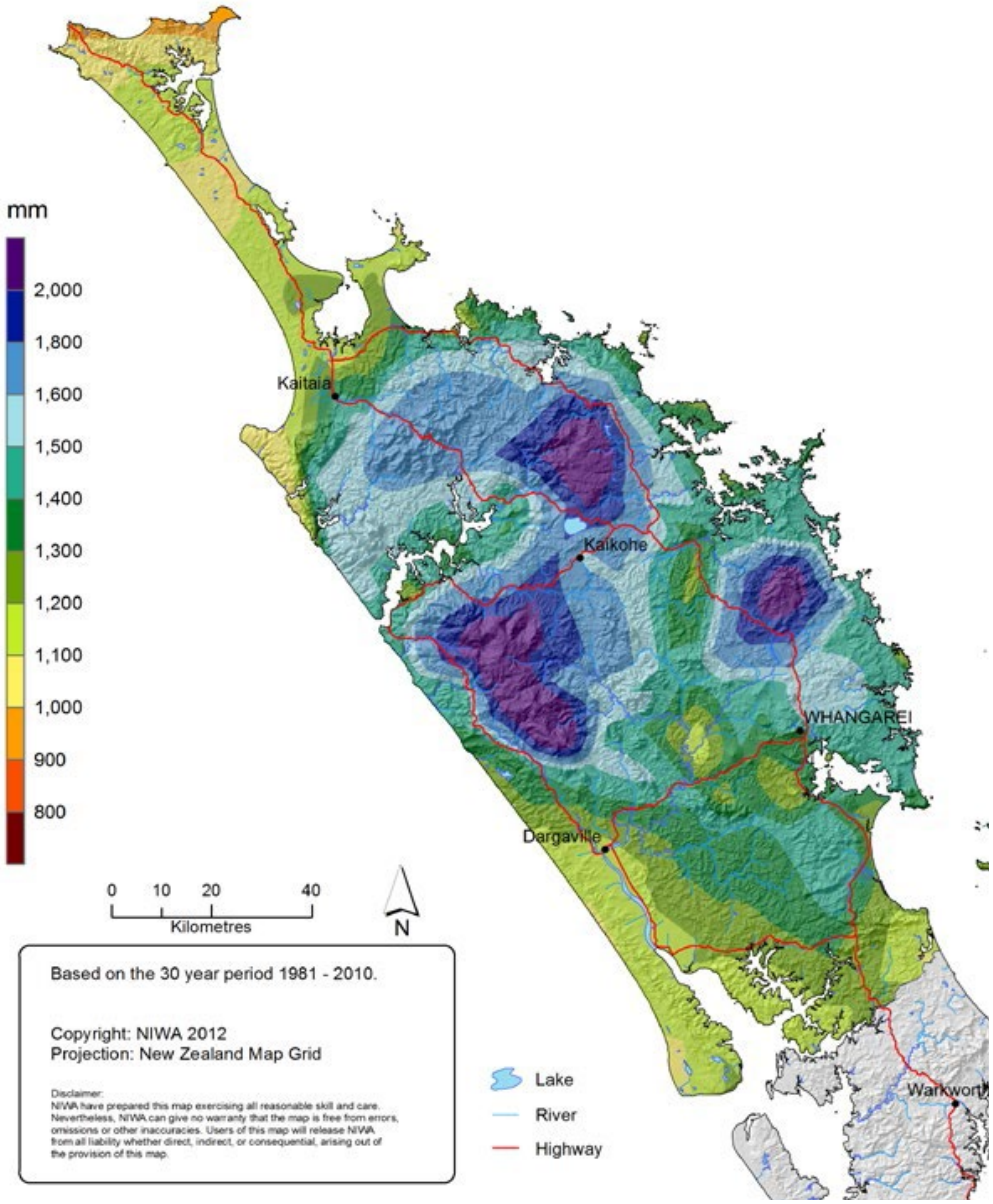

Figure 6: Northland median annual total rainfall 1981-2010 (NIWA, 2014).

Seasonal influences on rainfall distribution are also quite well-defined (NIWA, 2014). Table 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 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 7 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.

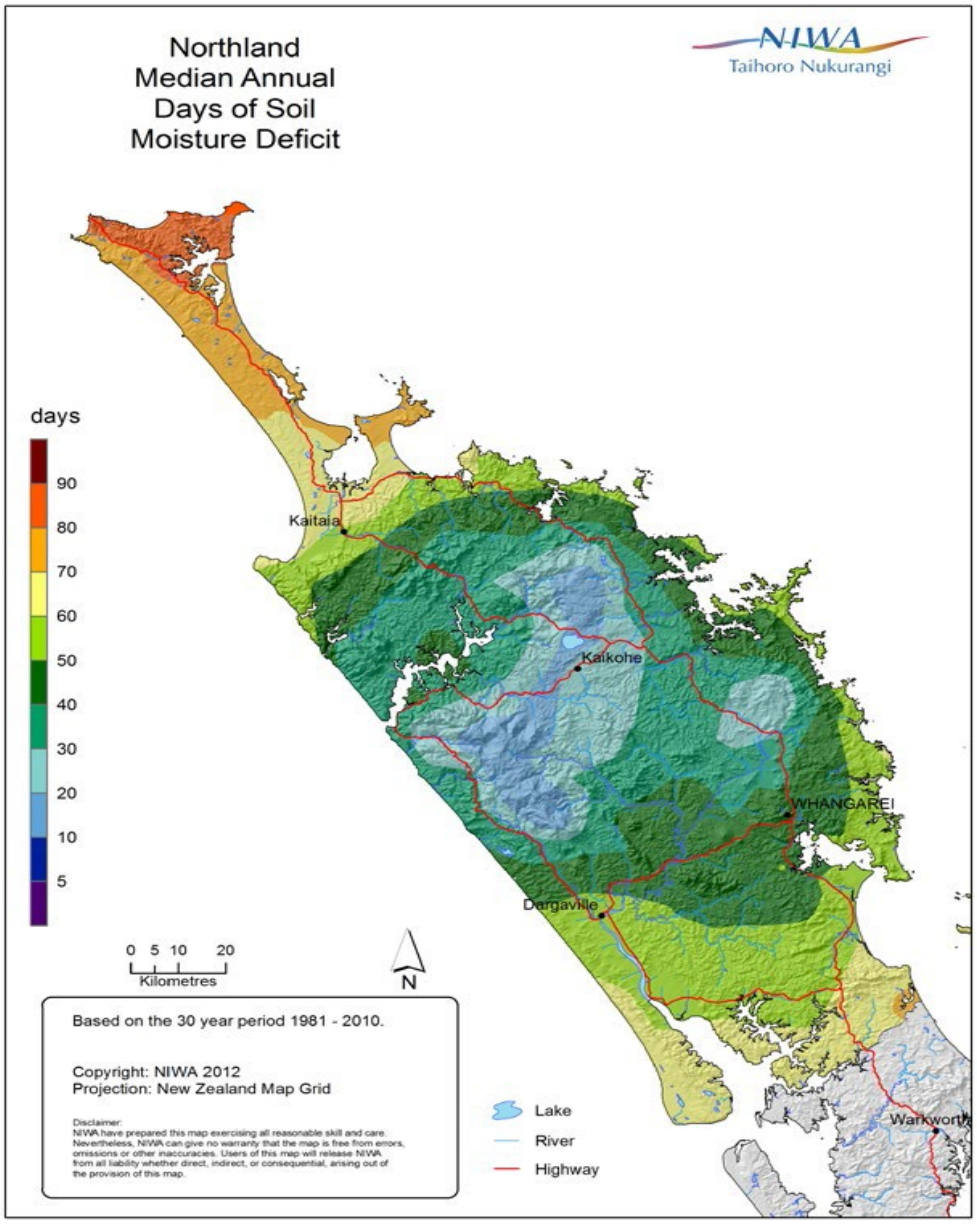

Figure 7: Northland median annual days of soil moisture deficit (NIWA, 2014).

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 and July 2020. The July 2014 flood/storm event was particularly severe and, according to Rosier et. al. (2015), was likely intensified by climate change. 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).

At a global level, this warming has a number of key effects that will be felt differently in different countries. Firstly, warmer temperatures will mean faster evaporation, resulting in many areas becoming more drought-prone even if total rainfall does not decrease. In addition, the melting of polar ice is causing sea levels to rise, potentially flooding low-lying coastal areas. In New Zealand, the major impacts of climate change that will require significant adaptation will be coastal hazards, drought and floods (MFE, 2017).

Many factors need to be taken into account when considering how future global warming will affect our communities. 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). This section sets out the key changes projected to effect Kaipara over the next 20 to 70 to 100 years. These assumptions are predominantly based on the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report's representative concentration pathway 8.5 (RCP8.5) and 8.5H+ (RCP8.5H+). These assume a continuing high emission baseline scenario, with no effective global emissions reduction, and emissions not stabilised till soon after 2100. It also assumes a higher rate of sea level rise (e.g. from faster polar ice sheet melt) being experienced in the latter part of this century and beyond 2100 (MFE, 2017).

Under these scenarios, average global temperatures are projected to be between 3.2°C and 5.4°C warmer by 2100 relative to the 1850–1900 baseline (MFE, 2017). Temperature increases are expected to be larger in the tropics and subtropics than in the southern mid-latitudes (i.e. New Zealand).

Northland's climate is projected to warm by approximately 0.75°C to 1.25°C by 2040, with average spring temperatures warming less compared with the other seasons (NIWA, 2016). By 2090, Northland's climate is projected to have warmed by approximately 2.5°C to 3.5°C, with more warming in summer, then autumn, compared with other seasons. A slight acceleration in warming is projected for the second 50 years of the 21st century compared to the first 50 years. Figure 8 shows these seasonal patterns of projected temperature increase for 2040 and Figure 9 shows the corresponding patterns for 2090 relative to the baseline climate of 1986-2005 (NIWA, 2016).

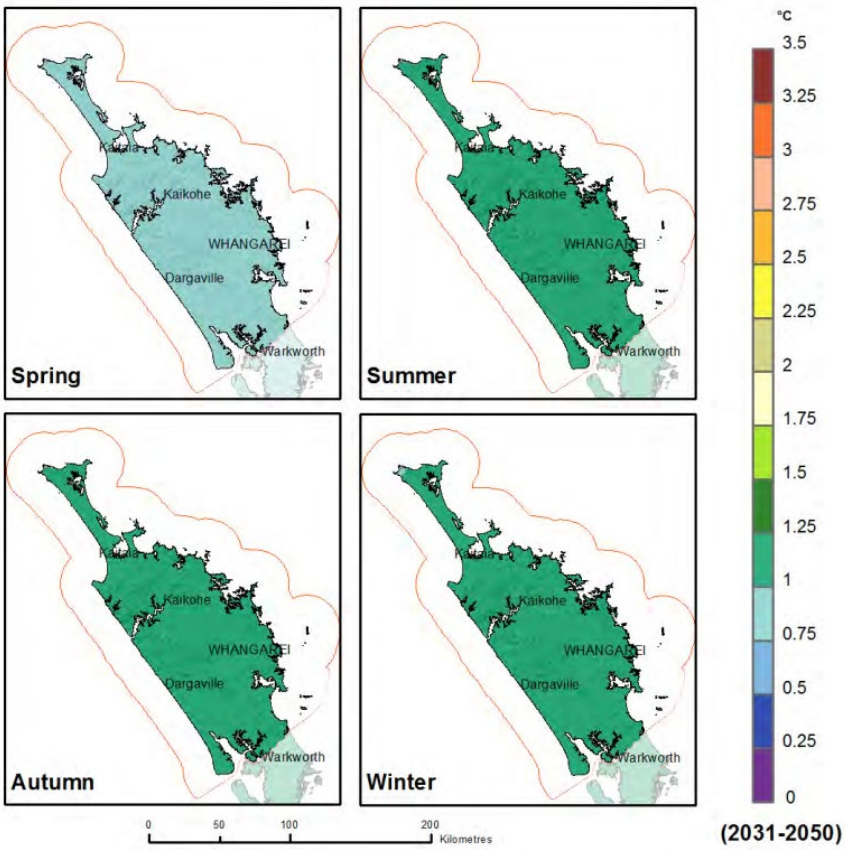

Figure 8: Projected seasonal temperature increase (additional °C) by 2040 (taken as an average for the period 2031-2050) relative to the baseline climate of 1986-2005 (NIWA, 2016).

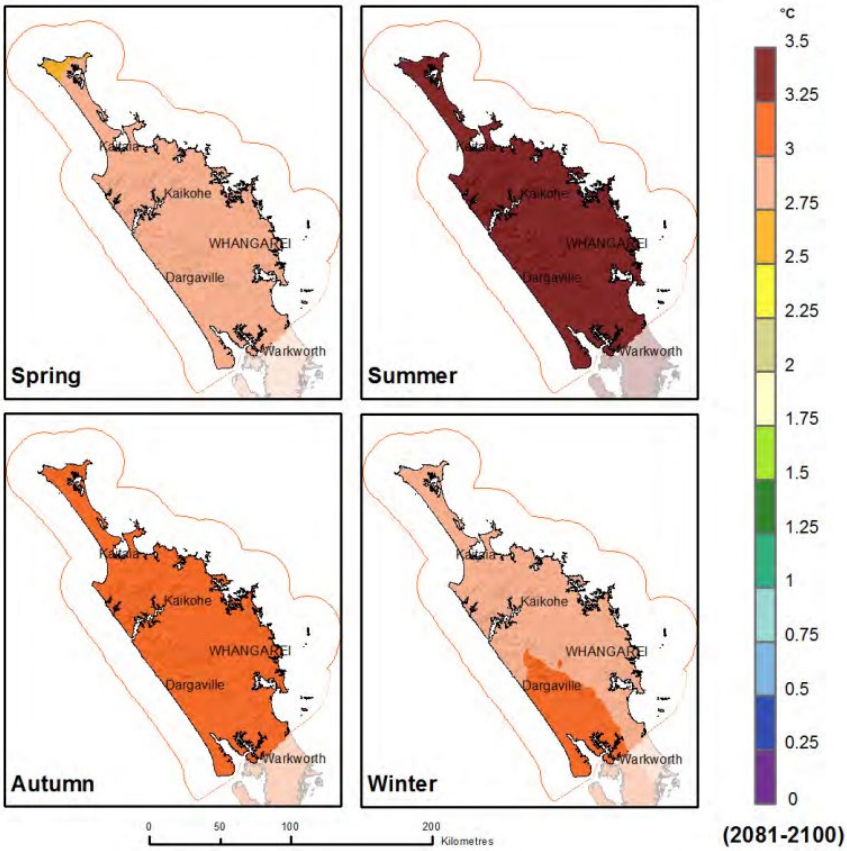

Figure 9: Projected seasonal temperature increase (additional °C) by 2090 (taken as an average for the period 2081-2100) relative to the baseline climate of 1986-2005 (NIWA, 2016).

As seasonal mean temperatures increase over time, changes in temperature extremes are also expected (NIWA, 2016). In general, an increase in high temperature extremes, and a decrease in low temperature extremes is expected. High temperature extremes (i.e. 'hot days') are considered as the number of days per year of 25°C or above, and low temperature extremes (i.e. 'cold nights' or frosts) are considered as the number of nights per year of 0°C or below. By 2040 it is projected Kaipara will experience about 20 to 30 more hot days per year (additional to the 25 hot days per year experienced on average during 1986-2005). By 2090 this is projected to be an extra 80 hot days per year relative to 1986-2005. A notable exception is the hill country north of Dargaville around the Tutamoe range, which is projected to be cooler, only experiencing up to 50 more hot days per year by 2090 (NIWA, 2016).

Concurrently, the number of frosts is projected to decrease across Northland, with a decrease from one frost every two years during 1986-2005 to one frost every five years by 2040 and one frost day every ten years by 2090. In many parts of the region, frosts will no longer occur by the late 21st century. This reduction in frosts is expected to be greater in the Kaipara district than elsewhere in Northland (NIWA, 2016).

Rainfall is projected to decrease in Kaipara and much of Northland particularly in spring and winter with summer rainfall projected to increase (NIWA, 2016). The spatial distribution of these trends is shown in Figure 10 for 2014 and in Figure 11 for 2090. Northland is projected to have about 20 more dry days (days with rainfall <1mm) per year by 2090 (NIWA, 2016).

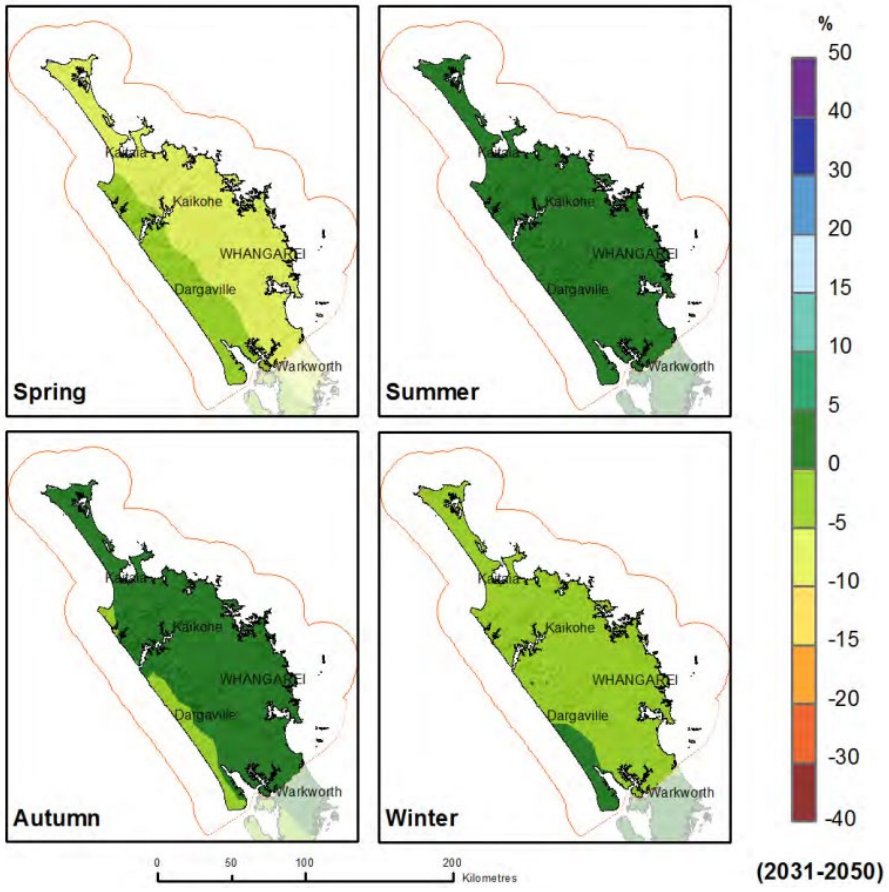

Figure 10: Projected seasonal precipitation changes (% change) at 2040 (2031-2050 average) (NIWA, 2016).

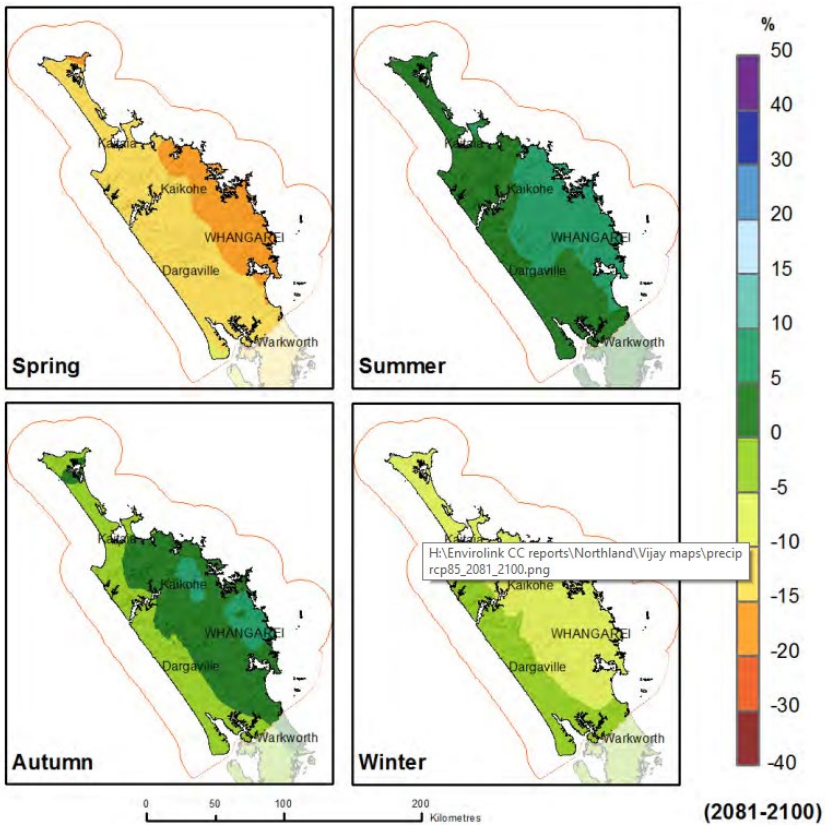

Figure 11: Projected seasonal precipitation changes (% change) at 2090 (2081-2100 average) (NIWA, 2016).

Despite more summer rain, droughts are projected to become more common as higher temperatures increase evaporation (NIWA, 2016). Potential evapotranspiration deficit (PED) is the cumulative difference between potential evapotranspiration and rainfall for days of soil moisture under half of available water capacity. PED, in units of mm, can be thought of as the amount of rainfall needed in order to keep pastures growing at optimum levels. As a rule of thumb, an increase in PED of 30mm or more corresponds to an extra week of reduced grass growth (NIWA, 2016). Future PED for Northland is projected for 2040 and 2090 in Figure 12.

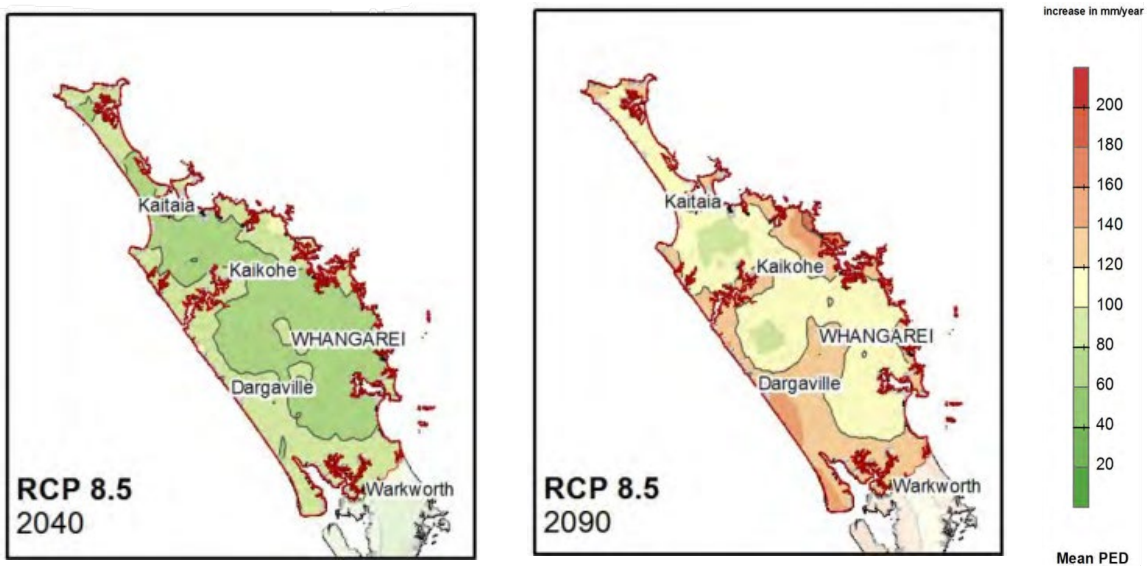

Figure 12: Projected additional potential evapotranspiration deficit (PED) in mm for 2040 and 2090 compared to 1995.

By 2040 western Kaipara is projected to experience increases in PED of 80-100mm/year (NIWA, 2016). However, by 2090 most of Kaipara is projected to experience increases in PED of 120-140mm/year, Mangawhai an increase of 140mm/year and some pockets south of Dargaville projected to experience increases in PED of over 140mm/year. It should be noted however that this model does not account for soil type, therefore, areas of free-draining sandy soils are likely to experience even higher PED. Kaipara can therefore expect to spend significantly more time in drought as climate change progresses (NIWA, 2016).

The warming climate is also causing sea levels to rise; due partly to additions of water from melting ice sheets and partly due to thermal expansion of the oceans (i.e. water expands in size as it warms) (MFE, 2017). Evidence suggests global sea level has risen by around 0.2m since 1900 and low-lying areas of New Zealand are already seeing an increased incidence of coastal storm inundation (MFE, 2017). The mean rate of globally averaged sea level rise appears to have been 1.7±0.2mm per year between 1901 and 2010. A slightly higher annual rise of 2.0±0.3mm per year appears to have occurred in the 40-year period from 1971 to 2010 (see Figure 13) (MFE, 2017).

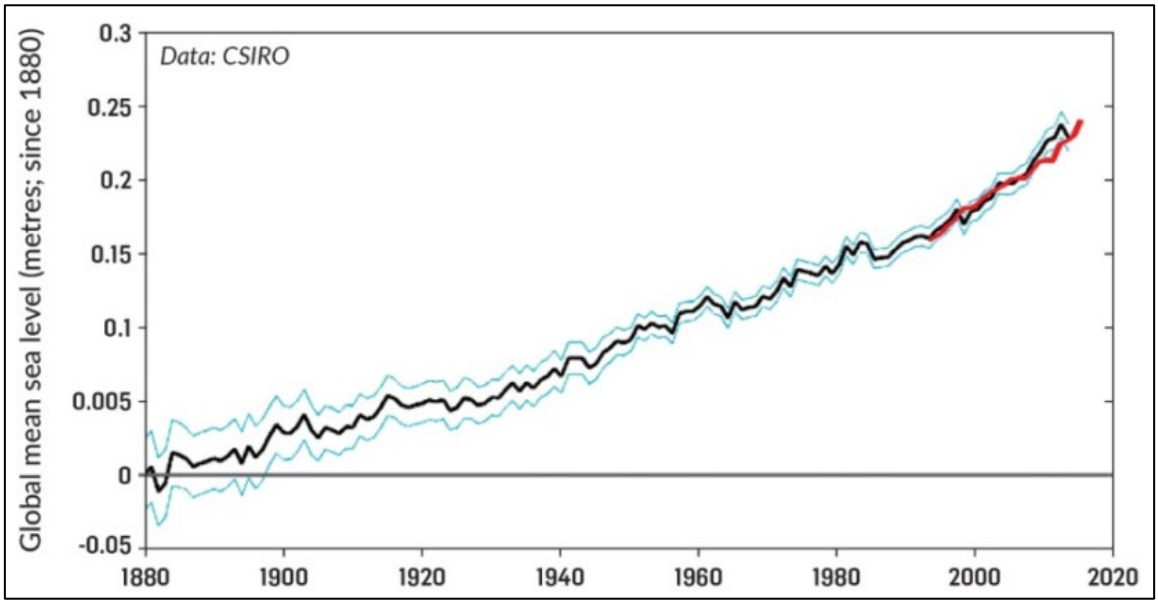

Figure 13: Cumulative changes in global mean sea level since 1880, based on a reconstruction of long-term tide gauge measurements to the end of 2013 (black) and recent satellite easements to the end of 2015 (red). Note: Lighter lines are the upper and lower bounds of the likely range (±1 standard deviation) of the mean sea level from available tide gauges (MFE, 2017).

Given the observed rate of sea level rise and current climate projections, the guidance given to Kaipara District Council is to plan for sea level rise of 1.5m above the 1986-2005 baseline over the next 100+ years (this is based on the IPCC's RCP8.5H+ scenario). This suggests sea level will be 1.5m higher than the 1986-2005 average by 2120-2130 (MFE, 2017).

Sea level rise of this magnitude will have significant ramifications for the Kaipara District due to its proximity to the ocean, extensive river network, and large expanses of low-lying land (Johnson, 2018). In particular, the Northern Wairoa area includes the second largest area of land protected by a land drainage scheme in New Zealand (after the Hauraki Plains). Much of this land around Ruawai, Aratapu and Hoanga is either just above or just below present day sea level and may be difficult to defend if sea

level rises in line with these projections (Tonkin and Taylor, 2016; Goodhue et al., 2012; Johnson, 2018). This issue is explored further under section 6.4.4; Land drainage.

Local government road and 'three waters' infrastructure will also be affected by sea level rise. In particular, many of Council's wastewater treatment plants are located adjacent to tidal rivers and many kilometres of roads are built on flood plains.

Even a minor rise in sea level can be expected to increase the frequency of damaging or disruptive coastal hazards (MFE, 2017). For example, a modest sea level rise of 0.3m to 0.4m (possibly reached by 2050–2060) will convert a present-day rare storm-tide inundation event (e.g. with a 1% annual exceedance probability) to an event that will occur on average once a year (MFE, 2017).

Higher sea levels will also push saltwater further up lowland rivers, increasing the extent to which they are tidal and saline (MFE, 2017). Sea level rise is also likely to encroach on coastal aquifers, raising groundwater levels, reducing groundwater flow velocities and increasing salinization (NIWA, 2016). How far this effect extends from the coast depends on aquifer properties, flow velocities, and the amount of sea level rise. Less groundwater recharge can also be expected due to less precipitation and higher evaporation (NIWA, 2016).

Climate change is likely to have the largest impact on primary industries such as agriculture, horticulture, and forestry through changes in climate variability and climate extremes (NIWA, 2016). In response to warmer temperatures, farmers and growers in Northland are likely to increase their usage and dependence on existing subtropical plant species and introduce new commercial species that are heat and drought-tolerant. Kikuyu grass (*Pennisetum clandestinum*) is likely to become the most prevalent forage grass as it spreads readily and forms dense swads, out-competing most other pasture species. Chicory (*Cichorium intybus*) and plantain (*Plantago lanceolata*) are two other pasture species that are deep-rooted and drought tolerant, which may increase in abundance in Northland (NIWA, 2016).

Climate change will generally increase pasture production, especially in winter, through higher temperatures and an extended growing season (NIWA, 2016). Climate change is also likely to be generally positive for cropping in Northland. 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 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).

Pinus radiata, is expected to perform even better in a warmer Northland than it currently does (NIWA, 2016). However, wildfires are likely to become a greater risk with increasing temperatures and decreasing rainfall. The number of days per year of Very High and Extreme Forest Fire Danger is projected to increase from 5.9 days/year to 8.2 days/year for Kaitaia, and from 2.2 days/year to 3.1 days/year for Dargaville over the period to 2050 and 2090 (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).

While efforts to reduce greenhouse gas emissions and so reduce the extent of climate change remain critical, the changes already underway in the Earth's environment will mean some degree of adaptation to climate change will be necessary. The changes anticipated as the climate warms will bring both opportunities and challenges for the Kaipara community. How Kaipara will respond to these remains to be seen.

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 Whāngārei (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 which is 18km/19 minutes' drive away. Mangawhai is 100km/one and a half hours' drive from Central Auckland, 64km/an hour and seven minutes' drive from Whāngārei, 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 Whāngārei 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 has an estimated resident population of 5,025,000 as at 30 June 2020 (Statistics New Zealand, 2020). New Zealand's population grew by an estimated 105,500 persons, or 2.1% in the year to June 2020. New Zealand's population growth rate remains high by historical and international standards, though the full impacts of COVID-19 remain to be seen. The world's population has been growing at around 1.1% per year and New Zealand has exceeded this growth rate in each of the last five years (Statistics New Zealand, 2020).

The largest driver of growth in New Zealand has been net migration, contributing an additional 79,400 persons, while natural increase (births minus deaths) contributed an additional 26,100 persons (Statistics New Zealand, 2020). The New Zealand Treasury (2019A) reports that New Zealand's rate of population growth had been experiencing a slowdown prior to the onset of COVID-19. This had been primarily attributed to net migration which is the main driver of cyclical changes in New Zealand's population growth. Net migration had previously peaked at 64,000 in 2016 (New Zealand Treasury, 2019A). The figure for the 30 June 2020 year appears to have been inflated by COVID-19 causing a rush of expat Kiwis returning home and a number of foreign visitors who have remained in New Zealand longer than they may have planned because of the crisis. It remains to be seen how long these migrants will stay once international boarders reopen.

However, while New Zealand has been growing overall, the growth paths of New Zealand's regions and cities have been quite different from each other (Salvation Army Social Policy and Parliamentary Unit, 2015). Provincial areas have seen slower growth while Auckland and the Upper North Island have been, and are projected to continue, growing strongly (Salvation Army Social Policy and Parliamentary Unit, 2015). Figures 14 and 15 show how growth rates have varied across different areas of New Zealand between the 2013 and 2018 Census. They reveal population decline in provincial parts of the central North Island and strong growth on the peripheries of Auckland as the city has overflowed into neighbouring areas. Strong growth was also seen in the Queenstown-Lakes District where lifestyle opportunities have driven migration (Statistics New Zealand, 2020).

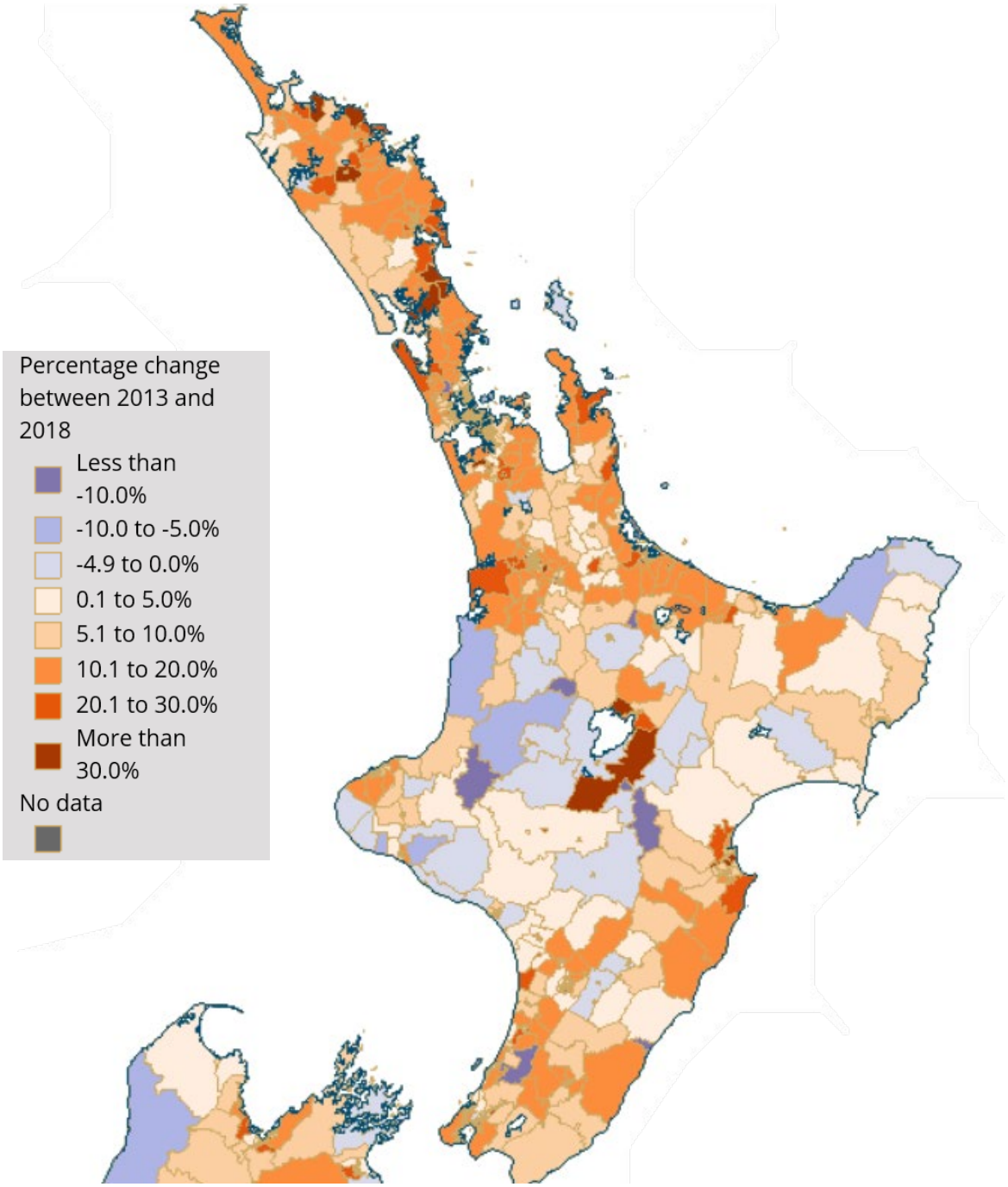

Figure 14: Population changes in the North Island between the 2013 Census and 2018 Census (Statistics NZ, 2020).

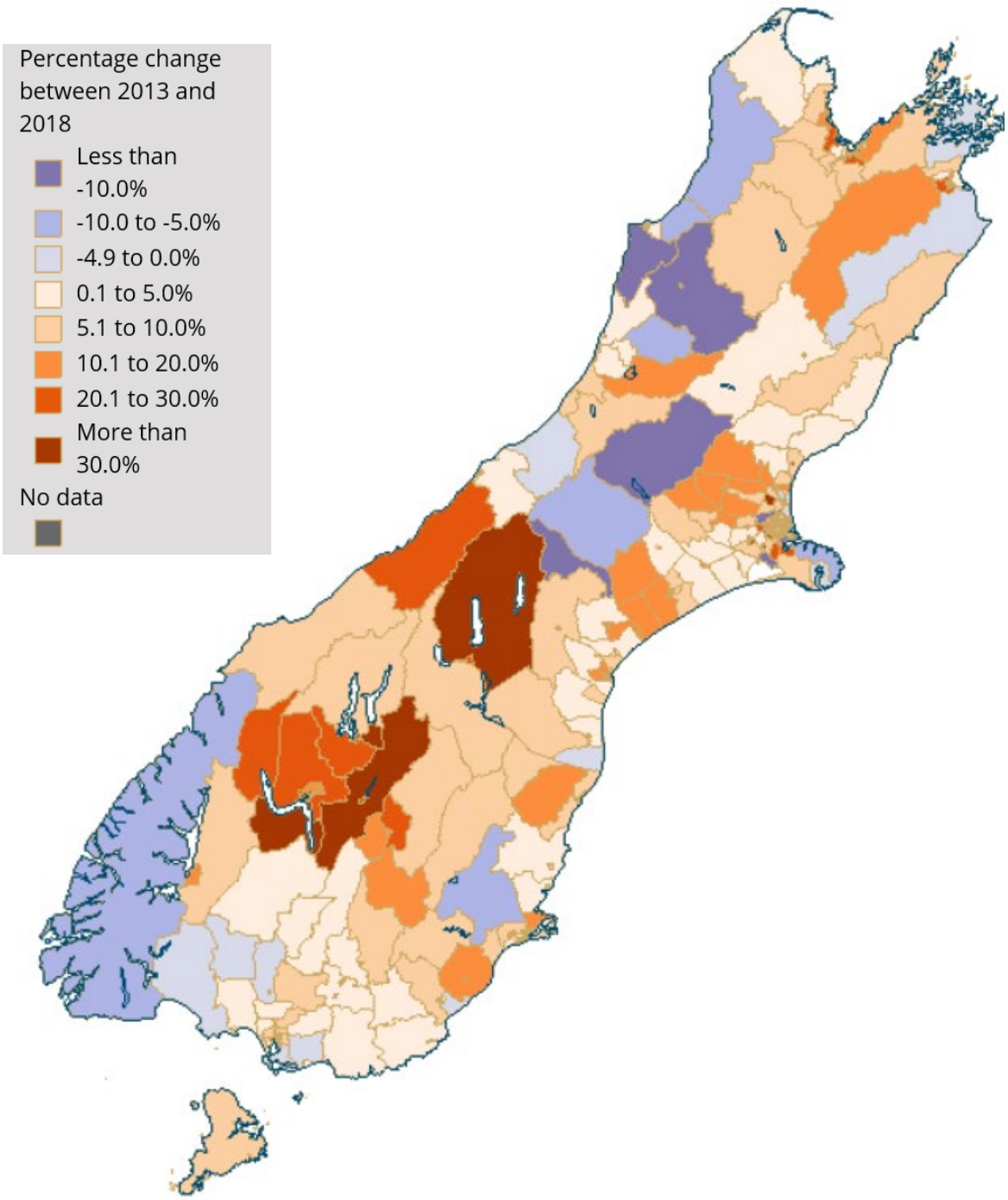

Figure 15: Population changes in the South Island between the 2013 Census and 2018 Census (Statistics NZ, 2020).

The 2018 Census shows New Zealand's population is unevenly distributed, with about 76% of New Zealanders living in the North Island and half of them 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').

Trends towards centralisation and globalisation have seen Auckland emerge as New Zealand's only global scale city, a city which can compete with other international cities for business and migrants. 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. Meanwhile, the trend for retirees to retire outside of Auckland has resulted in expansion of coastal settlements in the Coromandel and along Northland's east coast (including Mangawhai).

Statistics New Zealand predicts Auckland will continue to be New Zealand's fastest growing region, and account for three-fifths of the country's population growth between 2013 and 2043. From an estimated population of 1.6 million in 2016, Auckland is projected to reach 2 million in the early 2030s. That means out of every 100 people in New Zealand, 33 currently live in Auckland, however this will increase to 37 in 2028 and 40 in 2043 (Statistics New Zealand).

Natural increase (births minus deaths) is projected to account for three-fifths of Auckland's growth and net migration the remaining two-fifths. Interestingly the number of people moving into the city from other New Zealand regions is now less than the number of Aucklanders moving away. Auckland's net migration gains are therefore due to positive international rather than internal migration.

Almost 33,000 Aucklanders left Auckland for other parts of the country over the four years to June 2017 (Patterson, 2019b). What is more, the exodus of Aucklanders to the regions has accelerated from a net 2,727 people in 2014 to 12,942 people in 2017. The three regions closest to Auckland; Northland, Waikato and Bay of Plenty, attracted two thirds (68%) of Auckland's regional population exodus, further reinforcing the emergence of the Upper North Island as New Zealand's main population and economic centre. However, migrants from Auckland also made major contributions to other centres, including Dunedin and Queenstown-Lakes which each saw a net gain of more than 1,100 residents from Auckland over the four years to June 2017. Other parts of the country that are worth mentioning as destinations for Aucklanders include Wellington and Hawke's Bay (Patterson, 2019b).

Net regional migration out of Auckland is characterised by high net outflows of people in their late twenties and through their thirties with children (Patterson, 2019b). This suggests the unaffordability of housing in Auckland is a key driver pushing these young families into adjacent regions. Net regional migration outflows also accelerate as people reach retirement, suggesting people are seeking better lifestyle opportunities as well as releasing capital by selling their Auckland family home (Patterson, 2019b).

Based on current trends it is apparent that New Zealand is on a divergent growth path and that this path risks the creation of two New Zealand's; Auckland (with its surrounding overflow area) and the rest. In general, Aucklanders will be younger, wealthier, better skilled and more ethnically diverse than the rest of New Zealand (Salvation Army Social Policy and Parliamentary Unit May 2015).

However, while Auckland is New Zealand's most internationally competitive city, it faces significant challenges (PricewaterhouseCoopers, 2019). Auckland has rising basic expenditure (e.g. housing and transport costs), coupled with sluggish income growth. This results in residents having lower discretionary income in 2019 than a decade ago ($96 less per week) (PricewaterhouseCoopers, 2019).

By contrast, over the last decade, Wellington and Christchurch experienced increases in weekly discretionary income of $137 and $124 respectively, by combining high income growth with relatively low housing costs (PricewaterhouseCoopers, 2019). In contrast, the smaller cities of Hamilton and Tauranga have maintained discretionary income through lower basic expenditure, while Queenstown (immediately

prior to COVID-19) had high incomes outstripping rapidly increasing house prices (PricewaterhouseCoopers, 2019).

It is this increasing unaffordability of Auckland, coupled with the attractions of lower density living, that is increasingly drawing residents to relocate to those regions bordering Auckland or to secondary upper North Island cities (PricewaterhouseCoopers, 2019). Businesses too are relocating to where industrial land is cheaper and transport links are less congested. The rise in remote working is also contributing to this population shift with longer commutes more acceptable to those who only need to go into the office one or two days a week.

4.2 Population regionally

According to the 2018 Census count, Northland's population has increased 18.1% since the 2013 Census to reach 179,076. This makes Northland the fastest-growing region in the country, with more than 27,000 more people living in the region in 2018 than five years ago. The second fastest growing region was Bay of Plenty (15.2% growth), followed by Waikato (13.5% growth).

According to the latest population estimates, Northland had an estimated resident population of 194,600 in 2020 (Infometrics, 2020a). This was a 2.6% increase on the previous year (Infometrics, 2020a).

Whāngārei is Northland's only city and the closest city servicing the Kaipara district. Whāngārei district accounts for about half Northland's population with an estimated usually resident population of 98,300 in 2020 (Infometrics, 2020a). According to the 2018 Census, Whāngārei is growing strongly, increasing 18% between 2013 and 2018. Both Northland and Whāngārei's growth is mainly attributed to net migration which accounted for 4,433 and 2,033 persons respectively in 2020. Natural increase contributed a further 567 and 267 persons respectively (Infometrics, 2020a).

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. 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 Mangawhai area recorded the largest population growth (60% or 1,887 additional residents) over the 2013-2018 period, followed by 633 at Waipū, and 537 at Kaiwaka/Oneriri.

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 2020 population was estimated at 71,000 (Infometrics, 2020a).

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 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 and northern side of the Kaipara Harbour. The southern Kaipara is made of several hapū and iwi, namely Ngāti Whātua Tuturu, Te Taou and Ngāti Rongo whom extend their tribal area to Taupaki (IKHMG, 2019).

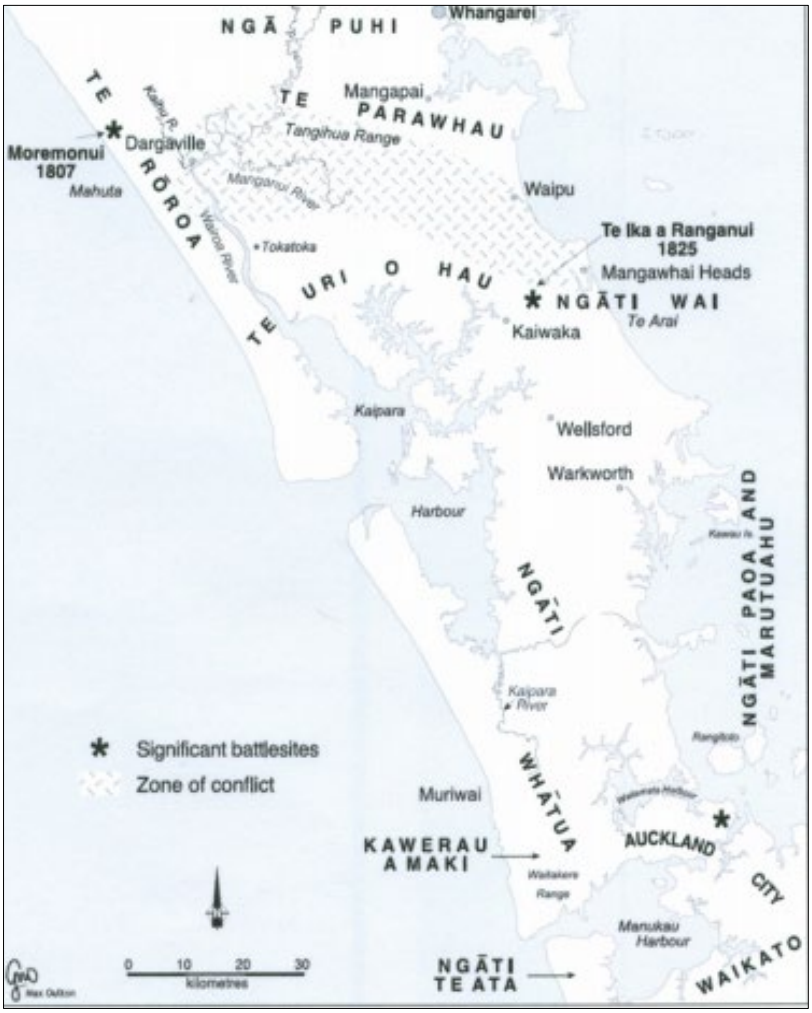

Figure16: The major Kaipara hapū rohe and location of significant battle sites prior to 1840.

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 25,200 persons in 2020 (Infometrics, 2020a). According to the 2018 Census, Kaipara's population rose 20.6% from 2013 to 2018 making it the fastest growing district in Northland. As a consequence of COVID-19, population growth in Kaipara is projected to slow over 2020 and 2021 with softer net migration and a decline in employment. Population growth is projected to pick up from 2022 onwards, with the district growing steadily to reach a population of 32,552 in 2051.

These projections are shown in Figure 17 with Mangawhai's growth plotted separately, revealing the importance of this centre to Kaipara's growth.

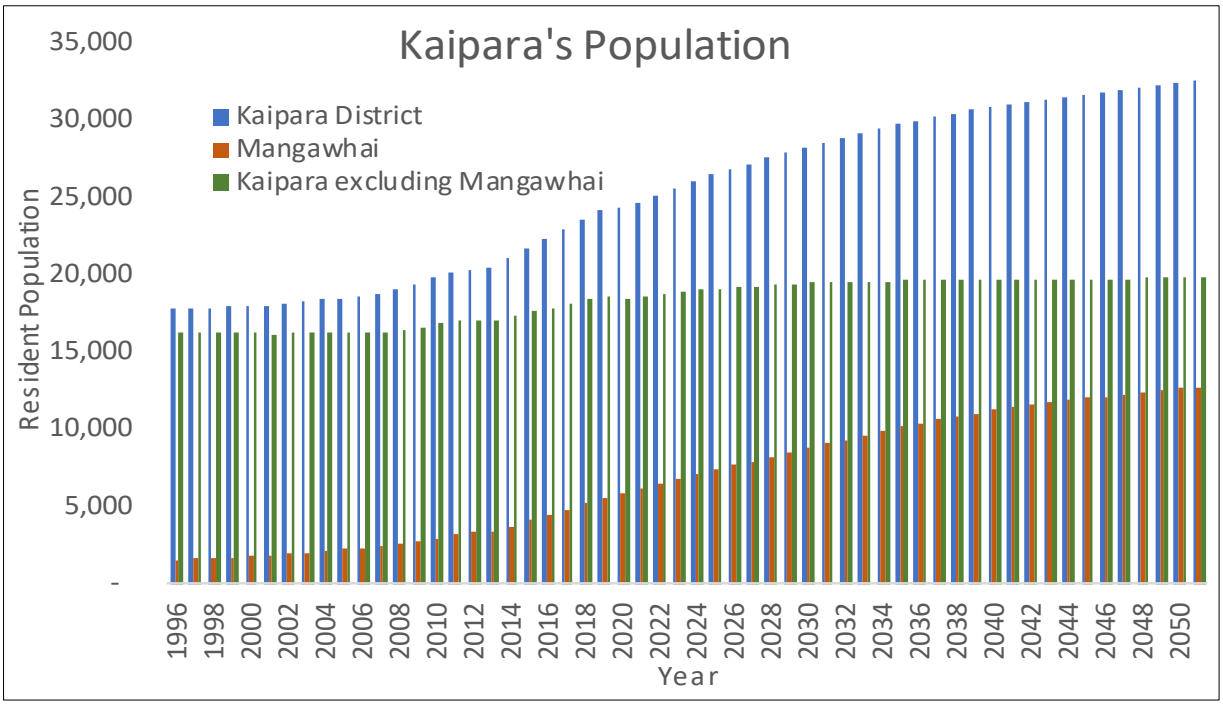

Figure 17: Projected population growth in the Kaipara District 1996-2051 (Infometrics, 2020f).

Figure 18 shows the fastest growing areas in Kaipara between 2013 and 2018 were around Mangawhai, Kaiwaka/Oneriri and to a lesser extent, Maungaturoto. Interestingly, this high rate of growth in south-eastern Kaipara was not shared by neighbouring areas of northern Auckland/Rodney.

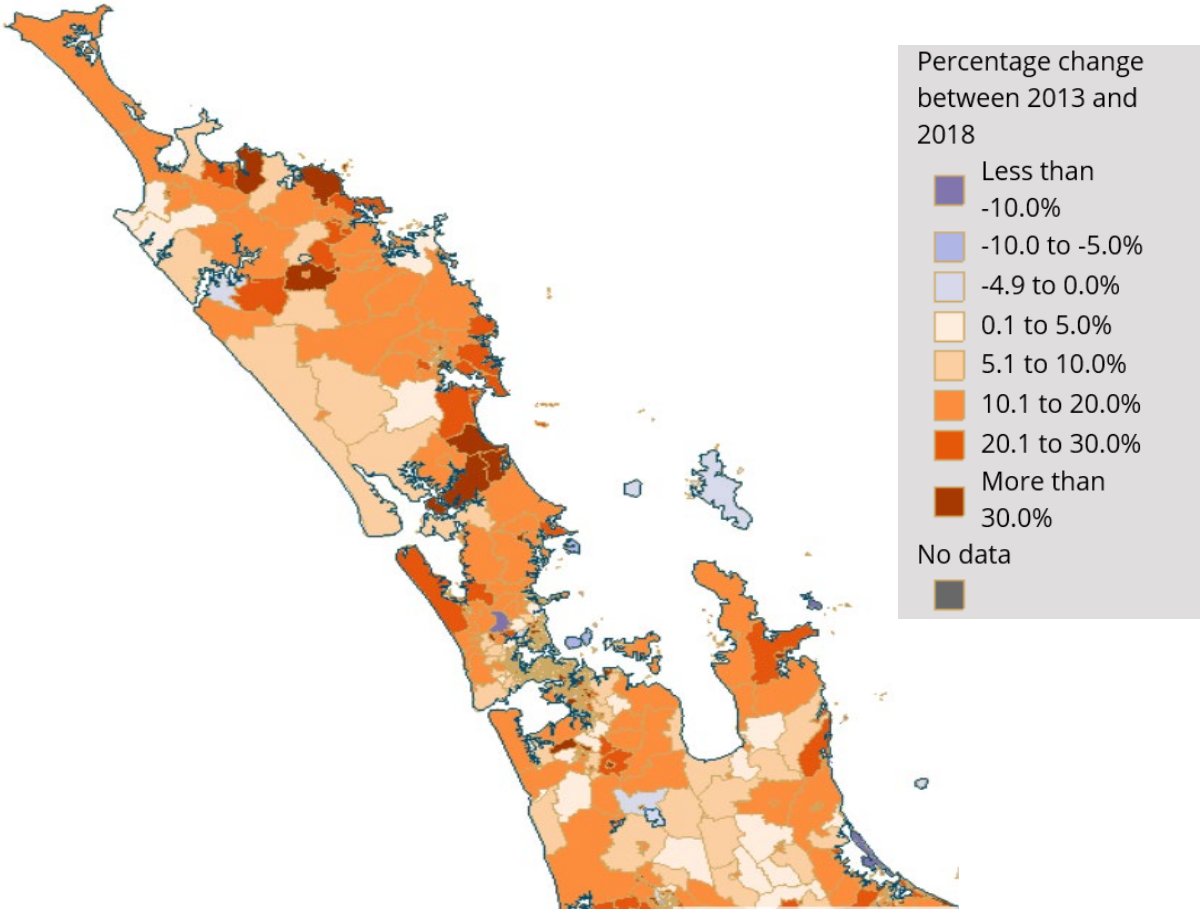

Figure 18: Population change between the 2013 Census and 2018 Census (Statistics NZ, 2019).

Table 2 shows how the different areas of Kaipara are projected to grow. Mangawhai has and is projected to continue growing rapidly over the course of the dataset. Meanwhile, all other areas show a similar trend of roughly stable populations with a recent period of population growth from about 2015 till the present. Growth for these areas is then projected to stall for a couple of years as a consequence of COVID-19 before resuming for several more years, then moderating for the remainder of the planning period.

Table 2: Population projections for Kaipara's communities 2013-2051 (Infometrics, 2020f).

Statistical Area 2	Year													
	2013	2019	2020	2021	2022	2023	2024	2025	2026	2031	2036	2041	2046	2051
Dargaville	4,600	5,077	5,102	5,149	5,238	5,328	5,408	5,478	5,540	5,764	5,897	5,978	6,079	6,169
Kaipara Coastal	3,680	3,776	3,747	3,733	3,749	3,762	3,769	3,767	3,759	3,734	3,734	3,750	3,804	3,862
Maungaru	1,815	1,865	1,844	1,829	1,828	1,826	1,824	1,818	1,808	1,756	1,714	1,673	1,637	1,607
Mangawhai Village	535	1,060	1,143	1,232	1,334	1,439	1,521	1,602	1,683	2,059	2,374	2,616	2,756	2,828
Mangawhai Heads	1,320	2,184	2,280	2,388	2,518	2,651	2,765	2,877	2,986	3,535	4,037	4,416	4,600	4,675
Mangawhai Rural	1,505	2,298	2,377	2,466	2,578	2,693	2,786	2,875	2,961	3,447	3,947	4,356	4,775	5,215
Total Mangawhai	3,360	5,542	5,800	6,086	6,430	6,783	7,072	7,354	7,630	9,041	10,358	11,388	12,131	12,718
Kaiwaka	1,760	2,217	2,222	2,236	2,269	2,301	2,339	2,373	2,403	2,520	2,589	2,605	2,610	2,654
Maungaturoto	1,160	1,318	1,322	1,331	1,352	1,372	1,403	1,432	1,459	1,539	1,585	1,607	1,603	1,582
Ruawai-Matakohe	2,430	2,520	2,494	2,476	2,479	2,479	2,488	2,491	2,490	2,474	2,466	2,444	2,422	2,418
Otamatea	1,595	1,785	1,769	1,760	1,765	1,769	1,767	1,761	1,751	1,697	1,641	1,593	1,567	1,541
Kaipara District	20,400	24,100	24,300	24,600	25,110	25,619	26,070	26,473	26,839	28,524	29,983	31,039	31,852	32,552

Dargaville and Northwest Kaipara

Dargaville had an estimated 2020 population of 4,960 (Infometrics, 2020d). Analysis of Infometrics' data reveals Dargaville is showing sustained growth in both population and employment following a period of stagnation and, at times, even decline which lasted up until 2013 (refer to Figure 19). The 2018 Census suggests Dargaville's population has grown by 13% from 2013 to 2018.

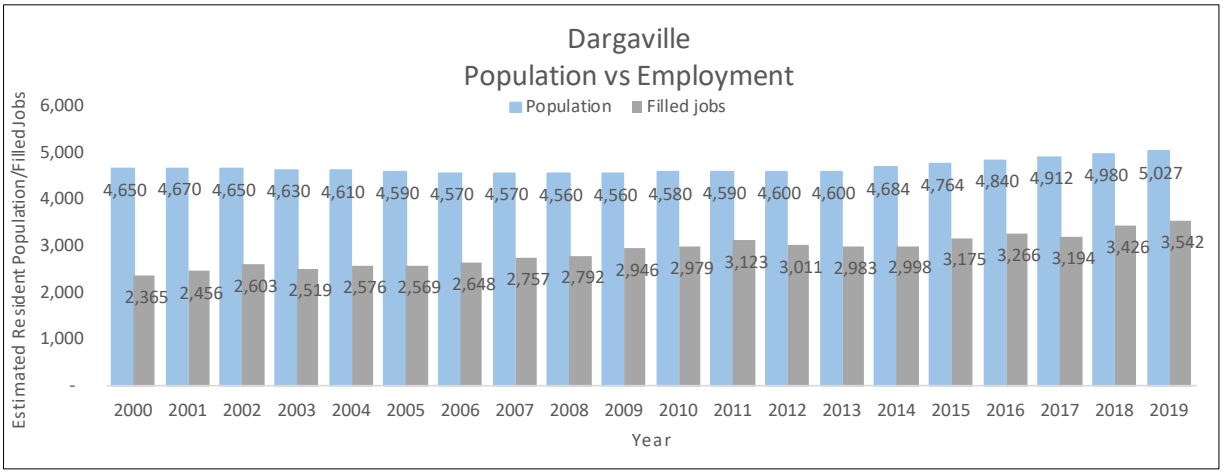

Figure 19: Population and employment growth in Dargaville (Infometrics, 2020d).

This changing trend is also evident from house prices (New Zealand Herald, 2017). An analysis by Quotable Value (QV) of Northland property values shows Dargaville experienced a 60.5% increase in the median price of residential properties in the three years to 30 June 2017. This increase in house prices likely reflects that Dargaville's population growth (13% from 2013 to 2018) has far exceeded dwellings growth (2% from 2013 to 2018). The town is now considered by real-estate agents to have a shortage of available rental properties (Northern Advocate, 2017).

The reasons for this change are not well understood but appear to stem from an uplift in the local economy. Dargaville's commutability to the expanding Whāngārei metropolitan area and its affordability compared to Auckland are also likely contributing factors. Dargaville is supported by communities such as Te Kopuru and Baylys which act as satellite residential areas. These areas are likely experiencing similar trends, however data at this level is limited.

Dargaville acts as a service centre for a large rural area roughly equal to half the geographic extent of the district which stretches from Pouto to the Waipoua Forest and east to Tangiteroria, Arapohue and Ruawai. Beyond this, communities look to Whāngārei, Auckland or, to some extent, Maungaturoto for their services centre needs. Much of this area falls within the Northwest Kaipara small area profile for which Infometrics provides detailed data. This area includes all the area mentioned above with the exception of the Ruawai area beyond Tokatoka (refer to the map in Figure 20).

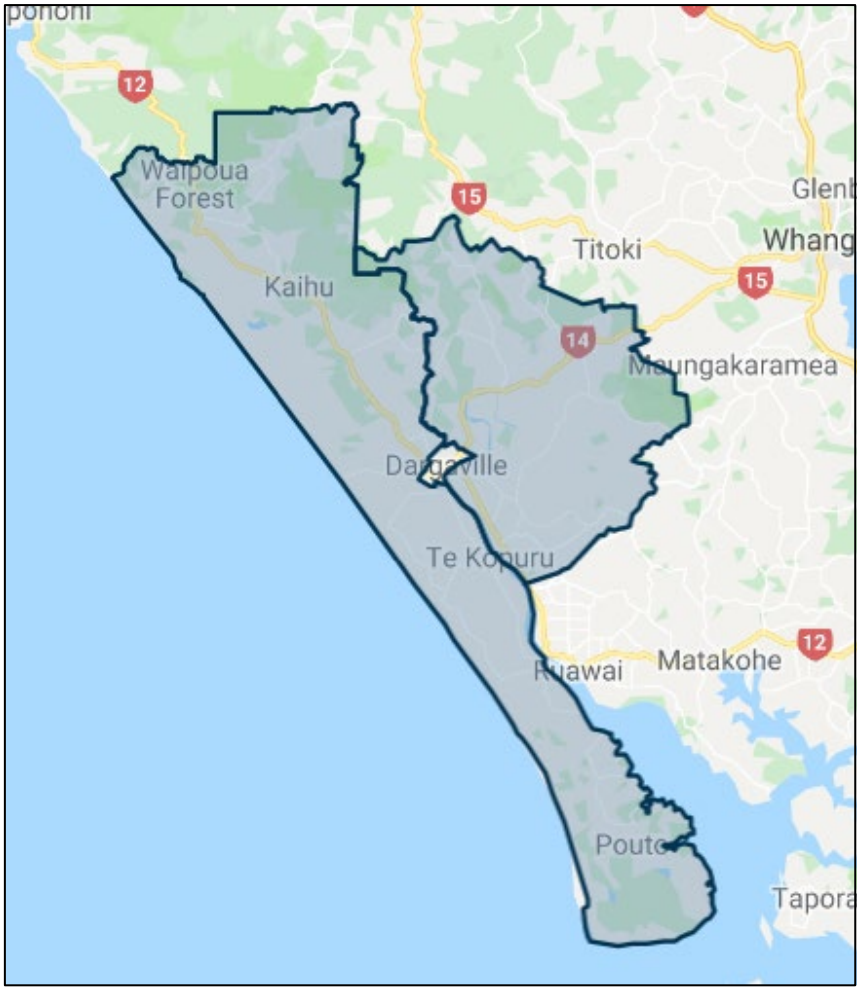

Figure 20: Geographic extent of Infometrics' Northwest Kaipara Small Area Profile. Also shown are the two sub areas of Kaipara Coastal and Maungaru (Infometrics, 2020b).

In 2020, Northwest Kaipara had an estimated population of 5,770 persons (Infometrics, 2020b). The area's population has followed a similar trend to that of Dargaville, showing an increase over recent years. However, growth in employment has not kept pace with population growth, suggesting many in these communities commute to Dargaville for work, where employment growth has exceeded population growth (Figure 21). Population increase without employment growth could also be attributed to more children and retirees.

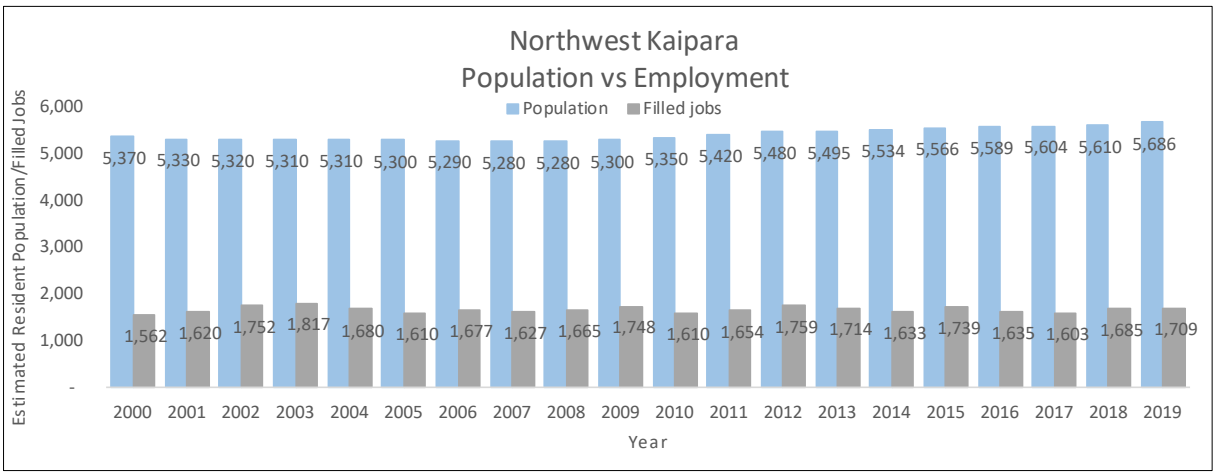

Figure 21: Comparison between population and employment growth in Northwest Kaipara (Infometrics, 2020b).

Looking ahead, population growth in Dargaville and the Northwest of the district is likely to be largely dependent on employment growth to attract new migrants and retain young people emerging into employment (Infometrics, 2020f). The recession brought about by the COVID-19 pandemic is anticipated to slow population growth. However, this recession will only be temporary and the focus of this area's economy on the primary sector positions it well for an early recovery. Employment and population growth are therefore expected to resume and continue, helped by initiatives such as Kaipara Kai and the development of community scale water storage infrastructure. Population and employment growth will later begin to slow as it reaches a new stable state and as advances in technology and automation continue to reduce labour requirements in the primary and manufacturing sectors. Much of Northwest Kaipara's growth is anticipated to be focussed around existing urban areas, particularly Dargaville, Baylys and Te Kopuru. This is partly due to population aging and is anticipated to result in the Maungaru area experiencing a slight population decline as household size reduces and as some older couples retire into town. These trends are portrayed in Figure 22.

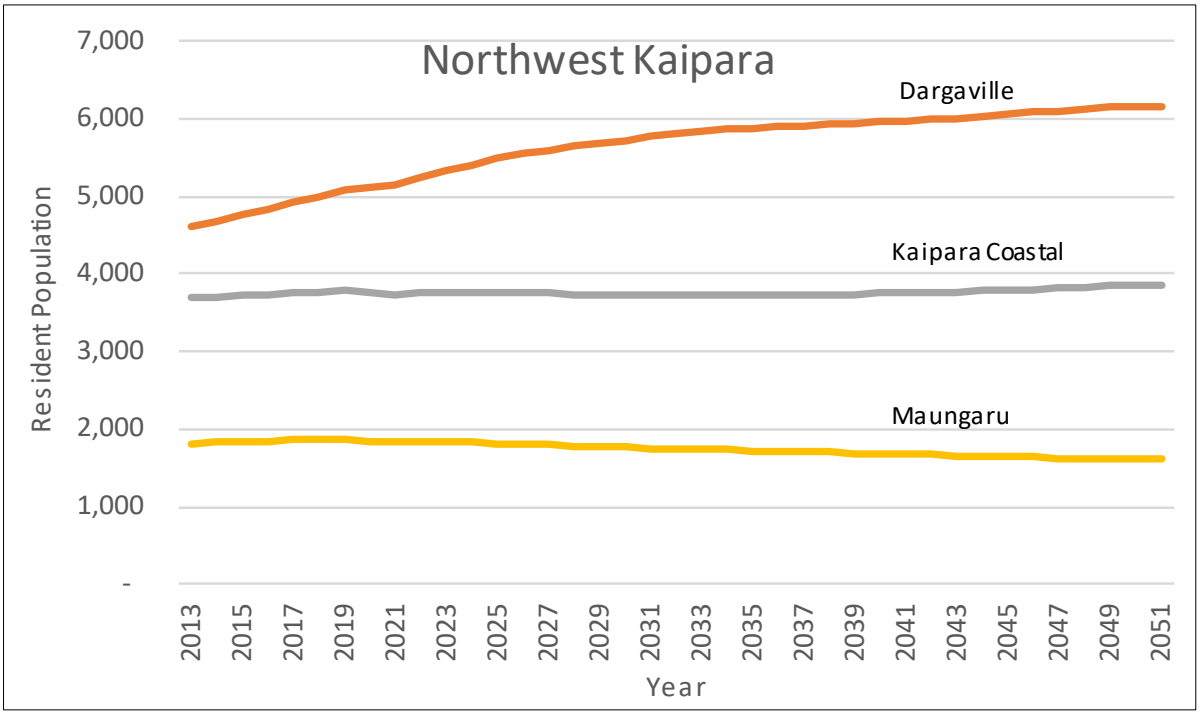

Figure 22: Projected population growth in Dargaville and the two Statistical Area 2s that comprise the Northwest Kaipara area.

Note that while population growth appears modest, particularly in Maungaru, the number of households is projected to continue growing in all areas over the length of the data set. This is because population aging and trends towards smaller families are resulting in less people living in each house. Dargaville is therefore projected to grow by 488 households between 2021 and 2051, with a further 183 households in Kaipara Coastal, and 28 households in Maungaru (see Figure 23).

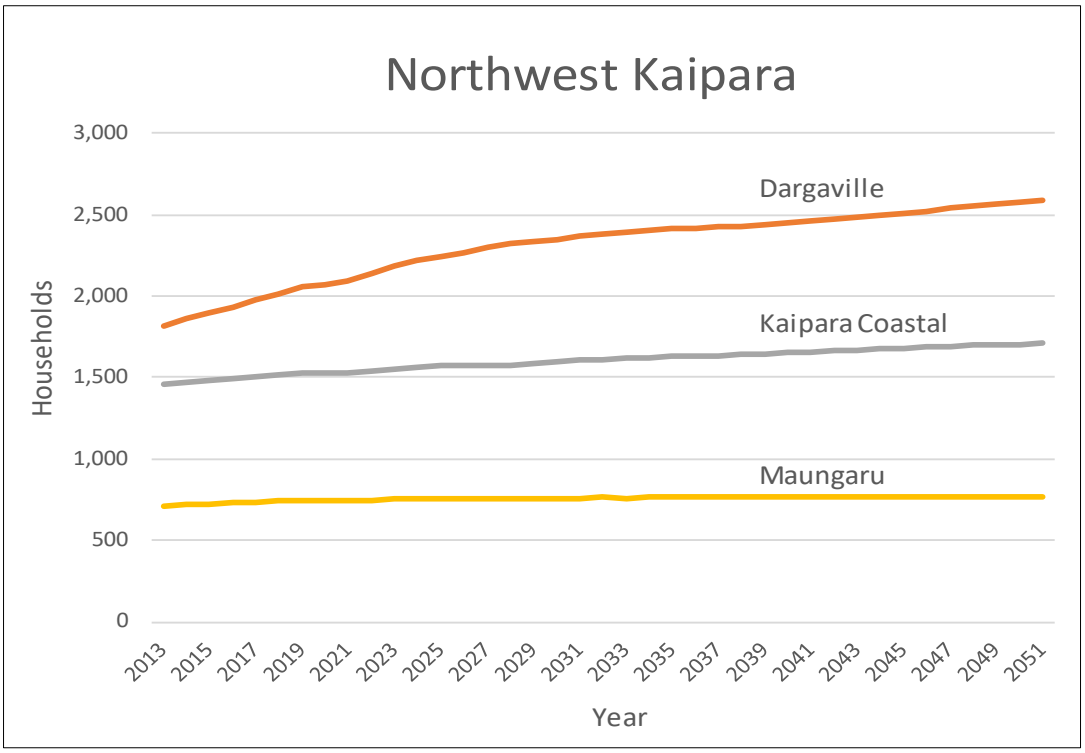

Figure 23: Projected household growth in the three SA2s in the Northwest Kaipara area (Infometrics, 2020f).

Mangawhai

Mangawhai is now the largest centre in Kaipara with an estimated 2020 resident population of 6,210 (Infometrics, 2020e). According to the 2018 Census, Mangawhai's population increased 60% from 2013 to 2018. This growth was split between Mangawhai Heads which grew 61% (to reach 1,995 residents in 2018), Mangawhai Village which grew 85% (to 936 residents) and Mangawhai Rural which grew 50% (to 2,100 residents) (Statistics New Zealand). In addition to Mangawhai's estimated resident population, past analysis comparing the number of unoccupied dwellings to occupied dwellings and 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. This has implications for Council when planning for infrastructure and service provision. Services must be able to cope with peak, not just usually resident, demand.

However, Mangawhai is a town facing transition. Recent data suggests the proportion of people living permanently in Mangawhai is increasing. This is likely due to people retiring permanently to their holiday homes, as well as more new homes being built for permanent residents.

A comparison of population growth to employment growth reveals Mangawhai's population is growing exponentially, however its employment is growing only modestly (Figure 24) (Infometrics, 2020e). This, together with the older age structure of the population suggests a high proportion of retirees in the Mangawhai community. In addition, there are a number of indicators suggesting more working-age people are moving to Mangawhai and commuting to the North Shore of Auckland for work. More affordable housing and anticipated better lifestyle opportunities, coupled with improving transport links and new technology which increasingly enables working from home, are considered to be factors driving this trend.

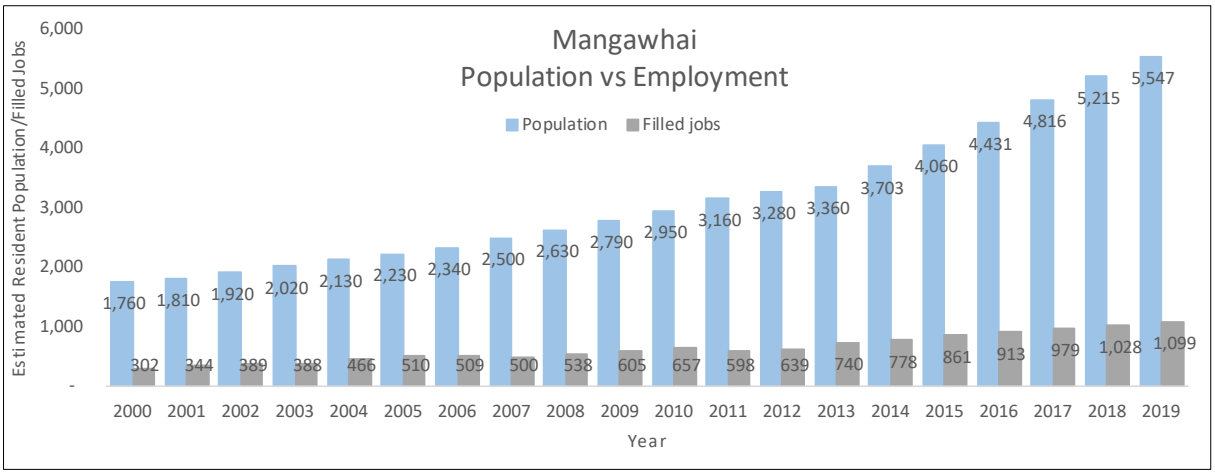

Figure 24: Comparison between population and employment growth in Mangawhai (Infometrics, 2020e).

As a result of these trends, Mangawhai is transitioning from a holiday and retirement destination to a permanent settlement and service centre for the local area. The proposed "Mangawhai Central" development, including a supermarket, commercial and retail outlets and a medical centre, will likely cement this transition.

The trends which have influenced Mangawhai's more recent growth look set to intensify. New Zealand's ageing population and the proposed additional services will likely add to the influx of retirees. Meanwhile, completion of the Pūhoi to Warkworth motorway extension and other roading improvements will further reduce travel times to Auckland and the North Shore, making Mangawhai increasingly attractive to commuters. These commuting opportunities will likely increase the flow of younger workers and their families into the area. In addition, Mangawhai's proximity to Northland's expanding port at Marsden Point and the growing Waipū-Marsden area may spur its growth further.

Figure 25 shows Infometrics are projecting strong population growth for all three of the Statistical Area 2s that comprise the Mangawhai Area. On the whole, Mangawhai's population is projected to grow to 7,354 by 2025, 8,751 by 2030 and 12,718 by 2051.

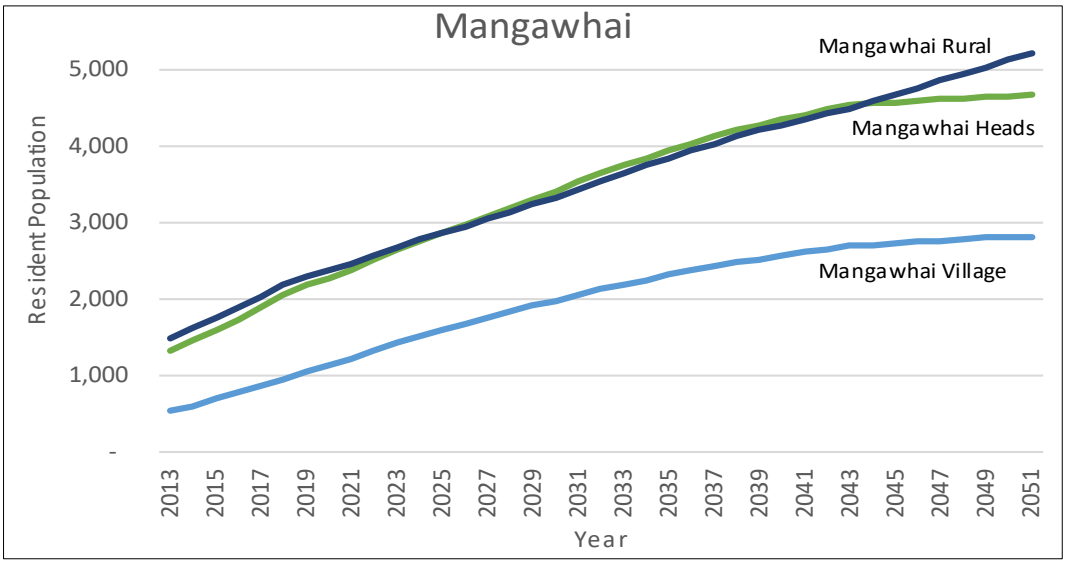

Figure 25: Projected population growth in the three Statistical Area 2s that collectively comprise the Mangawhai area (Infometrics, 2020f).

This rapid and ongoing growth poses various challenges for the Mangawhai community as they seek to retain their rural coastal amenity and relaxed pace of life while allowing for development to take place. This will entail guiding development to achieve a workable urban form and giving consideration to Mangawhai's infrastructure. This challenge is exacerbated by existing infrastructure constraints, the result of Mangawhai's historic 'bach' nature and ad-hoc manner of development. More information on these infrastructure constraints is provided in Section 6.

Southeast Kaipara

The Southeast Kaipara area encompasses the whole south-eastern part of the district stretching from Ruawai to Kaiwaka but excludes Mangawhai (refer to Figure 26).

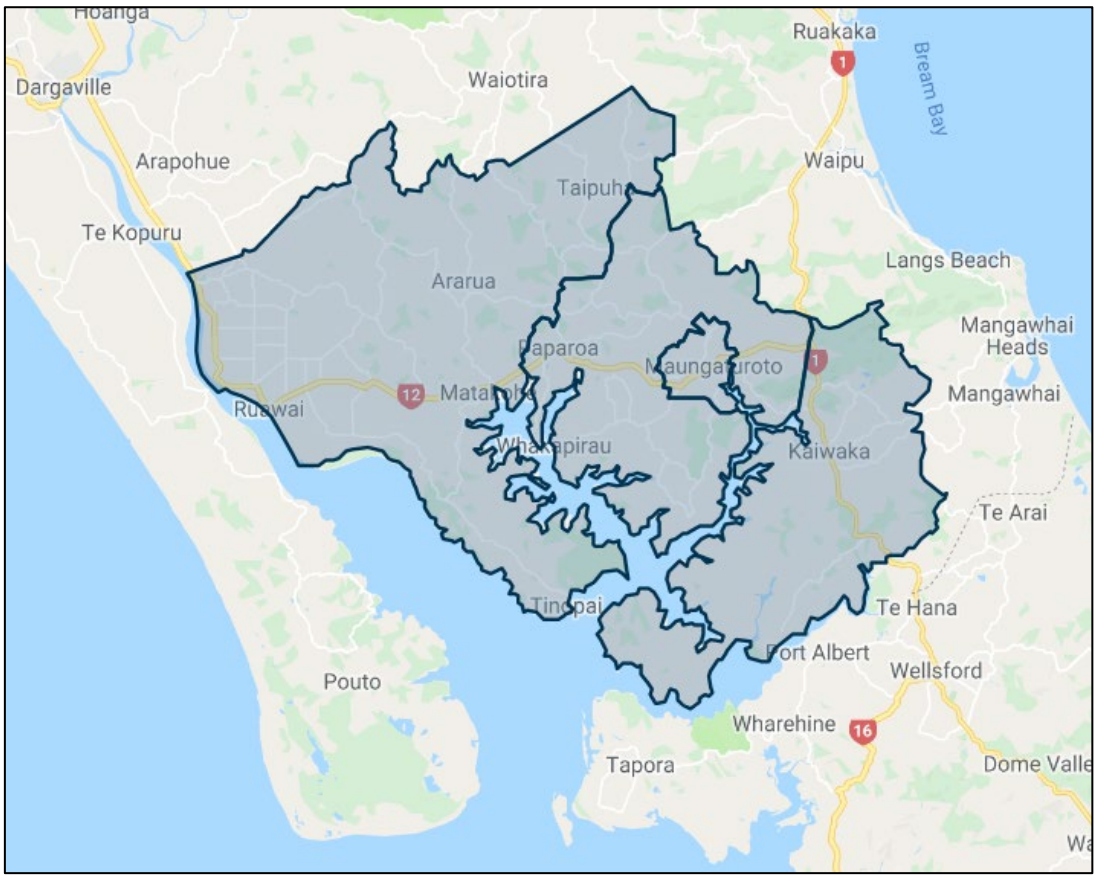

Figure 26: Geographic extent of Infometrics' Southeast Kaipara Small Area Profile. Also shown are the sub areas of Kaiwaka, Otamatea, Maungaturoto and Ruawai-Matakohe (Infometrics, 2020c).

This area had an estimated 2020 population of 8,230 persons (Infometrics, 2020c). As Figure 27 shows, population growth in this area has fluctuated and at times turned negative. The area shows a recent increase in the rate of population growth since 2015, a trend not dissimilar to that seen in Dargaville and Northwest Kaipara. However, despite population growth, Southeast Kaipara's employment has remained stagnant suggesting the area's population growth is likely to be mostly in the older, post working age group or made up of people commuting to the North Shore of Auckland.

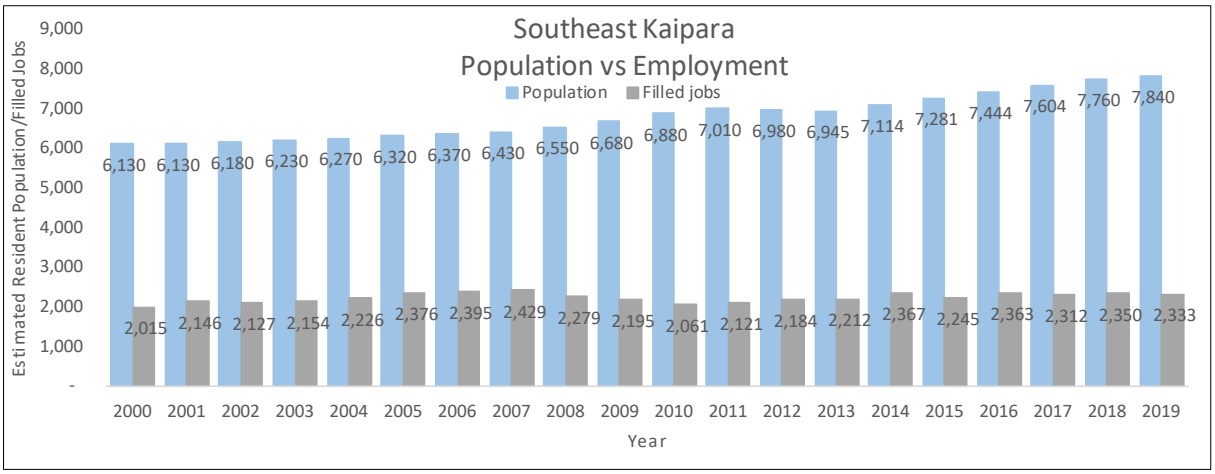

Figure 27: Comparison between population and employment growth in Southeast Kaipara (Infometrics, 2020c).

The Southeast Kaipara area is home to a collection of rural communities and settlements such as Ruawai, Matakoke, Tinopai, Paparoa, Pahi, Whakapirau, Maungaturoto and Kaiwaka.

The area around Kaiwaka, including the Oneriri Peninsular and Hakaru area, is becoming increasingly popular for lifestyle block developments. These are the closest areas of the district to Auckland, are supported by services in Kaiwaka and Mangawhai, are sited in picturesque rolling hill country and are close to either the Mangawhai Harbour or Kaipara Harbour.

Maungaturoto is Kaipara's third largest township and acts as a service centre for much of the surrounding rural area. It is also home to a number of industrial operations, including Fonterra's dairy factory, providing considerable local employment. According to the 2018 Census count, Maungaturoto's population increased by 17% over the 2013 to 2018 period.

Maungaturoto and Kaiwaka are projected to grow as a result of both local employment growth and their proximity to Auckland and improving transport linkages. By contrast, the population in the Ruawai-Matakohe area is projected to remain relatively stable while the Otamatea area is projected to experience slight population decline as a result of population aging and limited employment growth. That said, the village of Paparoa (included within the Otamatea area) is presently being expanded by a 14 lot residential subdivision aimed at retirement living and a further 15 rural residential lots. This aligns with the projections that both the Ruawai-Matakohe and Otamatea areas are projected to have more households in 2051 despite having smaller populations. This is because of a trend towards less people per household that is in part due to population aging and in part due to a trend towards couples having fewer children. Population projections for areas in central Kaipara are shown in Figure 28.

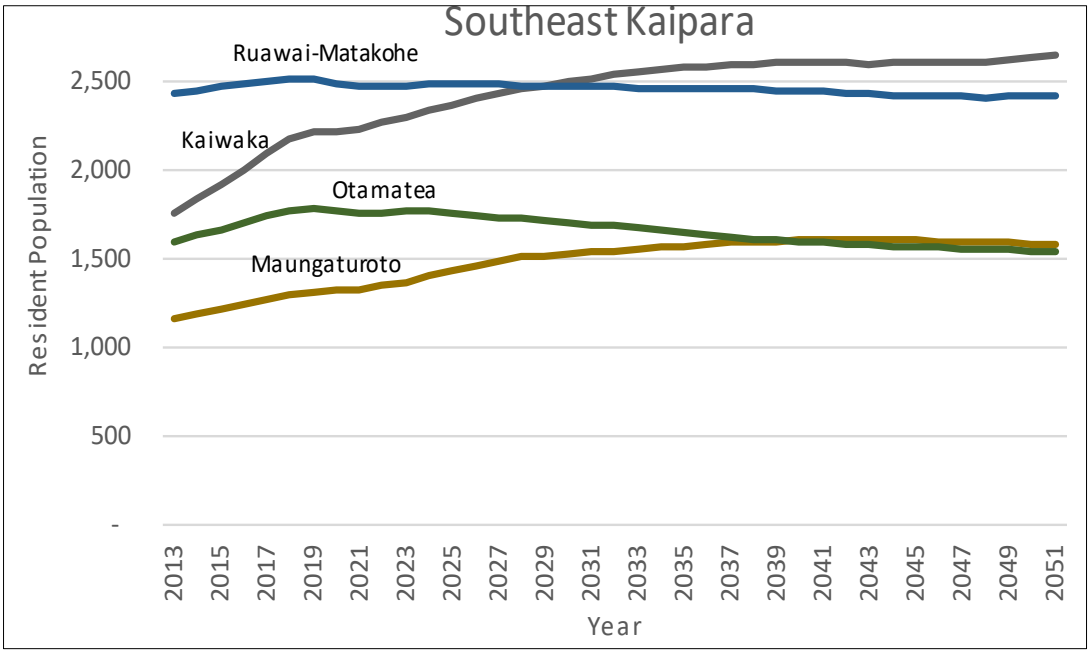

Figure 28: Projected population growth in the Statistical Area 2s of central Kaipara.

Drivers of growth

Kaipara's growth is mainly attributed to net migration (people moving to Kaipara from other areas of New Zealand and overseas. Regional migration (migrants from other parts of New Zealand rather than from oversees) accounted for approximately 41% of Kaipara's total population growth over the four years to June 2017, compared to 40% from international migration and 19% from natural increase (see Figure 29) (Patterson, 2019a).

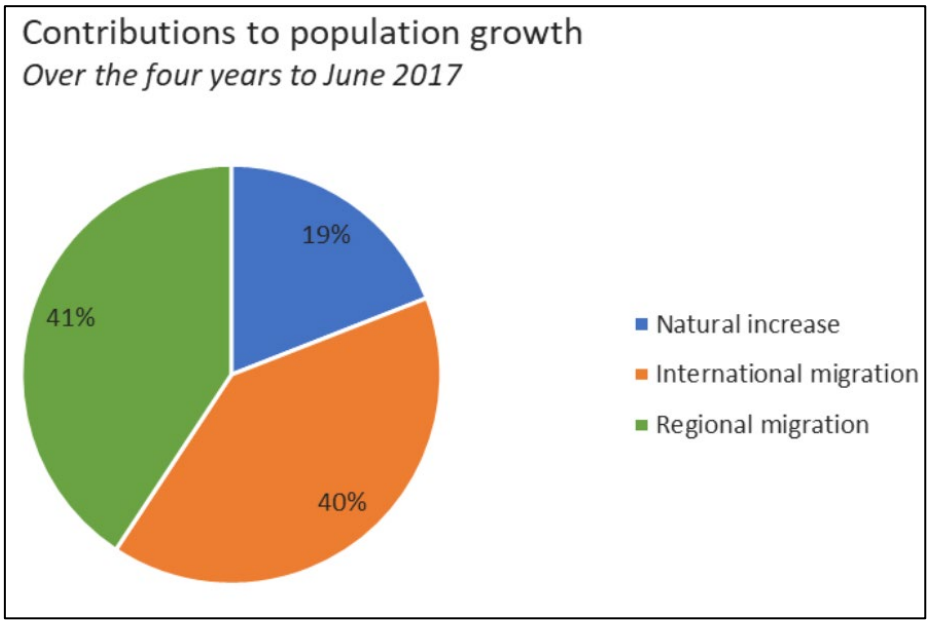

Figure 29: Proportion of Kaipara's population growth attributed to natural increase and migrants from oversees and other parts of New Zealand over the four years to June 2017 (Patterson, 2019a).

Net regional migration's greater contribution to Kaipara's population growth than natural increase is in contrast to historic trends and suggests an increasing number of people moving to Kaipara (Patterson, 2019a).

As shown in Table 3, net regional migration to Kaipara has been increasing from a loss of -144 people in 2014 to a gain of 498 people in 2017 (Patterson, 2019a).

Table 3: Net regional migration to Kaipara from other parts of New Zealand, June years (Patterson, 2019a).

Year	Net migration
2014	-144
2015	192
2016	309
2017	498
Average (2014-17)	214

Auckland was the largest contributor of regional migrants to Kaipara over the four years to June 2017 as severely unaffordable housing has pushed people from Auckland into regional New Zealand. Auckland averaged a net loss of 374 people per annum to Kaipara over the four years to June 2017. The other key sources of regional migration to Kaipara were generally from provincial parts of the central North Island.

Table 4 summarises the ten territorial authorities from which Kaipara district has gained the most regional migrants over the four years to June 2017 (Patterson, 2019a).

Table 4: Key sources of regional migration net gain to Kaipara over the four years to June 2017 (Patterson, 2019a).

Net gain from:	Average migration 2014-17 (pa)	Total migration 2014-17
Auckland	374	1,494
Rotorua District	10	39
Thames-Coromandel District	7	27
Waikato District	7	27
Nelson City	6	24
Otorohanga District	5	21
Palmerston North City	5	18
Central Otago District	4	15
Lower Hutt City	4	15
Ashburton District	3	12

Over the four years to June 2017 the key destinations for regional migrants leaving Kaipara were other parts of Northland, particularly Whāngārei (Patterson, 2019a). Kaipara experienced an average net loss of 92 residents a year to Whāngārei and 14 per year to Far North over the four years to June 2017 (Patterson, 2019a). However, these four-yearly averages can be deceptive, Table 5 below reveals a declining trend in losses to Whāngārei and an increasing trend in Aucklanders moving north.

Table 5: Net regional migration flows to Kaipara District from other territorial authorities (Patterson, 2019a).

Net regional migration

Regional migration from other territorial authorities

Net migration from:	Average migration 2014-17 (pa)	2014	2015	2016	2017
Auckland	374	138	294	489	573
Rotorua District	10	-6	30	-3	18
Thames-Coromandel District	7	-3	12	9	9
Waikato District	7	0	3	-9	33
Nelson City	6	9	3	6	6
Otorohanga District	5	3	9	12	-3
Palmerston North City	5	3	9	0	6
Central Otago District	4	0	6	3	6
Lower Hutt City	4	0	-3	15	3
Ashburton District	3	3	6	9	-6
South Taranaki District	3	6	9	-3	0
Hauraki District	2	12	-12	6	3
Gore District	2	3	6	0	-3
Grey District	2	6	-6	3	3
Invercargill City	2	6	-6	-6	12
Timaru District	2	0	-3	6	3
Marlborough District	1	3	9	-9	0
Rangitikei District	1	3	6	0	-6
Southland District	1	-3	-3	0	9
Taupo District	1	-3	12	-18	12
Whakatane District	1	0	6	-6	3
Kaikoura District	0	0	0	0	0
Opotiki District	0	-3	0	0	3
Queenstown-Lakes District	0	-3	-3	0	6
South Wairarapa District	0	0	0	0	0
Carterton District	-1	3	-6	3	-3
Clutha District	-1	-3	0	-3	3
Hurunui District	-1	-3	-3	3	0
Kapiti Coast District	-1	9	3	-15	0
Mackenzie District	-1	-3	0	0	0
Porirua City	-1	3	-3	-3	0
Stratford District	-1	0	0	-3	0
Tasman District	-1	-6	-6	6	3
Upper Hutt City	-1	0	-3	0	0
Waimakariri District	-1	-3	6	-6	0
Waimate District	-1	0	-3	0	0
Central Hawke's Bay District	-2	-6	-3	6	-3
Horowhenua District	-2	-6	-12	12	0
Selwyn District	-2	-9	-6	0	9
Waitomo District	-2	-3	0	-6	3
Buller District	-2	-3	-3	-6	3
Hastings District	-2	0	-3	-3	-3
Masterton District	-2	-3	6	-3	-9
Napier City	-2	3	-3	-6	-3
Waipa District	-2	9	-6	3	-15
South Waikato District	-3	9	6	-27	0
Waitaki District	-3	0	0	-9	-3
Wellington City	-3	-12	-9	3	6
Kawerau District	-4	-3	-3	0	-9
Manawatu District	-4	-6	0	-3	-6
New Plymouth District	-4	0	0	6	-21
Westland District	-4	0	-6	-6	-3
Christchurch City	-5	-15	3	-6	0
Tauranga City	-5	-3	0	-3	-12
Wairoa District	-5	0	-12	-6	0
Western Bay of Plenty District	-5	0	0	-6	-12
Gisborne District	-5	0	-12	-9	0
Ruapehu District	-5	-9	-6	-9	3
Tararua District	-5	-9	-3	-3	-6
Whanganui District	-5	0	-3	-3	-15
Dunedin City	-6	-3	-6	-6	-9
Hamilton City	-10	-30	12	-9	-12
Matamata-Piako District	-14	-24	-3	-15	-12
Far North District	-14	-51	24	18	-48
Whangarei District	-92	-141	-129	-81	-18
Total migration into Kaipara	**214**	**-144**	**192**	**309**	**498**

Kaipara experiences significant net migration losses of people aged 15-19 years, possibly because of school leavers seeking tertiary education in cities (Patterson, 2019a). Interestingly, there now appears to be net inflows of young families. This trend is apparent in the higher net inflows of children (0-14 years) and adults in their thirties, with many leaving Auckland, possibly in search of affordable housing and better lifestyle opportunities for their families. Regional migration to Kaipara rises again sharply as people approach retirement. This is likely because retirees are not concerned about finding employment in the area they move to. In addition, the potential to sell an Auckland property and buy a house in Kaipara for significantly less than the sale price may facilitate early retirement options. However, Kaipara also experiences net regional migration losses to other areas as people become more elderly, possibly because of their greater needs for healthcare services (Patterson, 2019a).

4.3.3 Age structure of Kaipara's population

Kaipara's population is comparatively old and is getting older (Infometrics, 2020f). Over the next 30 years, the number of residents aged 65 years and over is projected to grow from 6,104 in 2021 to 12,138 in 2051. The population 15 to 64 years of age is projected to grow slightly, and the population under the age of 15 is projected remain steady (Infometrics, 2020f) (see Figure 29).

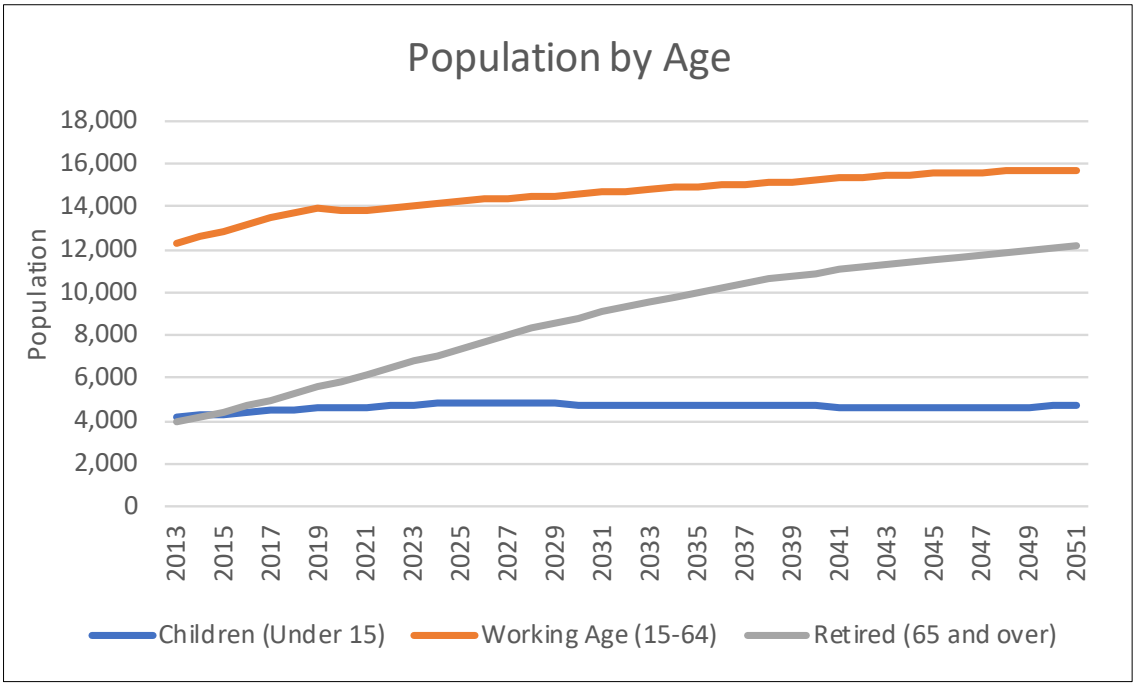

Figure 29: Population projections by age group for Kaipara District from 2013 – 2051 (Infometrics, 2020f).

Figure 30 shows an age pyramid for Kaipara's population and Figure 31 compares the age structure of Kaipara's population to the national population. These figures show the district has disproportionally fewer people aged between 20 and 50 than it does children and people aged over 50.

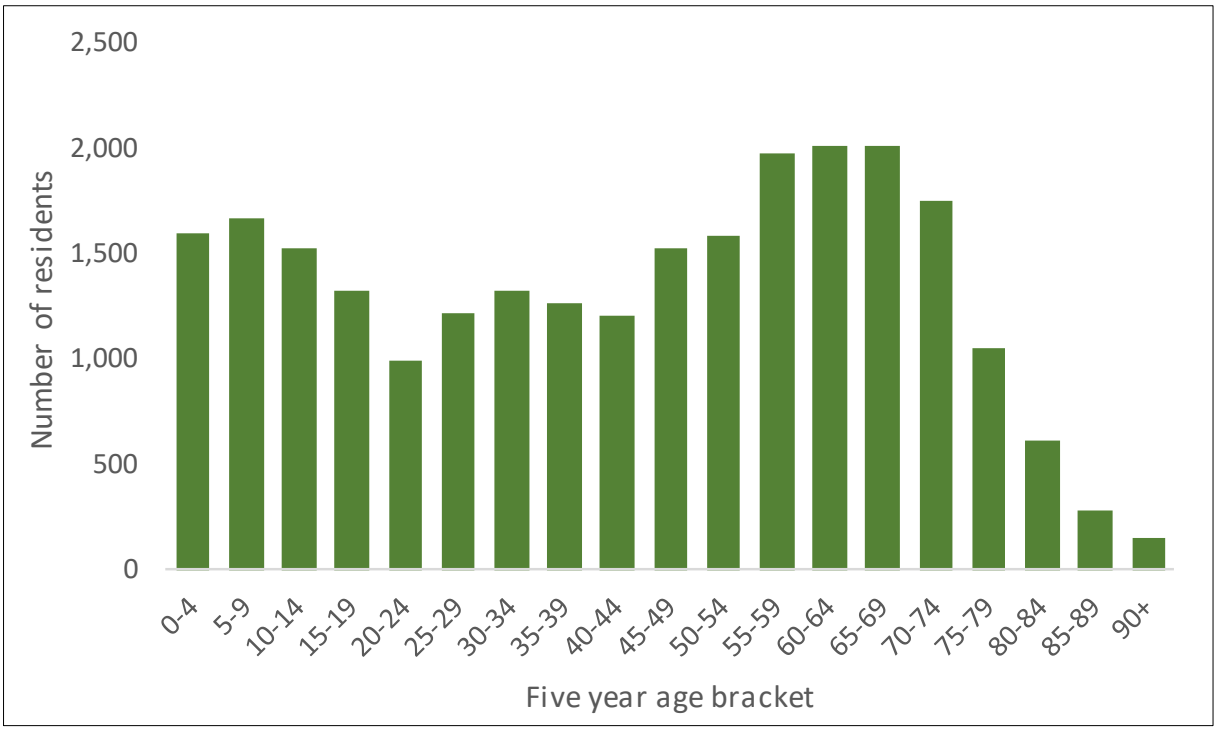

Figure 30: Age structure of Kaipara's population in 2020 (Infometrics, 2020a).

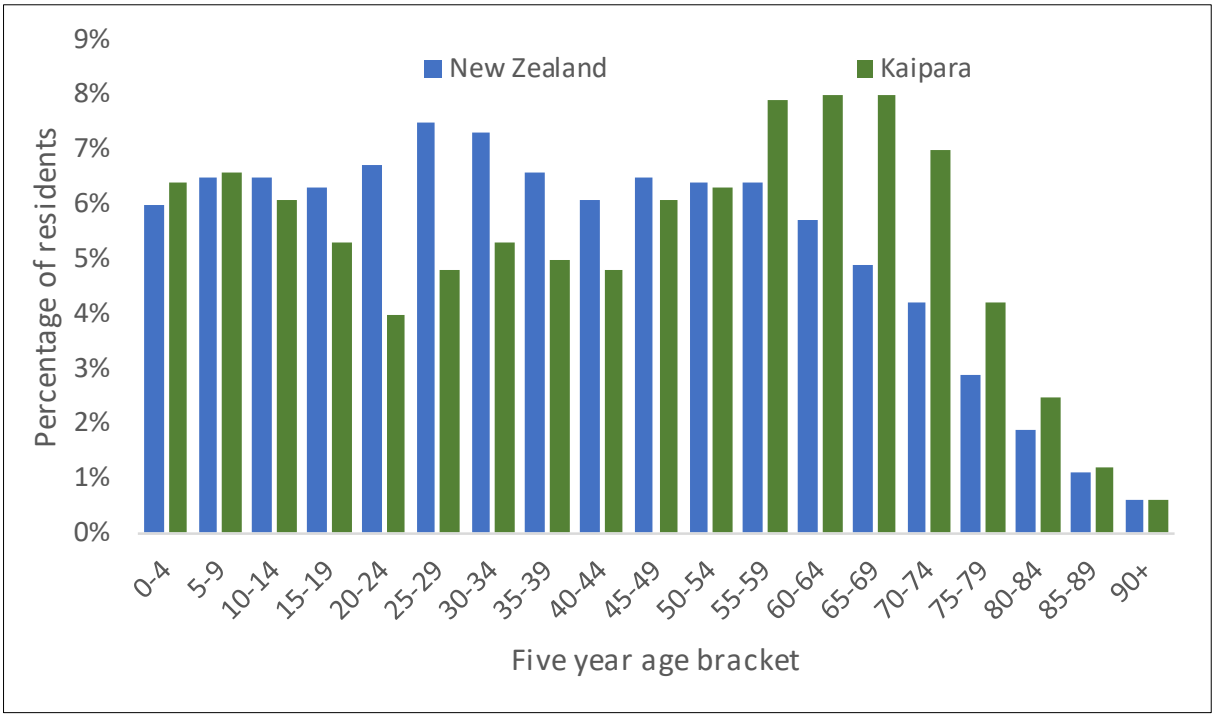

Figure 31: Comparison of the age structure of Kaipara's population in 2020 to that of New Zealand (Infometrics, 2020a).

This disproportion between different age groups in the Kaipara community is the result of trends associated with natural increase and net migration. Natural increase is the net result of births minus deaths. Improved health care and nutrition have resulted in people living to be older, this results in more people in the older age brackets. Concurrently, there is a trend towards couples having fewer children. This restricts growth in the younger age brackets. These trends are exacerbated by the "baby-boomer" cohort (those born between 1946 and 1964) being abnormally large due to a brief trend towards larger

families in developed countries in the mid part of the 20th century. This large baby-boomer cohort is now moving into the retirement age bracket.

These trends towards longer life expectancy and smaller families are by no means unique to Kaipara, affecting wider New Zealand and many other developed countries. However, in the Kaipara, and in many other parts of provincial New Zealand, this natural increase of elderly in the local community is further augmented by net migration trends. This is twofold; youth leaving the district in search of tertiary education, then gaining employment and settling outside the district further reduces the number of young people and young families in the district. At the same time, there is a trend for people nearing retirement to seek a better lifestyle in the countryside, particularly in coastal locations such as Mangawhai. This further contributes to the abundance of people in the district in the older age brackets.

Over the four years to June 2017, approximately half of Kaipara's population growth was among the 65+ age group, while only 41% of the growth was among people of working age (Patterson, 2019a). However, there was significant variation in this ageing trend across different parts of Kaipara. Population growth in Otamatea, Ruawai-Matakohe and Kaipara Coastal appears to have been driven most by the older age cohort. At the other end of the spectrum, population growth in Maungaturoto and Dargaville was driven predominantly by people of working age (Patterson, 2019a).

Population growth in Mangawhai now appears to be more evenly spread between retired, working age, and youth (Patterson, 2019a). As seen previously in Figures 30 and 31, the majority of Kaipara's future growth is projected to be comprised of those of or nearing retirement age.

Table 6 shows the proportions of populations across each part of Kaipara that were represented by each age group in 2019 (Patterson, 2019a). Despite recent increases in the proportion of working age families moving to Mangawhai, Mangawhai still has the oldest population in the district (Patterson, 2019a; Infometrics, 2020f).

Table 6: Proportion of 2017 population by age in each SA2 area in Kaipara (Patterson, 2019a).

SA2 Area	Youth (0-14)	Working Age (15-64)	Retired (65+)
Dargaville	19%	55%	26%
Maungaru	20%	62%	18%
Kaipara Coastal	19%	61%	19%
Ruawai-Matakohe	18%	61%	21%
Otamatea	20%	56%	23%
Maungaturoto	23%	58%	19%
Kaiwaka	21%	62%	17%
Mangawhai Village	18%	48%	34%
Mangawhai Heads	15%	50%	34%
Mangawhai Rural	18%	60%	23%
Total Mangawhai	17%	54%	29%
Kaipara District	**19%**	**58%**	**23%**
New Zealand	*19%*	*65%*	*16%*

These population ageing trends are however not reflective of Kaipara's Māori population. Figure 32 reveals Kaipara's Māori population is comparatively youthful. In stark contrast to the district's non-Māori population, Kaipara's Māori population included a large number of children and young adults and few

elderly people. This is partly the result of a trend towards bigger families among Māori and partly due to a generational change in cultural identity, with more young people of Māori decent choosing to identify as New Zealand Māori. That the district's Māori population had fewer older and elderly persons than the district as a whole may be partly related to Māori having lower life expectancy than non-Māori and partly to the influx of older migrants to Kaipara being predominantly of non-Māori ethnicity. In all, Kaipara's Māori population had a similar age profile to Māori nationally (as shown in Figure 33).

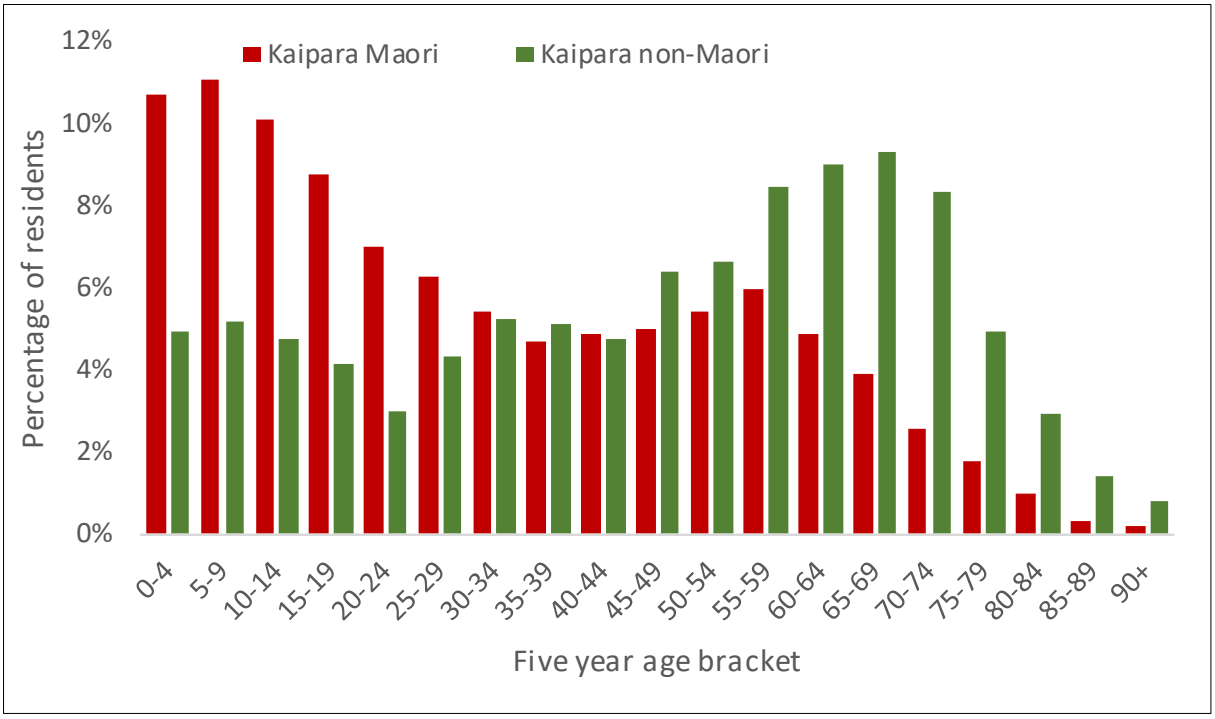

Figure 32: Age structure of Kaipara's Māori population in 2020 compared to that of Kaipara's non-Māori population (Infometrics, 2020a).

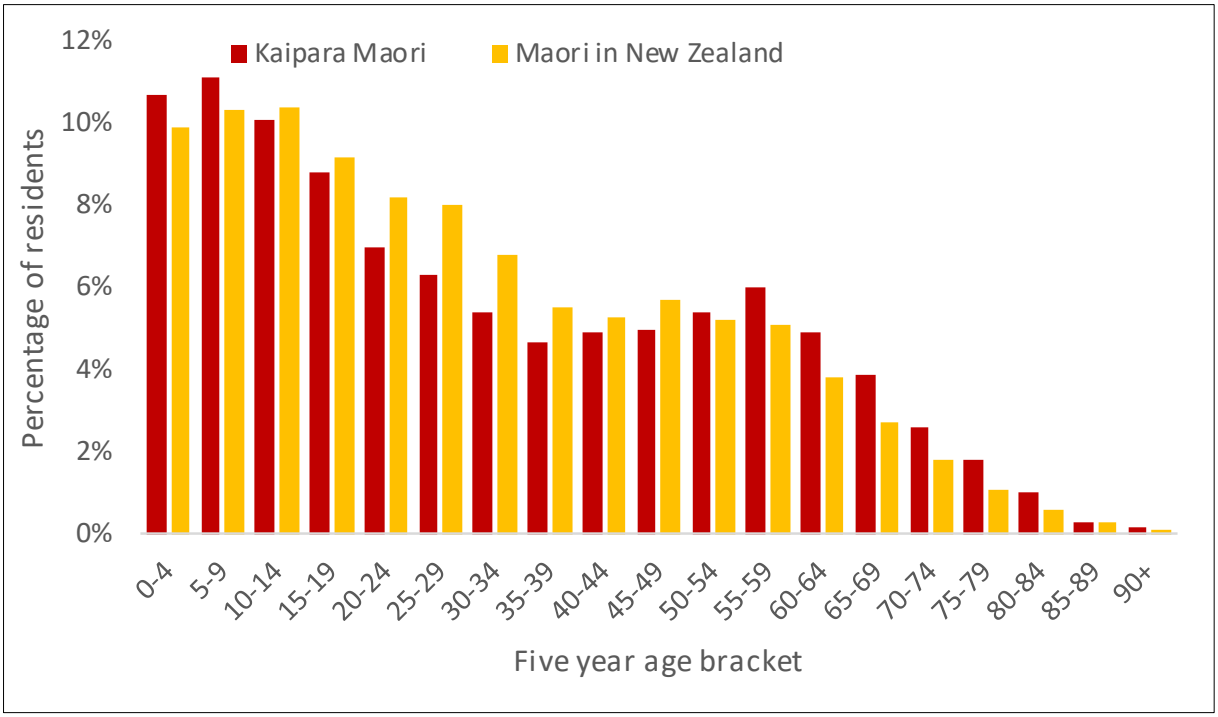

Figure 33: Age structure of Kaipara's Māori population in 2020 compared to the Māori population nationally (Infometrics, 2020a).

4.3.4 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).

Table 7 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 Whāngārei, 36.0% in Northland, 11.5% in Auckland and 16.5% nationally (Stats NZ, 2020).

Table7: ***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 2020 Kaipara's Māori population was estimated at 6,150 persons, an increase of 2% since 2019 (Infometrics, 2020a). Figure 34 shows how Kaipara's Māori population and non-Māori population have grown between 1996 and 2020.

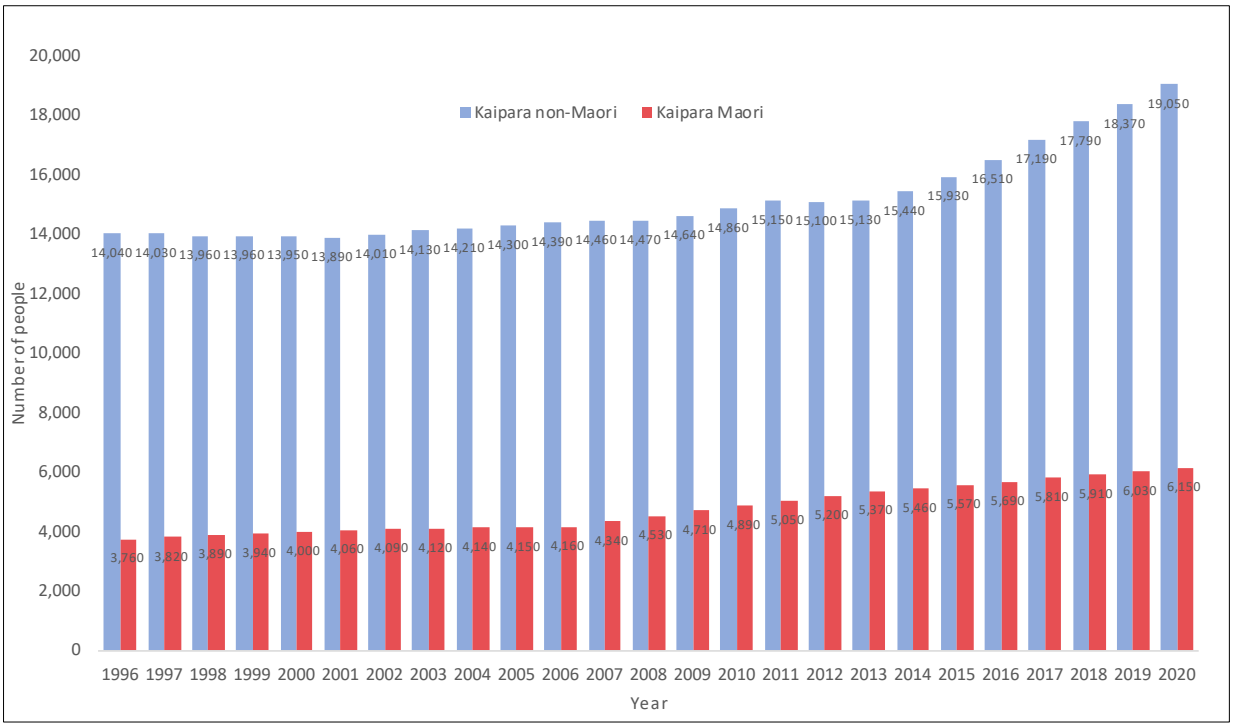

Figure 34: Growth in Kaipara's Māori and non-Māori populations (Infometrics, 2020a).

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 (IMD). The IMD 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 IMD 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 7 (Chiang & Exeter, 2019).

Table 7: 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 Whāngārei, 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 35 to 38 show how deprivation (as measured by the IMD) varied around Kaipara, Northland, the North Island and South Island. Light shading represents lessor deprivation (Chiang & Exeter, 2019).

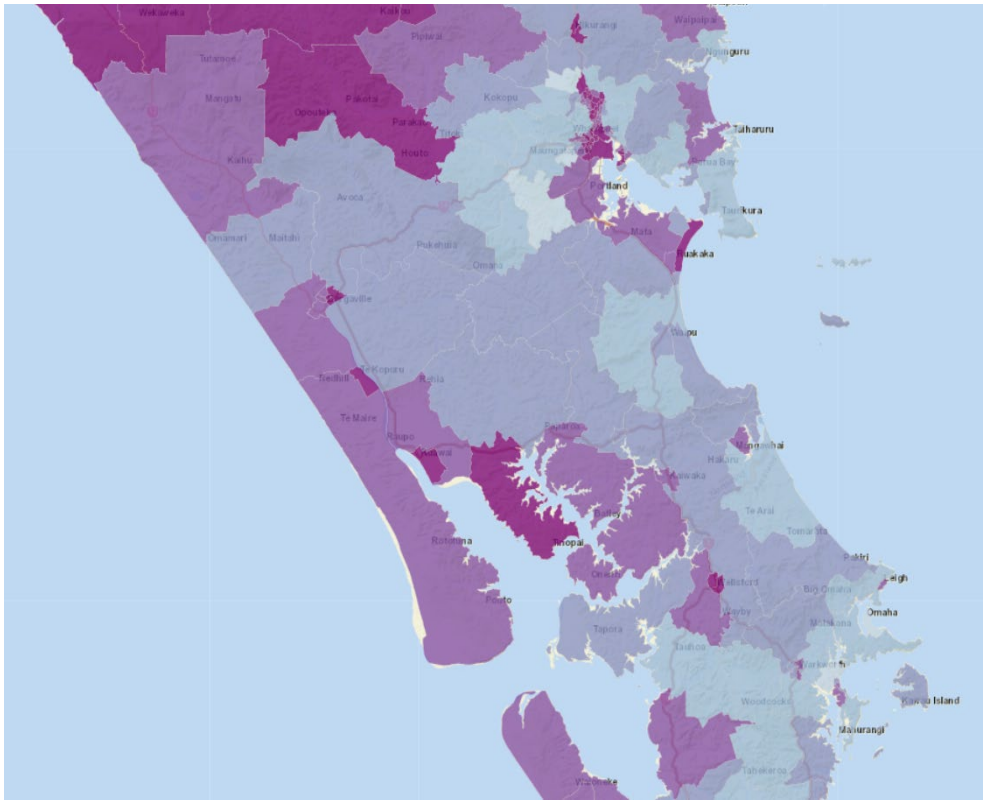

Figure 35: The disparity of deprivation in the Kaipara (as measured by the IMD) (Chiang & Exeter, 2019).

Figure 36: The disparity of deprivation in Northland (as measured by the IMD) (Chiang & Exeter, 2019).

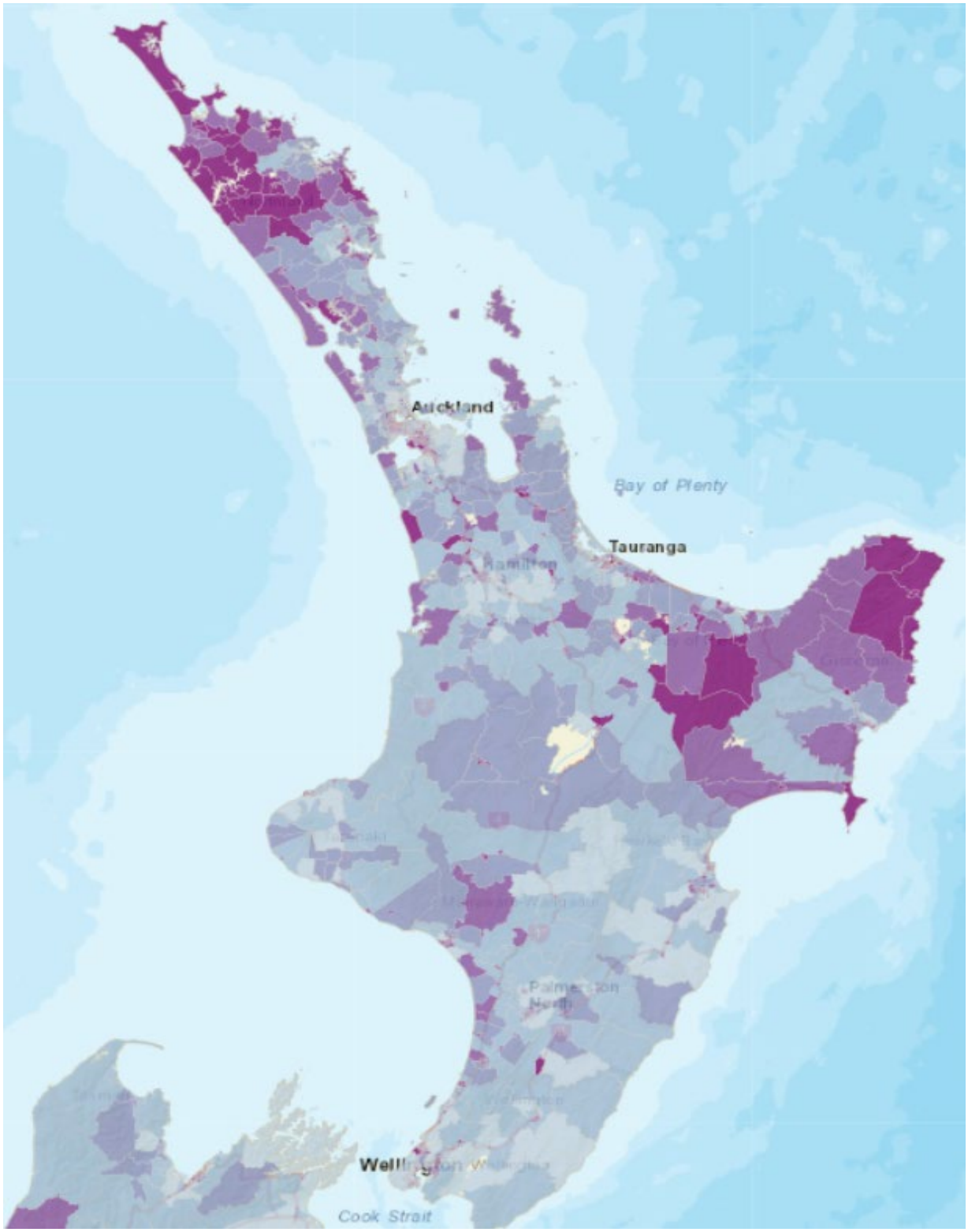

Figure 37: The disparity of deprivation in the North Island (as measured by the IMD) (Chiang & Exeter, 2019).

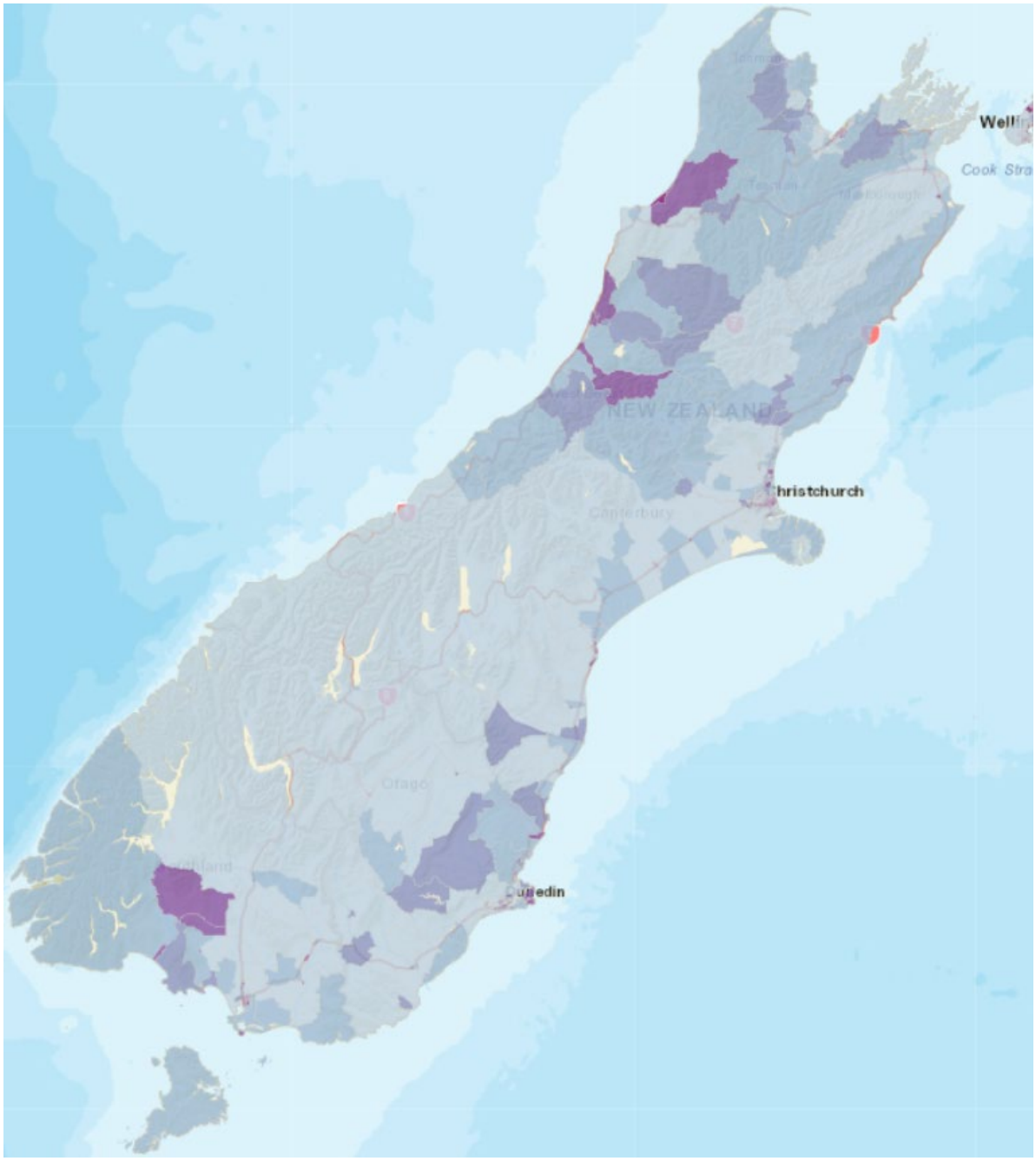

Figure 38: The disparity of deprivation in the South Island (as measured by the IMD) (Chiang & Exeter, 2019).

Looking at the components of Kaipara's IMD 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 so far established in Mangawhai. 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 IMD) are recognised and rewarded by employers in these industries.

The chart in Figure 39 takes a different approach to measuring skills in employment which more equally recognises the value of non-academic skills. It finds that in 2019, 37.8% of jobs in Kaipara required highly skilled employees which compares favourably to New Zealand generally (37.7%) (Infometrics, 2020). In addition, Kaipara also had a greater proportion of low skilled jobs (39%) compared to the national economy (35.6%), reflecting the greater concentration of these jobs in the primary, manufacturing and construction sectors (Infometrics, 2020).

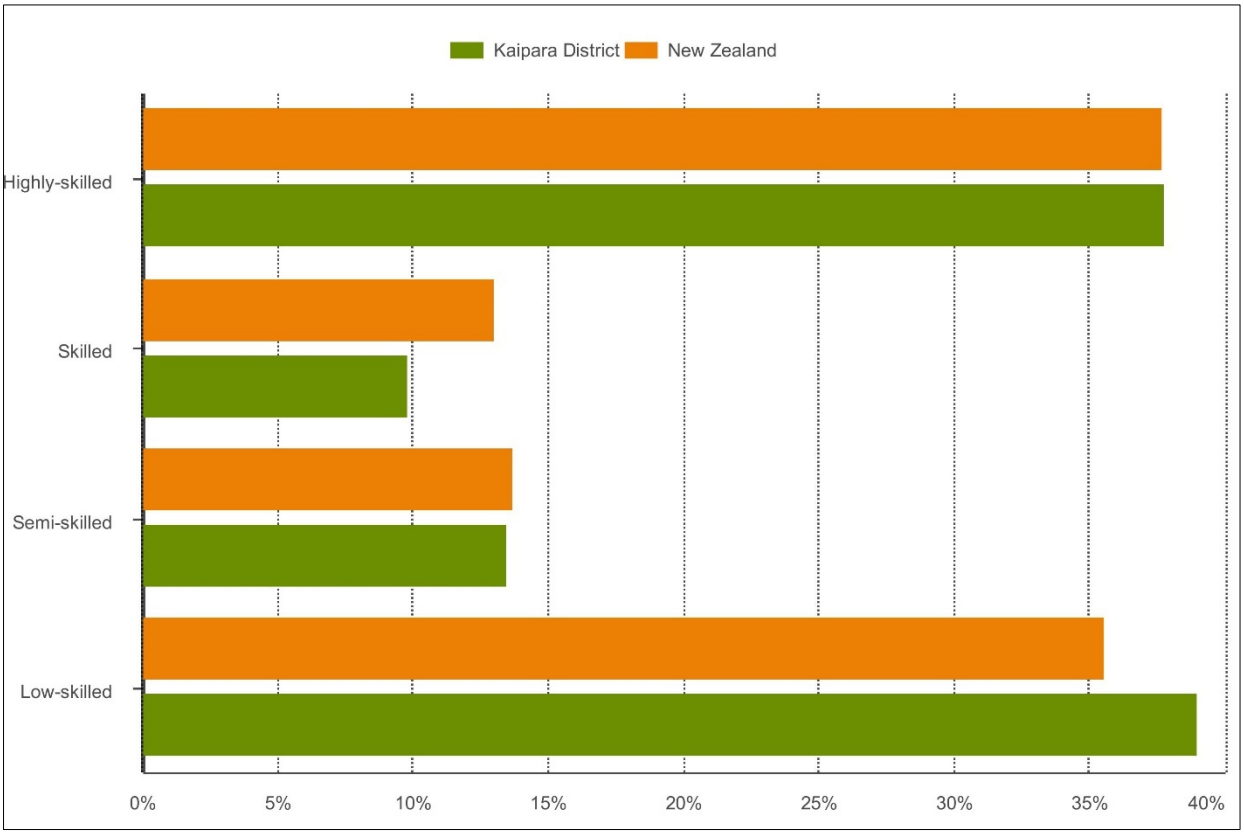

Figure 39: Percentage of employment requiring different broad skill levels in Kaipara and New Zealand (Infometrics, 2020a).

Education outcomes for Northland may be improving, with the number of Northland youth leaving school with no qualifications decreasing from 14.2% in 2017 to 13.6% in 2018 (Infometrics, 2019a). By contrast, across New Zealand, the percentage of school leavers without any qualification increased from 10.2% in 2017 to 11.2% in 2018. That is, 7,033 school leavers had no qualification in 2018, up 615 people from 2017. Further analysis of the data reveals considerable disparities between regions, as shown in Figure 40 (Infometrics, 2019a).

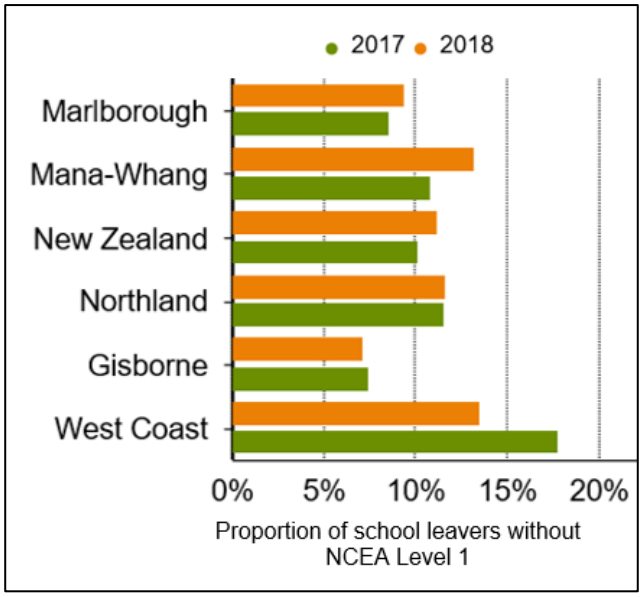

Figure 40: Proportion of school leavers without NCEA Level 1, 2017 vs 2018, top and bottom regions (Infometrics, 2019a).

Northland's truancy rate in 2017 was the second-worst regional rate in New Zealand (Infometrics, 2019b). Higher levels of truancy highlights issues at home which make it more difficult for students to remain at school, leading to poorer educational outcomes generally. The Far North had the fourth highest truancy rate in the country, at 8.4%. Whāngārei (5.2%) and Kaipara (4.6%) had lower rates of unjustified absences, but both were still above the 2017 nationwide average of 4% (Infometrics, 2019b).

These trends are important as research shows that two in five school leavers without any school qualification are likely to end up unemployed or not engaged in further education or training (NEET) (Infometrics, 2019a).

Māori education outcomes continue to lag behind other groups in New Zealand (Infometrics, 2019b). In 2017 85% of non-Māori achieved NCEA Level 2 or above, compared to 68% for Māori. While there is no Kaipara specific data on this indicator, it does have implications for the district given the high percentage of Māori in the population. Nationally, Māori educational outcomes are improving, which shows progress in enabling Māori to access more opportunities in life. But the gap still remains too large. A focus on Māori education outcomes is important given the growth in Māori in the working age population over the next 10-20 years (Infometrics, 2019b).

Māori in Kaipara had a higher unemployment rate in 2019 (11.6%) than the district average (4.3%) and for Māori nationally (8.7%) but lower than for Māori in the Far North (14.1%) (Infometrics, 2020a).

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. In addition to income earnt in employment, household income also captures other sources of income such as benefits and superannuation. The 2019 mean household income in Kaipara was estimated at $85,884. This was considerably lower than the New Zealand mean household income of $111,472 and lower than all of Kaipara's neighbours (refer to Figure 41) (Infometrics, 2020). In their

report, Chiang & Exeter (2019) identify low income levels as a key area of concern in the Northland region.

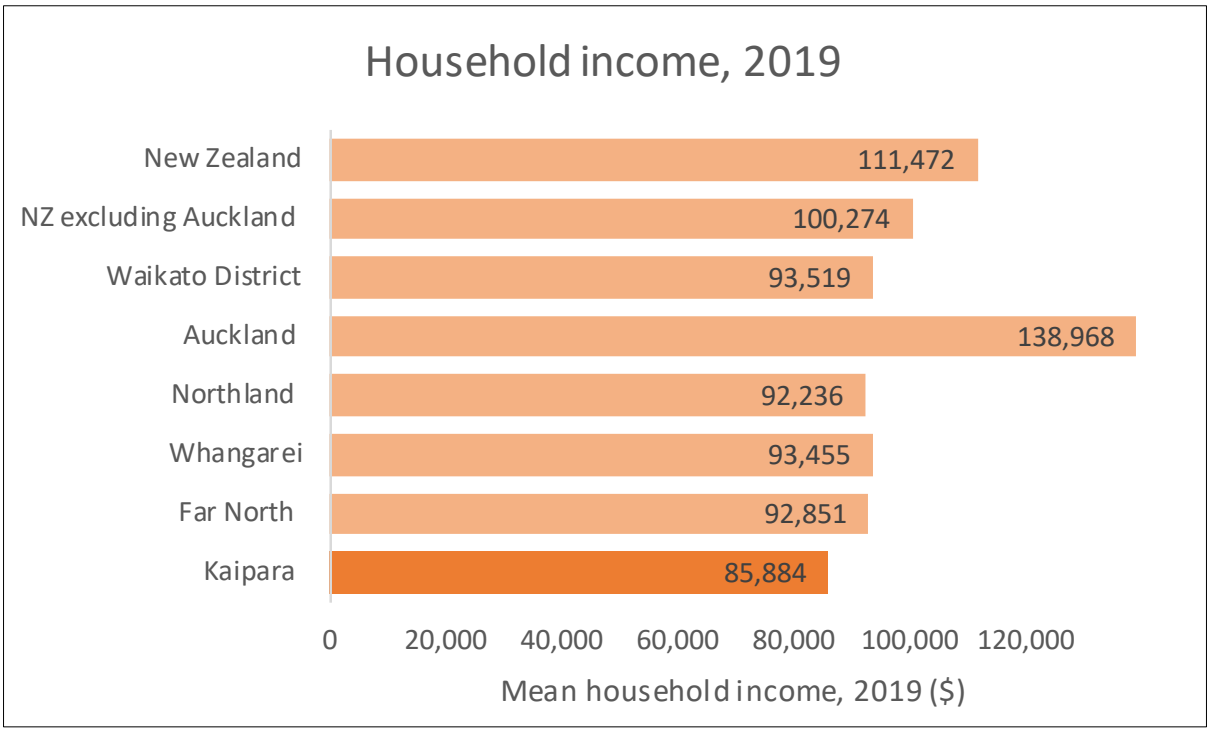

Figure 41: Comparison of household income in 2019 (Infometrics, 2020a).

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, 2019c).

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, 2020g).

Housing affordability can be assessed by comparing average house values with mean household income (Infometrics, 2020g). 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, 2020g).

Kaipara scores 6.7 on this housing affordability index suggesting housing is less affordable than other areas of Northland, the Waikato District and the New Zealand average (Figure 42) (Infometrics, 2020g).

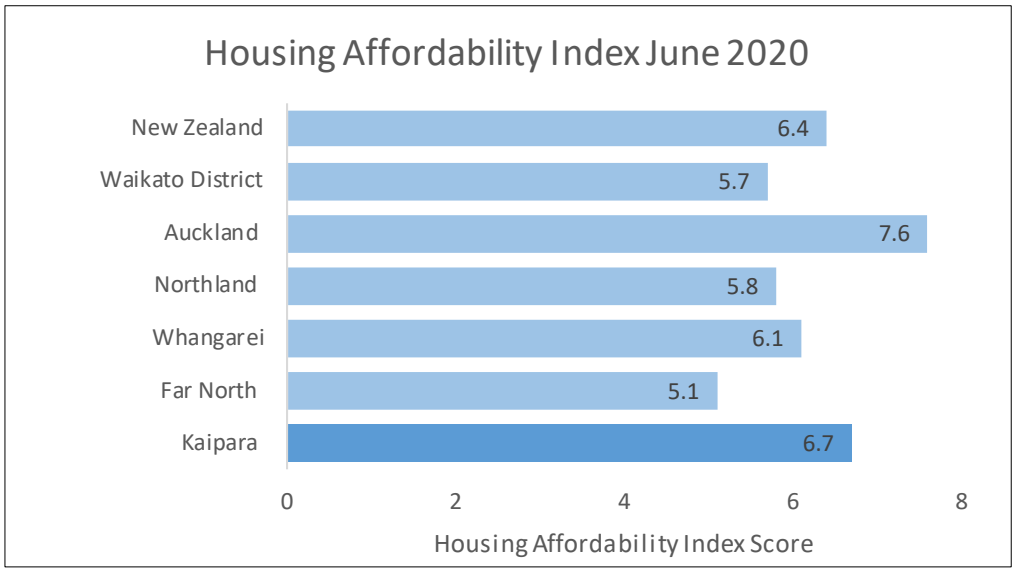

Figure 42: Comparison of housing affordability in June 2020 (Infometrics, 2020a).

Similarly, the affordability of renting can be considered in the same way by comparing average annualised rents with annual average household income. (Infometrics, 2020g). A higher ratio, therefore, suggests that average rents cost a greater multiple of typical incomes, which indicates lower rental affordability. Kaipara scored 23.9 on this rental affordability index suggesting rental accommodation is less affordable than its neighbours including Auckland (refer to Figure 43).

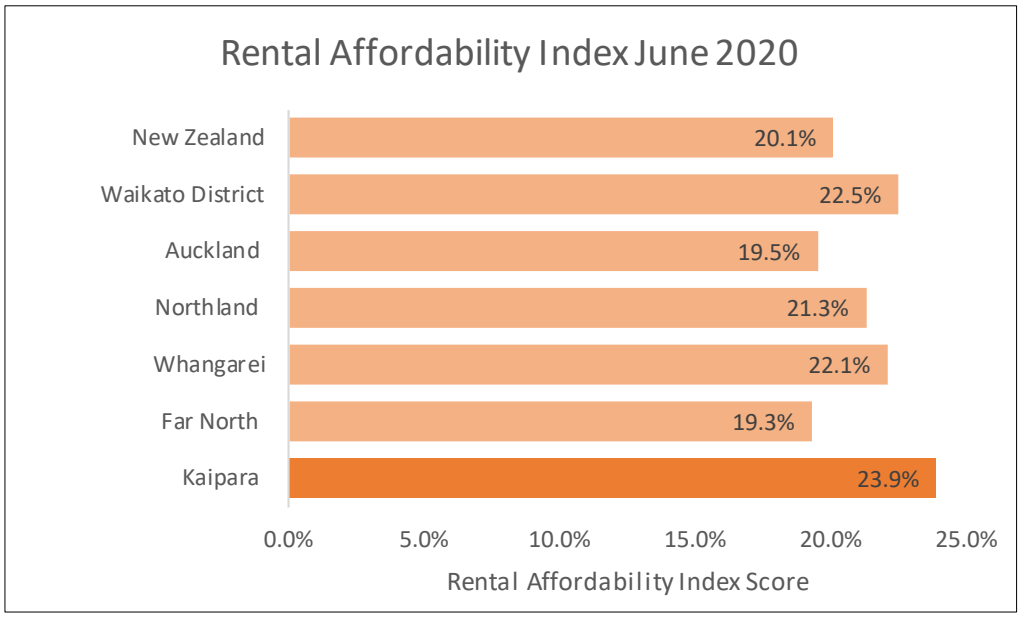

Figure 43: Comparison of rental housing affordability in June 2020, higher numbers equal lower affordability (Infometrics, 2020g).

The average rent in Kaipara in 2019 was $351 per week. This compares to $344 in the Far North, $372 in Whāngārei, $354 in Northland, $364 in New Zealand excluding Auckland, $419 in New Zealand overall, $518 in Auckland and $374 in Waikato district (Infometrics, 2020a).

Although New Zealand's population grew substantially between the 2013 and 2018 Census, the dwelling stock didn't follow suit (Infometrics, 2019d). New Zealand's occupied dwelling numbers rose 6.6% between the 2013 and 2018 Census, slower than the 10.8% population increase.

Strong population growth in Northland also wasn't met with the same growth in dwellings, with the Far North (2nd place behind Queenstown Lakes District), Kaipara (5th place) and Whāngārei (6th place) all seeing some of the largest differences between population and dwelling growth (Infometrics, 2019d). This undersupply is anticipated to further reduce housing affordability.

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 2018 behind Iceland (Infometrics, 2019c). Recorded crimes continued to fall over the year to June 2018, with total reported crime dropping 7% from a year before. Over this period, there were 153,800 criminal proceedings underway, down from 165,000 in the previous year. Over the long term, New Zealand's crime rate has been continuing to fall, from 3,756 crimes per 100,000 people in 2015 to 3,441 crimes per 100,000 people in 2017. This decline in crime rate comes as police numbers have risen, reaching 9,011 sworn officers in 2018. The number of murders in New Zealand has fallen in the last two years of reporting, with just 48 murders reported in 2017 (Infometrics, 2019c).

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, 2019c). 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, 2019c).

Mental health

The number of New Zealanders presenting to mental health and addiction services has risen from 139,000 in 2009 (3.2% of the population) to nearly 227,000 people (4.7% of the population) in 2017 (see Figure 44) (Infometrics, 2019c). By comparison, 4.4% of Kaipara's population presented to mental health and addiction services in 2017, below the national average (Infometrics, 2019c).

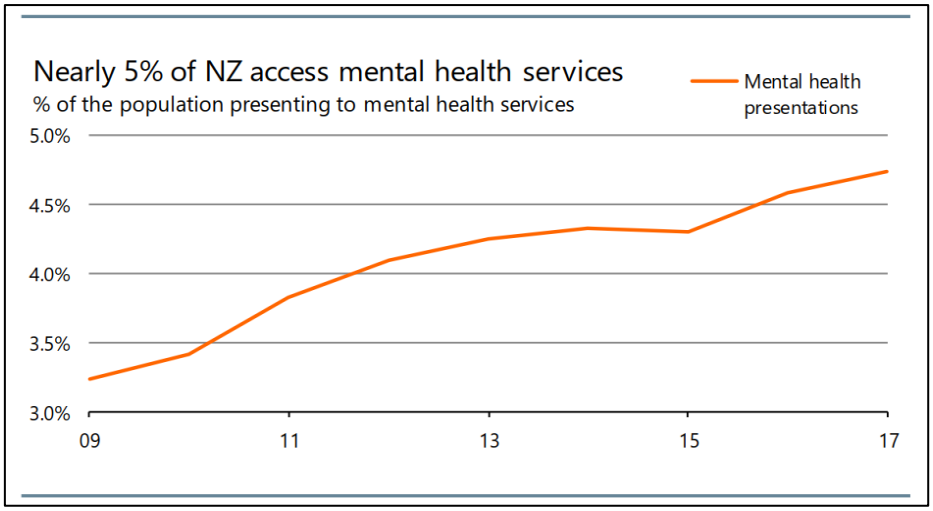

Figure 44: Percentage of New Zealand's population accessing mental health services (Infometrics, 2019c).

Growing rates of self-harm confirm the concerning trend of deteriorating mental health in New Zealand, with nearly 4,900 intentional self-harm hospitalisations in 2017 (Infometrics, 2019c). As shown in Figure 45, self-harm hospitalisation rates have increased from a low of 66.75 per 100,000 people in 2011 to 93.14 per 100,000 people in 2017 (Infometrics, 2019c).

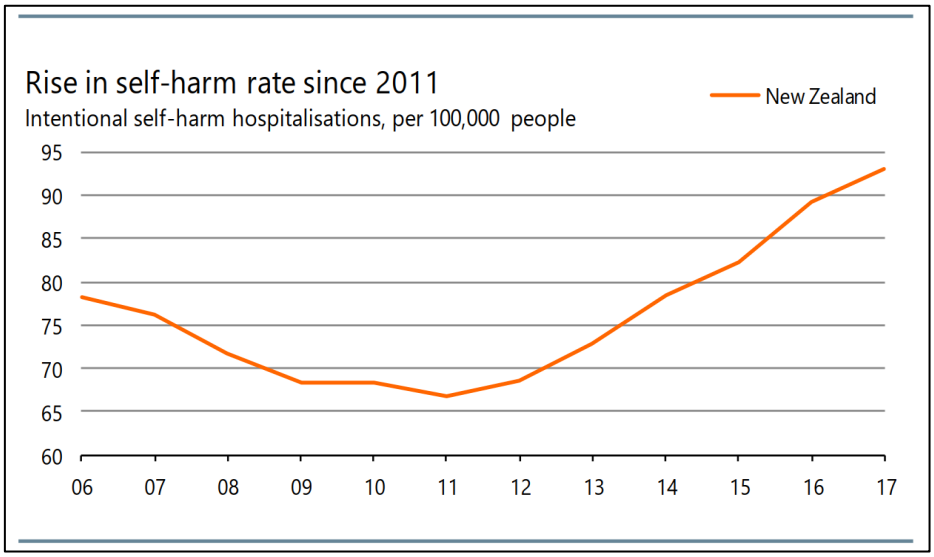

Figure 45: Number of hospitalisations per 100,000 people resulting from self-harm in New Zealand (Infometrics, 2020).

New Zealand's suicide statistics are particularly poor, with the rate of youth suicides the worst in the developed world (Infometrics, 2019c). Data from the Ministry of Justice shows the provisional suicide rate fell from 12.68 deaths per 100,000 people in 2008 to 12.27 in 2015. However, by 2018, the provisional suicide rate had increased to 13.67 deaths per 100,000 people. Kaipara's suicide rate was similar to the national average at 13 per 100,000 people (Infometrics, 2019c).

Life expectancy

Kaipara's life expectancy was only slightly below the national average. The average Kaipara person born in 2017 is expected to live to 81.2 years compared to 81.77 for the average New Zealander. The lowest life expectancy in New Zealand was in the Far North, where life expectancy at birth in 2017 was 79.41 (Infometrics, 2018).

Life expectancy in Northland is 80 years of age; slightly lower than the national average (Infometrics, 2018). However, presentation of this figure for Northland's population as a whole fails to reveal the true picture of disparity in the region. Closer analysis reveals non-Māori in Northland had the same mortality rates as nationally. However, life expectancy for Northland Māori was just 70 years for girls and 64 years for boys, lower than for Māori nationally (Infometrics, 2018).

5 Economy – Our Livelihoods

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 perspectives

The Coronavirus disease 2019 (COVID-19) pandemic has, with alarming speed, delivered a global economic shock of enormous magnitude, leading to steep recessions in many countries (World Bank, 2020). The pandemic is expected to plunge the majority of countries into recession by the end of 2020. The World Bank's June 2020 baseline forecast envisions a 5.2% contraction in global GDP in 2020, the deepest global recession since World War II, and almost three times as steep as the 2009 global recession (World Bank, 2020).

Advanced economies are projected to shrink by 7% in 2020, as widespread social-distancing measures, a sharp tightening of financial conditions, and a collapse in external demand depress activity (World Bank, 2020). Assuming that the outbreak remains under control and activity recovers later in 2020, China's growth is projected to slow to 1% in 2020; by far the lowest growth it has registered in more than four decades (World Bank, 2020).

Every region is subject to substantial economic growth downgrades (World Bank, 2020). East Asia and the Pacific will grow by a scant 0.5%. South Asia will contract by 2.7%, Sub-Saharan Africa by 2.8%, the Middle East and North Africa by 4.2%, Europe and Central Asia by 4.7%, and Latin America by 7.2%. These downturns are expected to reverse years of progress toward development goals and tip tens of millions of people back into extreme poverty (World Bank, 2020).

However, even this bleak outlook may be optimistic (World Bank, 2020). Given COVID-19 outbreaks persist, restrictions on movement have been extended or reintroduced, and disruptions to economic activity have been prolonged, the recession could be deeper. Under this downside scenario, global output could shrink by almost 8% in 2020 (World Bank, 2020).

Over the longer horizon, the deep recessions triggered by the pandemic are expected to leave lasting scars through lower investment, an erosion of human capital through lost work and schooling, and fragmentation of global trade and supply linkages (World Bank, 2020).

The sharp fall in economic activity is expected to contribute to a contraction in global trade of 13.4% in 2020 (World Bank, 2020). The controls to slow the spread of the pandemic have resulted in a sharp fall in travel and transport, which accounts for two-thirds of oil consumption. Oil demand therefore collapsed in the first half of 2020 and is expected to fall by 8.6% in 2020 overall. Such a decline would be unprecedented, surpassing the previous record fall of 4% in 1980 (World Bank, 2020).

Demand for metals and transport-related commodities such as rubber and platinum used for vehicle parts has also tumbled (World Bank, 2020). Prices for metals are anticipated to decline 16% in 2020 before showing a modest increase in 2021. This forecast is based on a recovery of Chinese demand, which accounts for around 50% of the consumption of base metals (World Bank, 2020).

Agricultural prices, which weakened over the first half of the year, are expected to decline only marginally in 2020 as a whole, as they are less sensitive to economic activity than industrial commodities, particularly at higher-income levels (World Bank, 2020).

5.2 New Zealand's economy

The COVID-19 pandemic reached New Zealand at the end of February 2020 resulting in a number of Lockdown measures aimed at eliminating the spread of the virus. The rapid deterioration in economic conditions across New Zealand and the globe, and expectations for a long slow recovery, signal a tough few years for the economy (Infometrics, 2020h). New Zealand's GDP in the June 2020 quarter (after COVID-19) is estimated to have been 12.6% lower than in the June 2019 quarter (before COVID-19), with year-end economic growth over the 12 months to June 2020 sitting at -2.1% pa. The economy is not considered likely to recover to greater than pre-COVID-19 levels until the second half of 2023 at the earliest. The early 2020s will be characterised by economic recession and recovery following the COVID-19 pandemic (Infometrics, 2020h).

Restrictions on trading due to the pandemic have impacted on businesses revenue (Infometrics, 2020g). Consumer spending fell dramatically in the June 2020 quarter, with spending down 20% compared to the June 2019 quarter, as households held onto their wallets during the lockdown period. Spending over the year to June 2020 was down 2.8% compared to the June 2019 year (Infometrics, 2020g).

Prior to the pandemic, New Zealand's unemployment rate had dropped to an annual average of 4.1% – the lowest since the global financial crisis (GFC) (Infometrics, 2020g). New Zealand's labour market had been tight, with wage growth picking up and firms reporting high levels of difficulty finding labour (New Zealand Treasury, 2019A). However, the COVID-19 economic downturn has made it necessary for many businesses to cut staff or even wind up their business. In total, nearly 50,000 New Zealanders were added to government unemployment support over the June 2020 quarter, taking the total number of people supported to over 200,000 (Infometrics, 2020g). On average over the year to June 2020, Jobseeker Support recipients were up 19%pa. This rise doesn't include the COVID-19 Income Relief Payment which was supporting nearly 11,000 people at the end of June 2020. This rise in government support of Jobseeker Support recipients occurred even as the government spent over $12.3b to support 1.7m workers (61% of the labour force) through the Wage Subsidy and extension. Job losses are anticipated to rise further once this Wage Subsidy scheme finishes. Infometrics anticipate the unemployment rate may reach 7.4% by the end of 2020 and over 8.5% by the second half of 2021 (Infometrics, 2020g).

Not all regions have felt the economic effects of the pandemic equally (Infometrics, 2020j). Otago region saw the hardest hit to economic activity, with a 15.6% per annum drop, as the collapse in tourism activity hit a number of local economies, particularly the Queenstown-Lakes District. Meanwhile, the Manawatū-Whanganui and Gisborne regions weathered the storm as well as could be expected, with

economic activity falling by less than 9% per annum (Infometrics, 2020j). On the whole, districts with a high dependence on international tourism are anticipated to fare worst while districts with an emphasis on the primary sector are anticipated to fair better (Infometrics, 2020j).

According to Infometrics' article "industry concentrations, and the fall of Think Big", 20% of all local economies have dairy cattle farming as their largest industry by GDP, 17% have a health care and social assistance focus, and 11% concentrated on sheep, beef cattle, and grain farming (Infometrics, 2020i). Employment also shows similar focuses, with 41% of local economies having health care and social assistance as their largest employer, followed by 12% with dairy cattle farming, another 12% with sheep, beef cattle, and grain farming, and 11% with accommodation and food services. It is these latter economies with accommodation and food services as their largest industry that have been hardest hit by the COVID-19 pandemic and associated border closures, lockdown and travel restrictions (Infometrics, 2020i).

Tourism spending fell 12.3%per annum over the year to June 2020, as the border closure and domestic restrictions hit visitor activity (Infometrics, 2020g). Total tourism spending over the 12 months to June 2020 totalled $26b, with spending of $3.6b lost compared to the June 2019 year. The West Coast recorded the hardest hit, with tourism spending down just over 20%pa, followed by Southland (-16%), Otago (-15%) and Wellington (-14%). Domestic travel has helped bolster tourism activity since the lockdowns (for example New Zealand experienced a bumper July school holiday, in which spending was up to 7% ahead of 2019 levels as Kiwis explored their own backyard instead of travelling overseas) but won't be enough to outweigh the loss of international tourism activity (Infometrics, 2020k). Figure 46 shows the relative importance of domestic and international visitor spending to New Zealand's economy. Note that more recent data showing the evolving scenario of no international and only domestic visitor spending was not available at the time of writing.

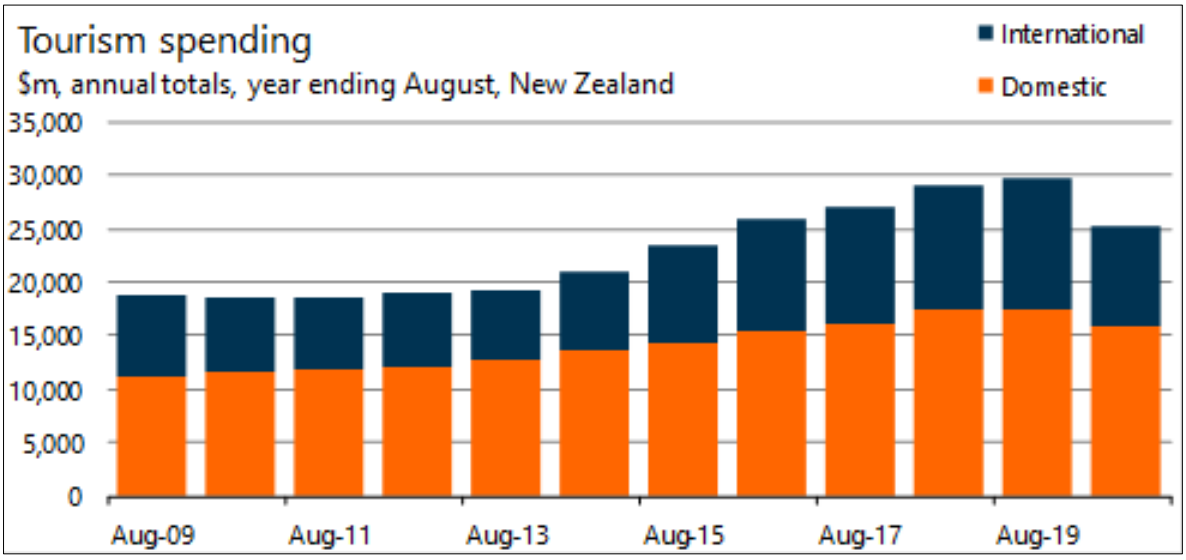

Figure 46: Annual visitor spending ($millions) (Infometrics, 2020l).

Aucklanders are a key part of New Zealand's domestic tourism market (Infometrics, 2020m). Over the year to December 2019, Aucklanders spent $3.5b on tourism across the country, representing around 20% of total domestic tourism spending. This figure is anticipated to rise now that Aucklanders do not have the option of choosing between local or overseas holidays. For context, Auckland has 34% of

New Zealand's population, generates around 38% of GDP and 40% of tax revenue (Auckland Council, 2020). Auckland is also one of the most affluent regions, with an average household income of $139,000, well above the national average of $111,000 (Infometrics, 2020m).

Some areas are more reliant on Auckland's tourism dollar and will be more greatly impacted by the extended period of time the Super City was forced to spend in Lockdown (Infometrics, 2020m). Ten areas across New Zealand receive 30% or more of their domestic tourism spending from Auckland, including four receiving over 40% (Waikato District (48.2%), Kaipara (46.8%), Thames-Coromandel (45.5%), and Hauraki (43.2%)) (Infometrics, 2020m).

5.3 Northland's Economy

Northland's economy is based on manufacturing and its primary industries, in particular the dairy industry (Infometrics, 2020a). In 2019, dairy cattle farming alone accounted for 3% of the region's filled jobs and 4% of its GDP. The Far North and Kaipara districts have similar economic structures, with a strong focus on primary production. Whāngārei is the region's main urban and servicing centre with a higher concentration of manufacturing and service industries. In particular, Whāngārei is home to the region's port, Northport, and New Zealand's only oil refinery, Refining New Zealand. Consequently, petroleum and coal product manufacturing accounted for 6.5% of Northland's GDP and 0.5% of its employment in 2019. In all, manufacturing (including the oil refinery) was the largest contributor to Northland's GDP (16.2%) followed by the agriculture, forestry and fishing sector (11.4%) in 2019 (Infometrics, 2020a). In light of this, it is worth noting that Refining New Zealand is reconsidering the viability of its oil refining operation at Marsden Point. This may lead to this facility being reconfigured as a fuel import and distribution terminal rather than a refinery. It is anticipated this would result in a significant loss of employment at this facility if it were to occur, however no decision on this had been made at time of writing (Infometrics, 2020i). The refinery will be continuing its refining operations into 2021, albeit in a more simplified form with reduced refinery throughput and the cessation of bitumen production (Refining New Zealand, 2020).

Northland sits at the apex of the fastest growing area of New Zealand; Auckland/the upper North Island (AECOM, 2019). The upper North Island accounts for over half of the country's population, over half the freight moved and over half the country's Gross Domestic Product (GDP). However, despite its proximity to New Zealand's largest economic centre, the Northland economy underperforms the rest of New Zealand on a number of social and economic measures (AECOM, 2019).

Auckland's ongoing growth is pushing population and industrial activity north and south of the city into the Waikato and Northland (AECOM, 2019). Over the last ten years Auckland's population has grown faster than previously forecast and is now expected to grow to 2.4 million people by 2043, with around half this future population living north of the Waitematā Harbour. This growth is placing constraints on the transport system within the city and the land available for industrial activities (AECOM, 2019).

This creates an opportunity for Northland to accommodate industry, businesses and population finding it difficult to expand or establish in Auckland (AECOM, 2019). Northland has affordable land in reasonable proximity to Auckland and an excellent deep water port. However, Northland's direct competitor for this growth is the Waikato district which is better connected to Auckland by road and rail as well as being

close and well connected to the Port of Tauranga. Northland therefore has considerable opportunities to grow its economy along with the rest of the Upper North Island, providing it can overcome its transportation constraints and become better connected with Auckland and the rest of New Zealand (AECOM, 2019).

5.4 Structure of Kaipara's economy and employment

Kaipara's economy is founded on its primary industries (particularly dairy), supported by a strong manufacturing sector (Infometrics, 2020a). In 2019, the primary sector (agriculture, forestry and fishing) accounted for 26.6% of Kaipara's GDP while manufacturing contributed a further 11.5% as is shown in Figure 45. Dairy cattle farming's contribution to the local economy alone was six times the national average, with 12.1% of Kaipara's GDP coming from dairy cattle farming compared to 2% nationally. The primary and manufacturing sectors were also two of the biggest contributors to employment in Kaipara in 2019 accounting for 25.4% and 11.6% of filled jobs, respectively (Figure 47). Construction was another important contributor, also accounting for 11.7% of filled jobs (Infometrics, 2020a).

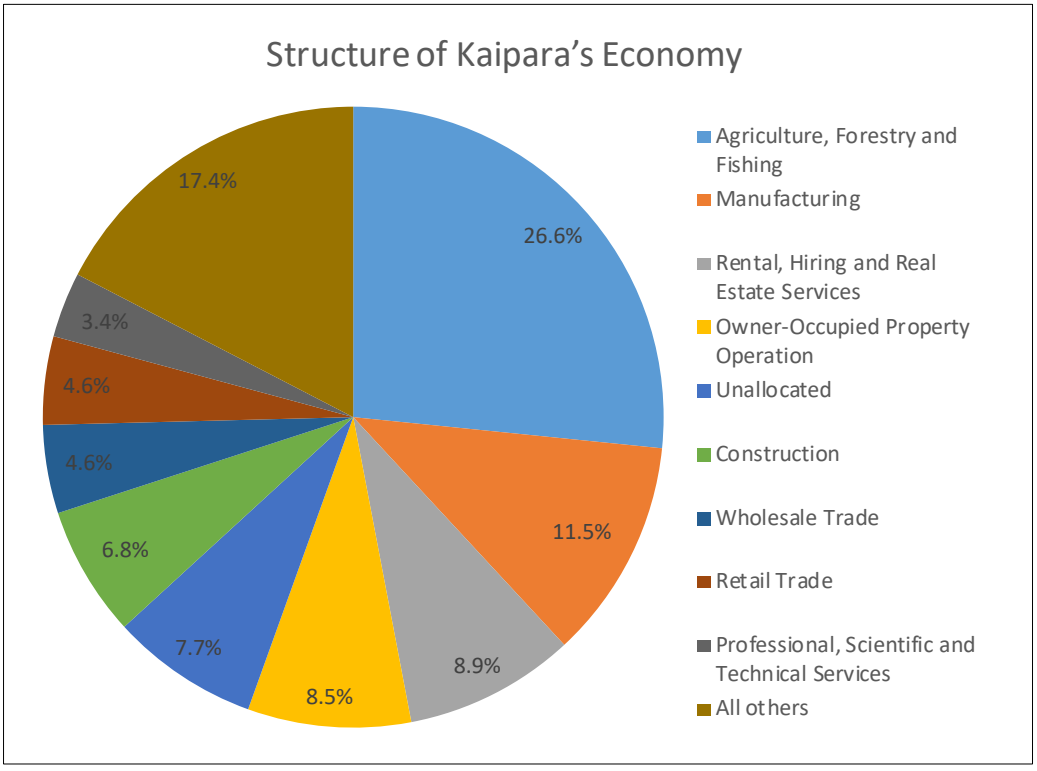

Figure 47: The contribution of different sectors to Kaipara's GDP in 2019 (Infometrics, 2020a).

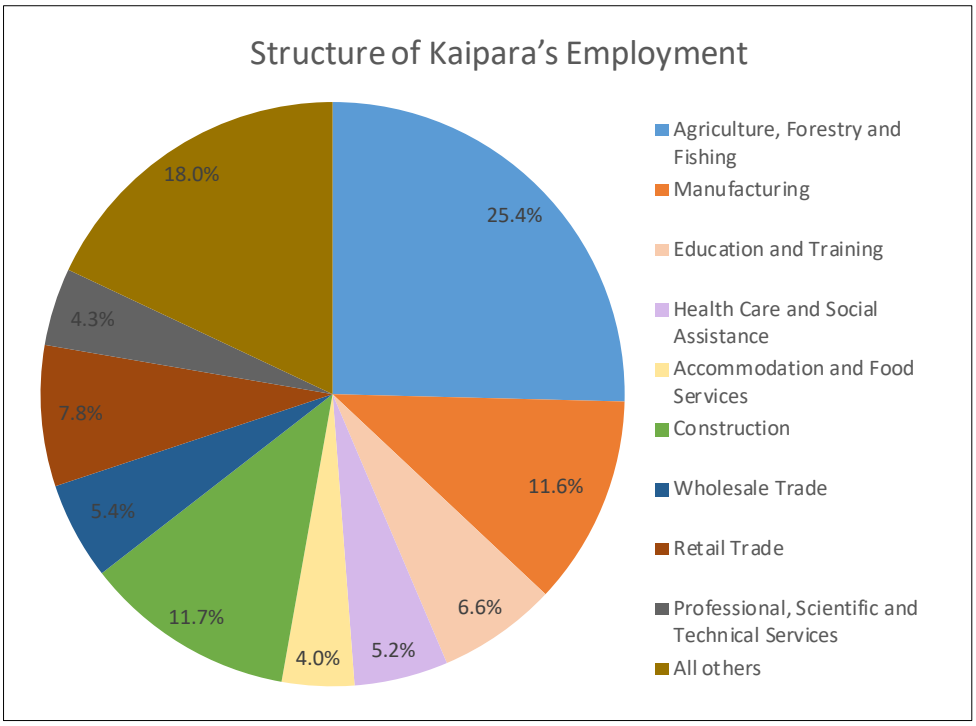

Figure 48: The contribution of different sectors to the number of filled jobs in Kaipara in 2019 (Infometrics, 2020a).

However, the structure of Kaipara's economy is not consistent across the district (Infometrics, 2020a). The Northwest Kaipara area is predominantly focussed on the primary sector with agriculture, forestry and fishing accounting for 64.9% of GDP and 67.6% of filled jobs in 2019 (see Figures 49 and 50). Dairy farming alone accounted for 33.1% of Northwest Kaipara's 2019 GDP while sheep, beef and grain farming accounted for a further 13.3%, horticulture and fruit growing a further 11.7% and forestry a further 5% (Infometrics, 2020a).

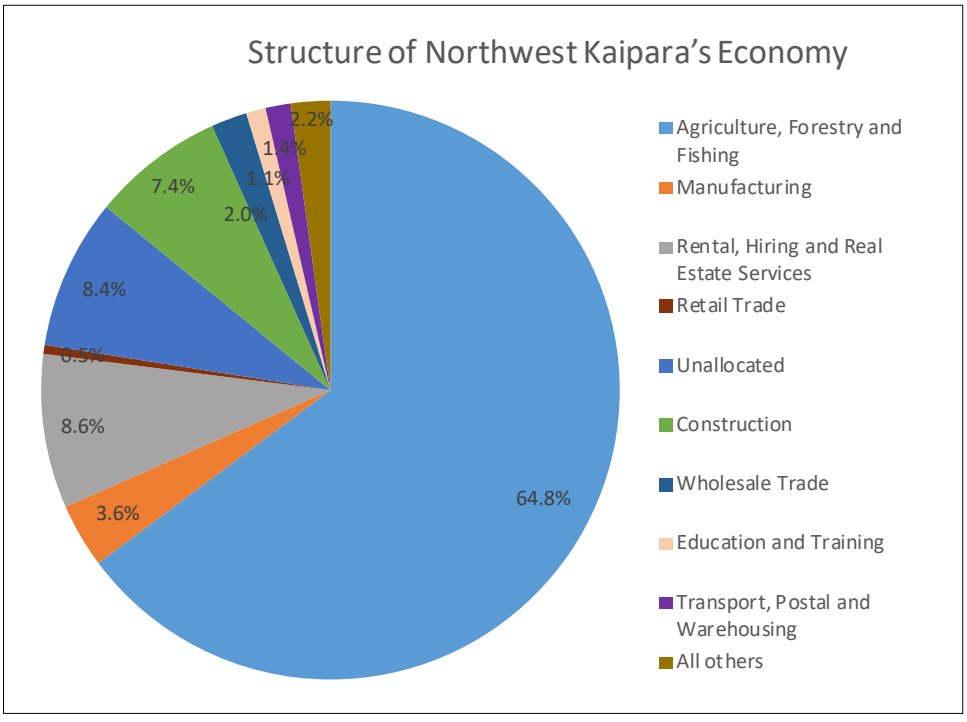

Figure 49: The contribution of different sectors to Northwest Kaipara's GDP in 2019 (Infometrics, 2020a).

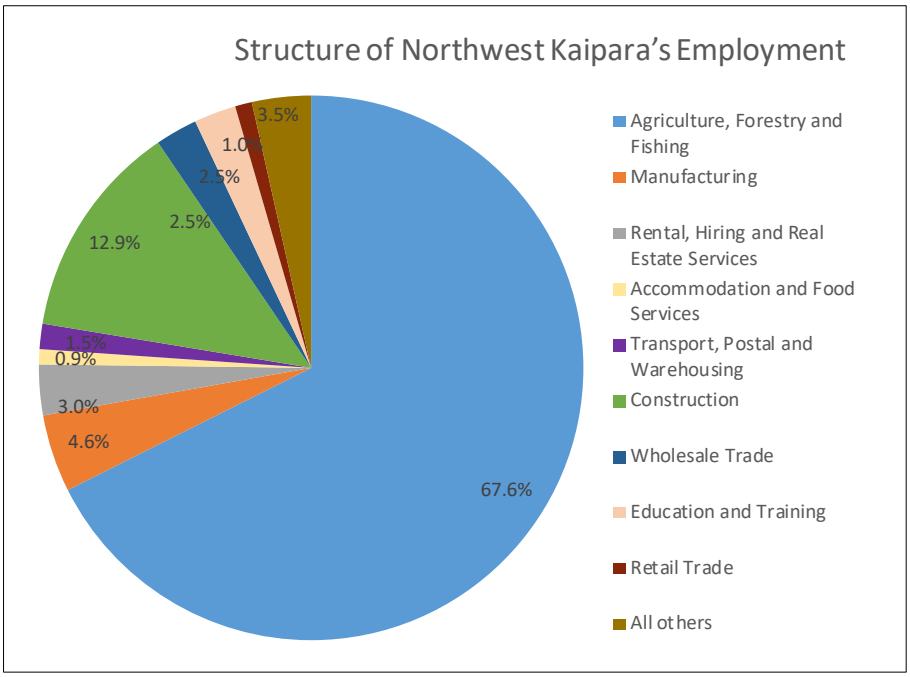

Figure 50: The contribution of different sectors to the number of filled jobs in Northwest Kaipara in 2019 (Infometrics, 2020a).

Southeast Kaipara was also highly dependent on the primary sector (32.8% of 2019 GDP) but was also well supported by the manufacturing sector (18.2% of 2019 GDP) (see Figure 51) (Infometrics, 2020a). The greater importance of Manufacturing to Southeast Kaipara likely reflects the presence of Fonterra's Maungaturoto Dairy Factory. Collectively, the primary and manufacturing sectors accounted for almost half of all filled jobs in the Southeast Kaipara area, as is shown in Figure 52 (Infometrics, 2020a).

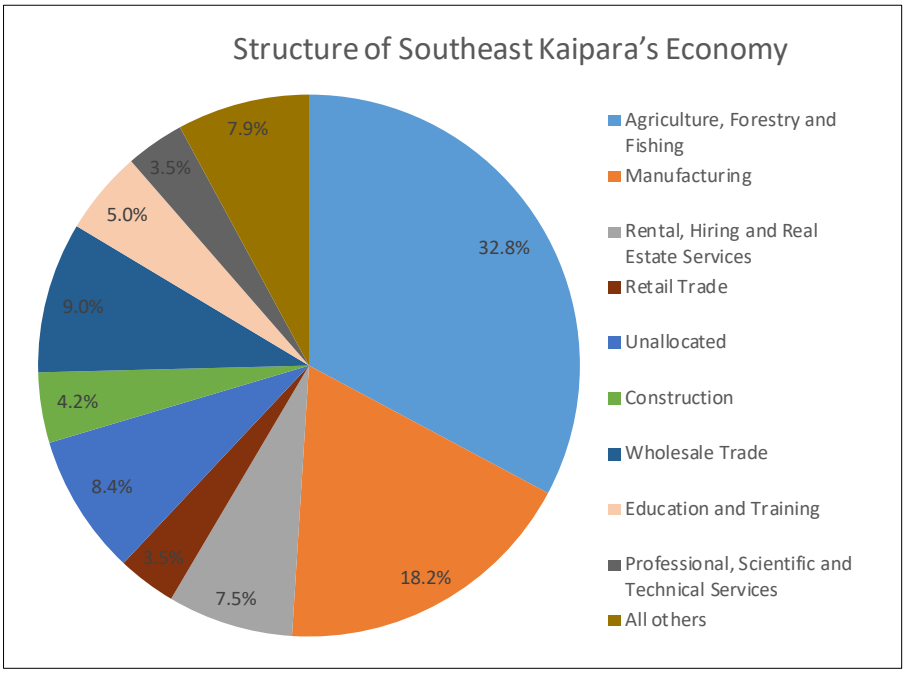

Figure 51: The contribution of different sectors to Southeast Kaipara's GDP in 2019 (Infometrics, 2020a).

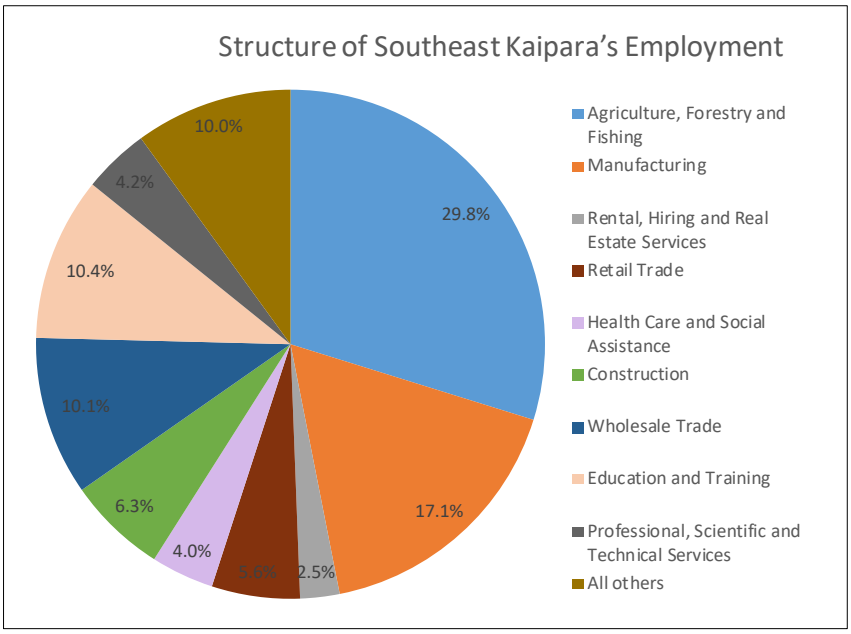

Figure 52: The contribution of different sectors to the number of filled jobs in Southeast Kaipara in 2019 (Infometrics, 2020a).

Dargaville township, which acts as a service centre to the wider Northwest Kaipara area had a more diversified economy with a stronger focus on manufacturing, which accounted for 14.4% of GDP and 12.2% of filled jobs in 2019 (see Figures 53 and 54) (Infometrics, 2020a). This reflects the presence of Silver Fern Farms' meat works together with the many smaller fabricating and processing manufacturing businesses present in the town. As a rural service centre, and with many of its manufacturing businesses supporting the primary sector (e.g. the meat works), Dargaville's fortunes are closely linked to the primary industries it services. Drought years have been seen to result in less commercial activity in Dargaville due to farmers having less money to reinvest in their businesses and rural workers having less disposable income. This trend is likely to also be true of other rural Kaipara towns such as Maungaturoto, however detailed data for these towns is not available.

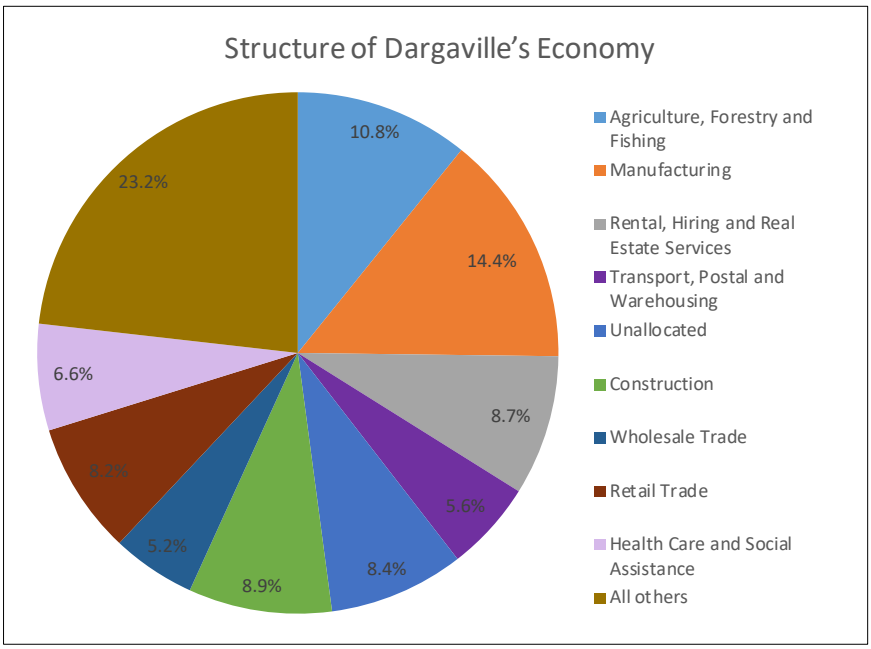

Figure 53: The contribution of different sectors to Dargaville's GDP in 2019 (Infometrics, 2020a).

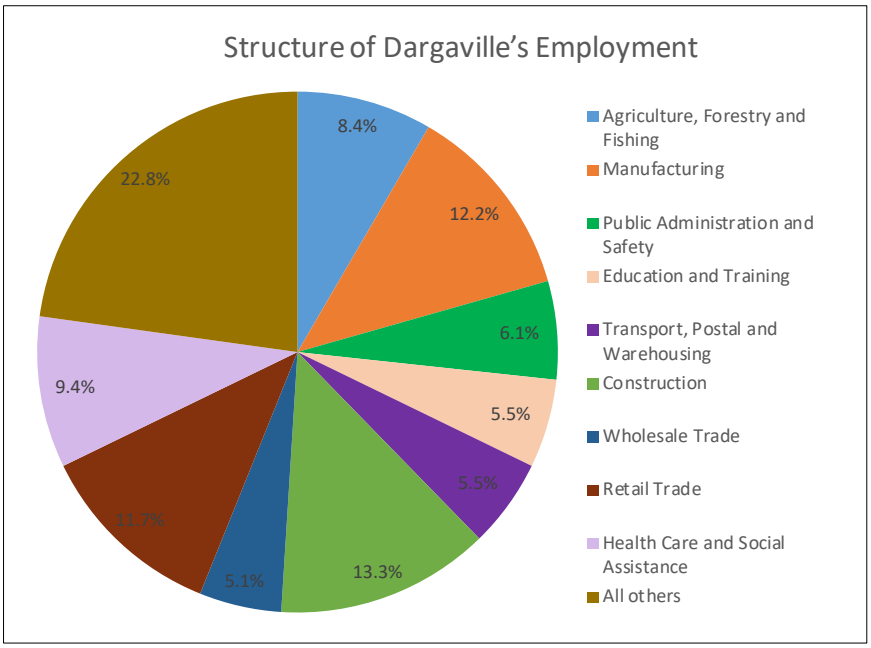

Figure 54: The contribution of different sectors to the number of filled jobs in Dargaville in 2019 (Infometrics, 2020a)

By contrast, Mangawhai has little economy of its own with only 1,099 filled jobs in 2019 for a usually resident population of 5,620 people (Infometrics, 2020a). This reflects the large number of retired people who have chosen to make Mangawhai their home, as well as the increasing number of working age people who commute to Auckland for their employment. Unsurprisingly for a fast growing seaside resort, Mangawhai's economy is primarily comprised of real-estate services (21.7% of GDP and 6% of filled jobs) and the construction sector (11% of GDP and 16.4% of filled jobs) (see Figures 55 and 56). Accommodation and food services were also important, accounting for 14.7% of filled jobs (Infometrics, 2020a).

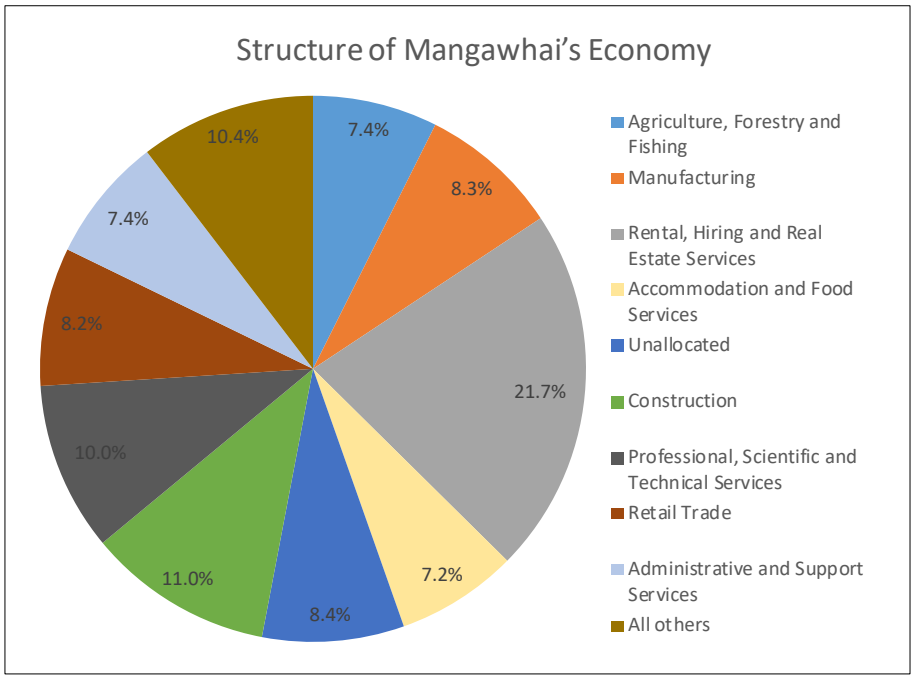

Figure 55: The contribution of different sectors to Mangawhai's GDP in 2019 (Infometrics, 2020a).

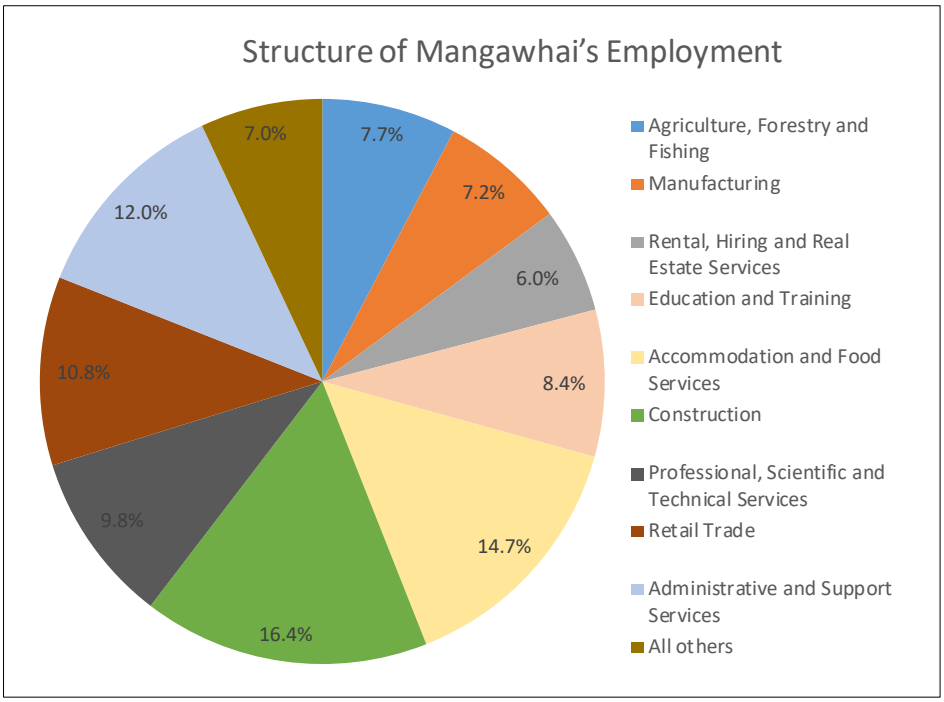

Figure 56: The contribution of different sectors to the number of filled jobs in Mangawhai in 2019 (Infometrics, 2020a).

Figure 57 on the next page further breaks down the contribution different industries make to Kaipara's economy. It reveals the importance of industries within the primary sector such as dairy (12.1% of 2019 GDP), sheep beef and grain farming (5.4% of 2019 GDP), forestry (3.4% of 2019 GDP) and horticulture and fruit growing e.g. kumara (3% of 2019 GDP). Dairy farming alone was worth $110.8 million to Kaipara's economy in 2019 (Infometrics, 2020a).

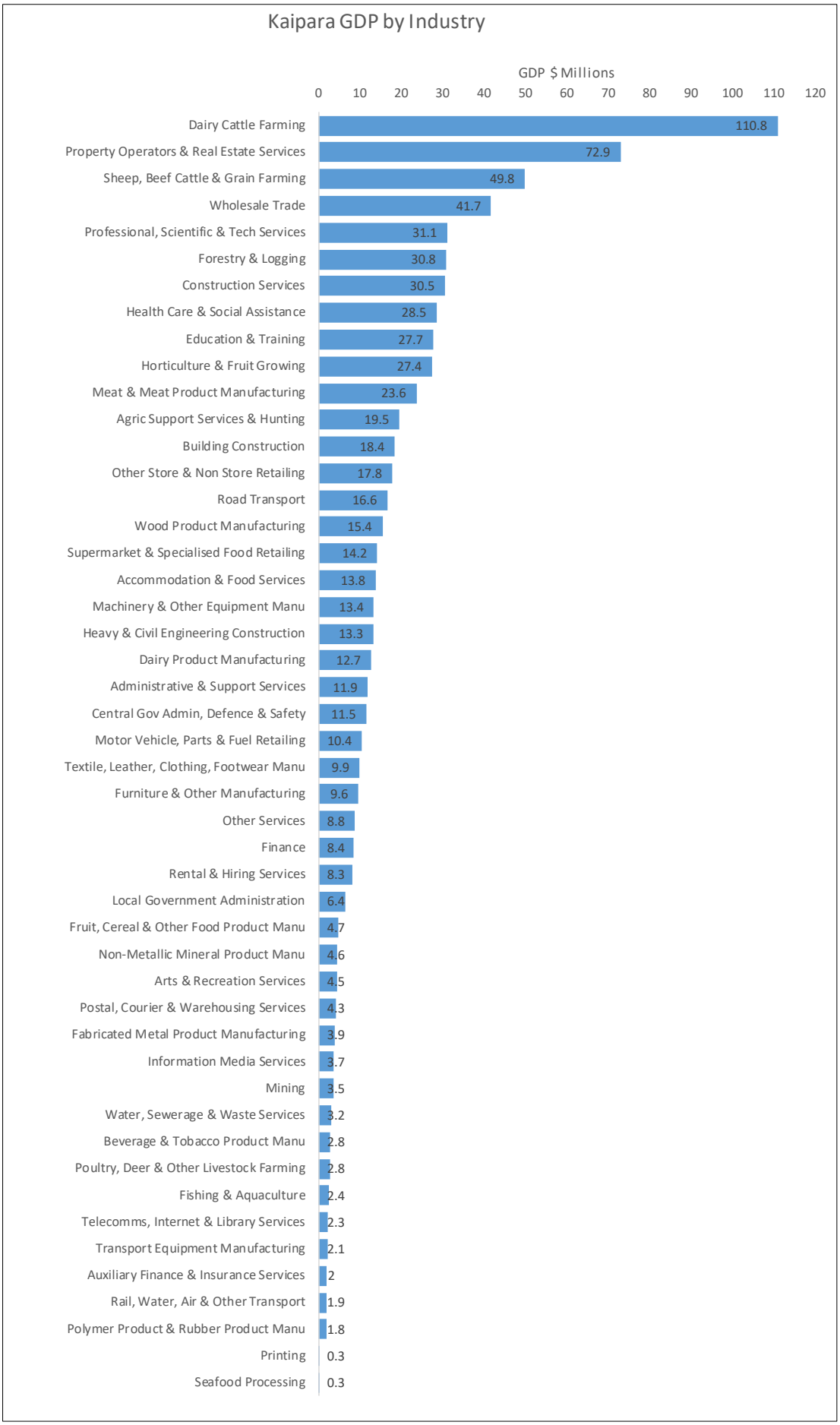

Figure 57: Contribution to Kaipara's GDP by industry, 2019 (Infometrics, 2020a).

Figure 58 shows which sectors of the economy contributed most to growing Kaipara's GDP. It shows that the top five industries that made the greatest contribution to GDP growth in Kaipara from 2014 to 2019 were; construction, manufacturing, professional/scientific/technical services, retail trade and wholesale trade (Infometrics, 2020a).

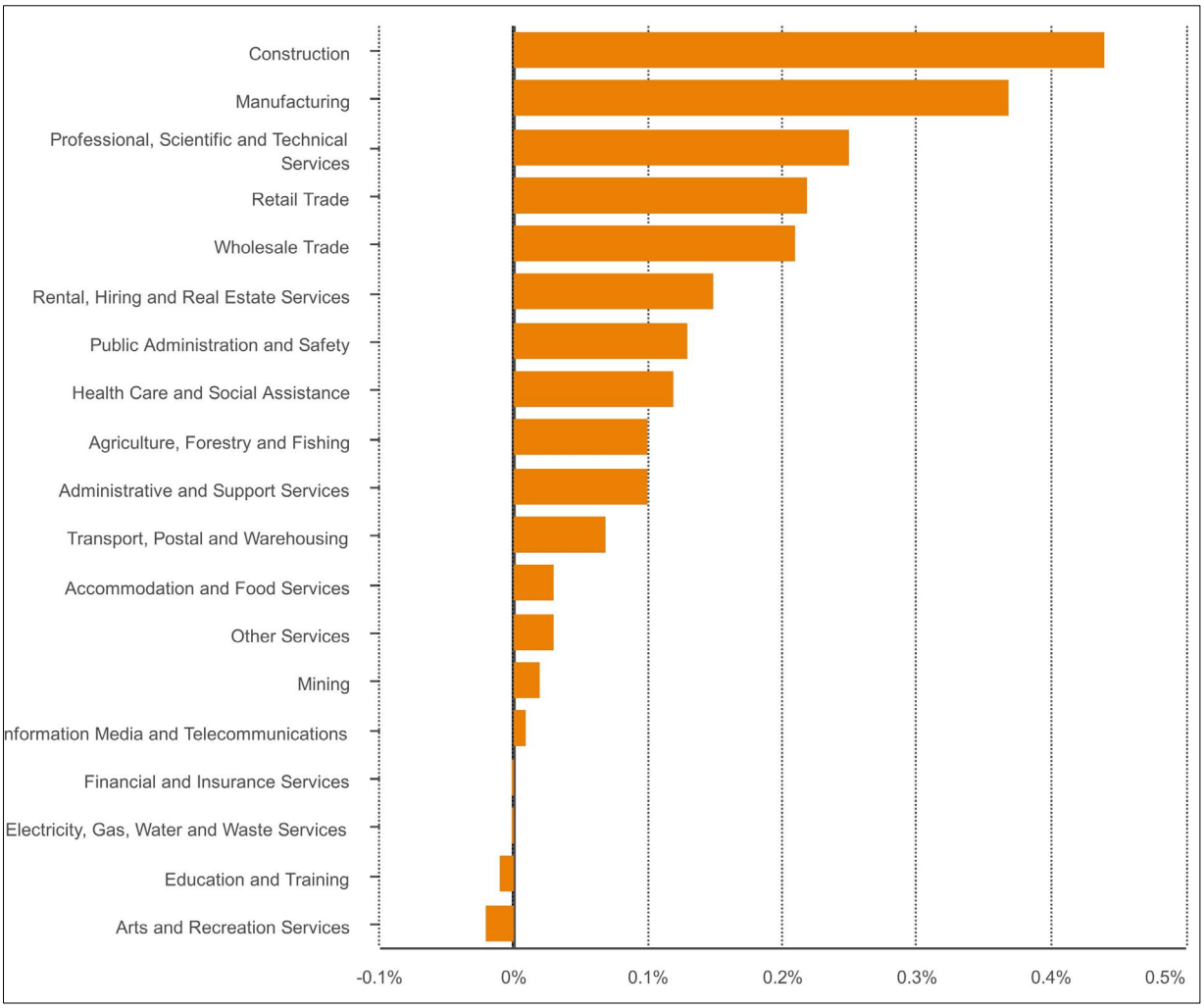

Figure 58: Contribution to GDP growth in Kaipara by industry from 2014 to 2019 (Infometrics, 2020a)

The industries which contributed most to employment growth in Kaipara over the period 2014 to 2019 were construction (+273 jobs), manufacturing (+155 jobs), professional, scientific and technical services (+107 jobs), wholesale trade (+85 jobs), administrative and support services (+79 jobs) and Health Care and Social Assistance (+78 jobs) (Infometrics, 2020a).

There were a total of 8,703 filled jobs in Kaipara in 2019, a 2.1% increase on the previous year and part of an ongoing growth trend as is shown in Figure 57 (Infometrics, 2020a). On average, the number of filled jobs in Kaipara grew 2.2% per annum over the five years to 2019 (Infometrics, 2020a).

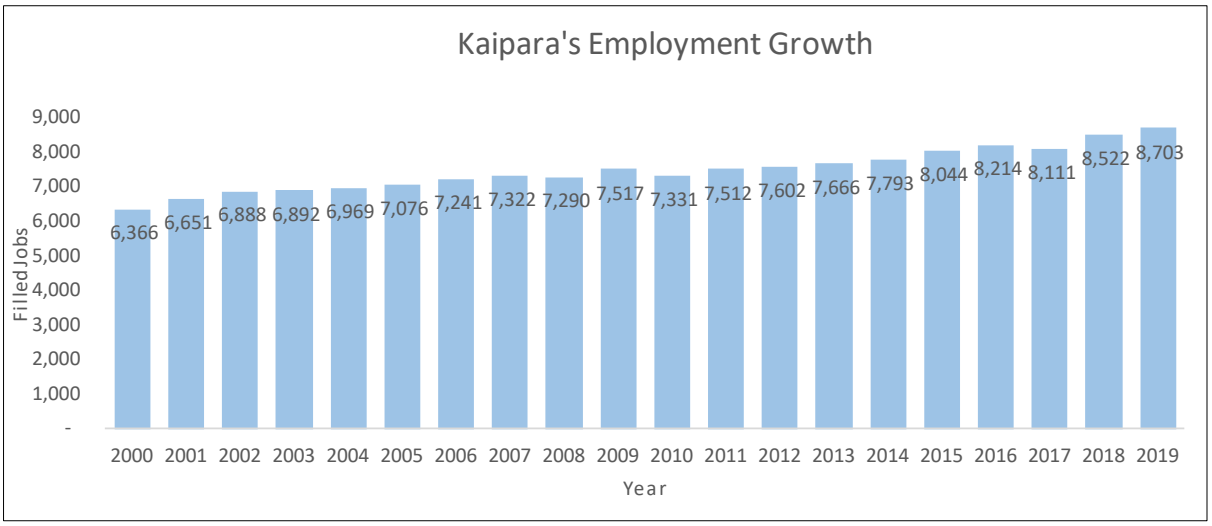

Figure 59: Number of filled jobs in Kaipara District from 2000 to 2019 (Infometrics, 2020a).

Dargaville's employment increased by 544 filled jobs between 2014 and 2019 while the surrounding Northwest Kaipara area saw a net increase of 76 filled jobs over the same period (Infometrics, 2020a). This employment growth coupled with strong population growth implies economic growth in the Dargaville/Northwest area. The top five contributors to Dargaville's employment growth over this period were agricultural support services (+71 jobs), health care and social assistance (+63 jobs), supermarket and specialised food retailing (+44 jobs), road transport (+43 jobs) and construction services (+40 jobs). The greatest contributors to job creation in Northwest Kaipara were horticulture and fruit growing (includes kumara and vegetable growing) (+58 jobs), building and construction (+45 jobs), sheep beef and grain farming (+44 jobs), non-road transport (+18 jobs), and wholesale trade (+13 jobs). The industries which lost the most jobs in Northwest Kaipara over the 2014 to 2019 period were dairy farming (-122 jobs), accommodation and food services (-16 jobs), education and training (-8 jobs), (Infometrics, 2020a).

The significant reduction in people employed in dairy farming represents continuing modernisation, consolidation and automation in this industry rather than a drop in production (Infometrics, 2020a). Between 2014 and 2019, the number of dairy herds in Kaipara District has decreased from 353 to 307, the number of dairy cows has decreased from 106,857 to 98,933 and total hectares in production has decreased from 48,340 to 45,205. Despite this, milk solids production has remained reasonably consistent over this period, averaging 31.7 million kg per annum. This trend of consistent output with decreasing input has been in motion since at least 1999 (the length of the data set) (Infometrics, 2020a).

Mangawhai's local employment increased by 321 filled jobs over the period 2014 to 2019 despite population growth of 2,020 people over the same period (Infometrics, 2020a). This further highlights the importance of retirement, remote working and commutability to this town's growth, with relatively few jobs available locally compared to the population. The top five industries which contributed most to job creation in Mangawhai were administrative and support services (+72 jobs), construction services (+59 jobs), building and construction (+56 jobs), professional, scientific and technical services (+47 jobs), and fruit, cereal and other food product manufacturing (+35 jobs) (Infometrics, 2020a).

Southeast Kaipara's employment reduced by 34 filled jobs between 2014 and 2019 (Infometrics, 2020a). Southeast Kaipara had a total of 2,333 filled jobs in 2019. The top five industries which added the most to jobs were wholesale trade (+56 jobs), professional, scientific and technical services (+25 jobs), wood

product manufacturing (+23 jobs), poultry, deer and livestock farming (other than dairy, sheep and beef) (+19 jobs) and sheep, beef cattle and grain farming (+19 jobs). In addition, textile/leather/clothing/footwear manufacturing and education and training each added 15 jobs. The industries in Southeast Kaipara which lost the most jobs were dairy farming (-116 jobs), horticulture and fruit growing (-73 jobs), agricultural support services (-24 jobs) and road transport (-23 jobs) (Infometrics, 2020a).

Employment growth in Kaipara is anticipated to be disrupted by the COVID-19 pandemic. Job losses are anticipated in the accommodation and food services and retail trade sectors particularly (Infometrics, 2020j).

5.5 Performance of Kaipara's economy

Kaipara's economy is anticipated to follow the national and global economy into recession in the wake of the COVID-19 pandemic and associated lockdowns (Infometrics, 2020g). Data available at time of writing shows economic activity in Kaipara beginning to fall but also reveals the district has underlying strengths that should allow it to weather the storm better than most. Kaipara's GDP declined by 7.2% in the June 2020 quarter compared to the same quarter in 2019. However, this was mild compared to the decline of 12.6% in the national economy (Infometrics, 2020g).

Kaipara's strong agricultural sector can be seen to be softening the downturn. The sector's status as an essential service allowed it to continue operating throughout the lockdowns. Just over 25% of Kaipara's workforce is employed in the primary sector, most of which was able to continue operating throughout the lockdown restrictions (Infometrics, 2020g). Overall, Infometrics estimates 58% of Kaipara's economy could operate at Level 4, and 81% at Level 3 – both higher than the national averages of 53% and 75%. The 2019-2020 dairy season is estimated to have contributed $221 million to the local economy, up $28 million from the previous season, despite drought conditions (Infometrics, 2020g). This pay-out together with good returns for other food exports has continued to support local economic activity.

This economic resilience is highlighted by spending in the district (Infometrics, 2020g). Marketview data shows card spending in Kaipara declined just 6.5% per annum in the June 2020 quarter – the fourth smallest decline among the two-thirds of territorial authorities Infometrics monitor. This hit to spending pulled annual spending growth down to +0.7% per annum, but this slower growth compares favourably to the -2.8% per annum decline in national spending. Aucklanders and other domestic tourists also contributed to this strong spending activity in Kaipara as they rushed to enjoy weekend road trips and local getaways immediately after lockdown (Infometrics, 2020g).

Building activity is also continuing to support the Kaipara economy with the June 2020 quarter recording the largest value of non-residential work consented since records began in mid-1995 (Infometrics, 2020g). New accommodation, education, and office projects worth a combined $17.5 million were consented in the June 2020 quarter. While this represents projects already in motion prior to the pandemic, Kaipara's pre-existing growth pressures and resilient economy suggest construction activity should likewise prove resilient (Infometrics, 2020g). Over the medium and long term, Mangawhai's continued growth and transition to a service centre, together with an influx of population to other areas of Kaipara, driven by an expanding Auckland population, are likely to sustain both residential and commercial construction activity.

Kaipara's tourism sector is also likely to prove more resilient than most, though will still decline. This is because international tourists only accounted for 11.4% of tourism spending in Kaipara prior to COVID-19 compared to 40.5% nationally (Infometrics, 2020m). Figure 60 shows the relative importance of domestic and international visitor spending to Kaipara's economy. Note that more recent data showing the evolving scenario of no international and only domestic visitor spending was not available at the time of writing. This chart reveals international tourism spending has remained reasonably consistent since 2009 whereas domestic tourism spending has shown strong growth (see Table 8).

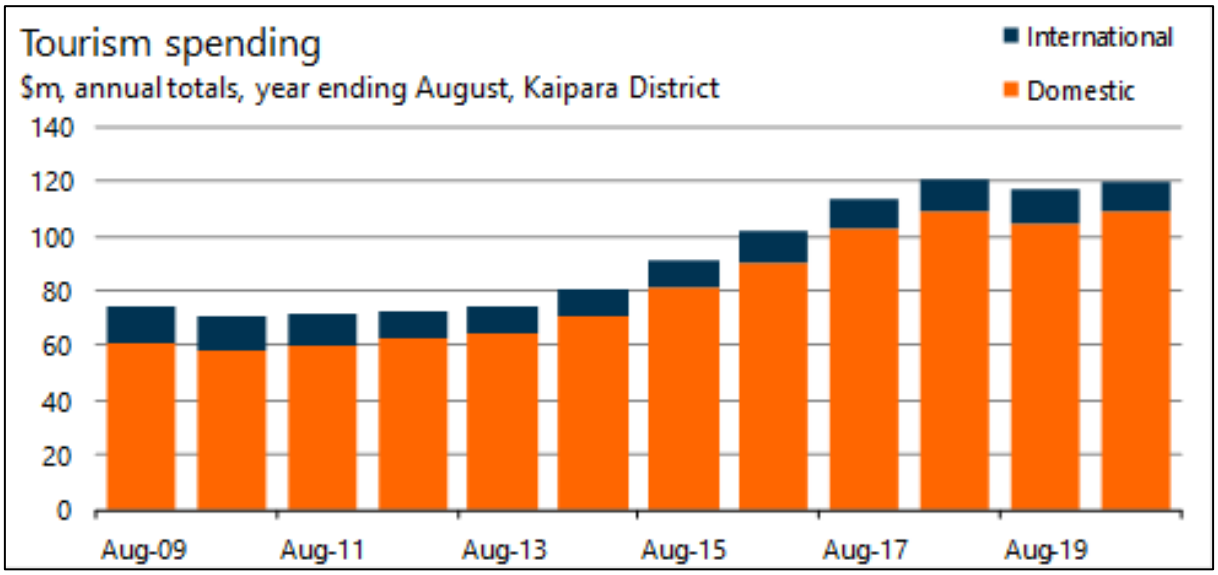

Figure 60: Annual visitor spending in Kaipara ($millions) (Infometrics, 2020l).

Table 8: Annual visitor spending in Kaipara ($millions) (Infometrics, 2020l).

Year ending	Domestic	International
Aug-09	61	13
Aug-10	58	12
Aug-11	60	11
Aug-12	62	10
Aug-13	65	9
Aug-14	71	10
Aug-15	81	10
Aug-16	91	11
Aug-17	102	11
Aug-18	109	11
Aug-19	105	12
Aug-20	109	11

Kaipara is also likely to benefit from additional visitors from Auckland due to the lockdown restrictions. Prior to COVID-19, Aucklanders only accounted for around 20% of New Zealand's domestic tourism spending despite accounting for around 34% of New Zealand's population and having higher average incomes. This suggests Aucklanders were more likely than most to holiday overseas. However, with the border closed, Aucklanders will need to find opportunities to holiday within New Zealand. The threat of further outbreaks and domestic travel restrictions also makes booking flights risky, while impromptu family road trips and weekends away in neighbouring regions require less forward planning and booking

commitment. Prior to COVID-19, visitors from Auckland already accounted for the single largest share of domestic tourism spending in Kaipara (46.1% or $50.2 million) (Infometrics, 2020m). Other areas of Northland were the second largest contributor (40.7% or $44.2 million) with other areas of New Zealand comprising the remainder (13% or $14.6 million). These figures highlight the importance of visitor experiences within driving distance, with Kaipara strategically placed to offer weekend getaways for the cities of Auckland and Whāngārei(Infometrics, 2020m). Not surprisingly given the above, total tourism expenditure in Kaipara only decreased 1.8% in the year to June 2020 compared to a decrease of 12.3% in New Zealand over the same period. Total tourism expenditure was approximately $116 million in Kaipara during the year to June 2020, down from $118 million the previous year (Infometrics, 2020g).

Despite Kaipara's relative resilience, the scale of the pending recession should not be downplayed (Infometrics, 2020g). Job losses are already rising with Kaipara experiencing a 44% per annum increase in government unemployment support in June 2020, taking the year-end change to just over 19% per annum. Between June 2019 and June 2020, 367 additional people in Kaipara were being supported by Jobseeker Support or the COVID-19 Income Relief Payment (Infometrics, 2020g).

Prior to the outbreak of COVID-19, the annual average unemployment rate in Kaipara District had been 4.3% in June 2019, down from 4.6% a year earlier (Infometrics, 2020a). The unemployment rate in Kaipara district had at that time been higher than in New Zealand (4.1%) but lower than Whāngārei (5.5%), Far North (7.3%) and Northland (6%). Over the last ten years Kaipara's unemployment rate reached a peak of 7.1% in March 2013 and reached its lowest point in a decade just prior to the onset of COVID-19. Figure 61 reveals Kaipara's unemployment rate is consistently lower than in other parts of Northland and typically sits near the national average. Unemployment rates across all areas of Northland can be seen to follow a similar trend to each other and the national average, suggesting trends in the wider economy are more important than local shocks (Infometrics, 2020a).

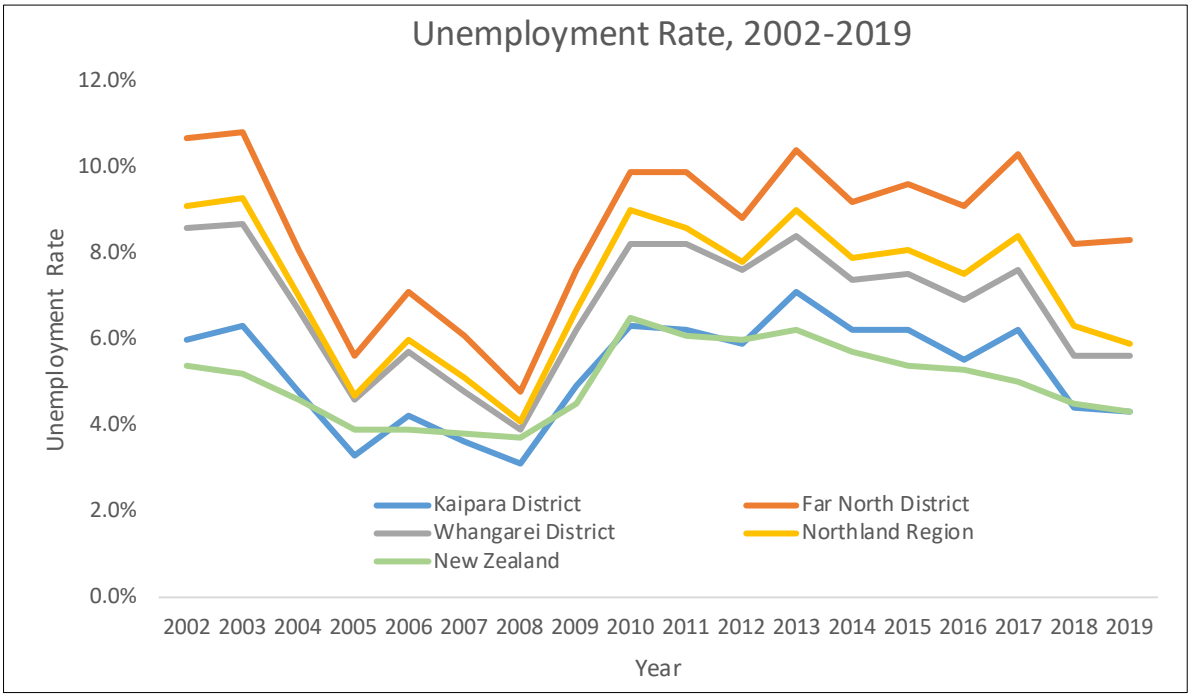

Figure 61: Changes in the unemployment rate from 2002 to 2019 (Infometrics, 2020a).

Once international trade and travel begin to return to normal (or reach a new normal), the factors that contributed to Kaipara's economic success prior to 2020 are likely to once again stimulate economic growth. Demand for Kaipara's produce, population growth and interest from tourists in exploring the Kauri Coast are therefore likely to lead to further expansion of Kaipara's economy over the remainder of the 2021-2051 planning horizon, once the COVID-19 economic recovery is overcome.

Graphing the annual percentage change in GDP reveals Kaipara's economy experiences greater ups and downs than the regional and national economy (Infometrics, 2020a). Figure 62 shows how the annual rate of GDP growth has fluctuated in Kaipara, Northland and New Zealand between 2001 and 2019. Kaipara's GDP fell by as much as -5.8% in 2008 and increased by as much as 7.7% in 2004 and 6.6% in 2012. By contrast, Northland and the national economy had more moderated ups and downs. Both saw their greatest year on year GDP increase in 2004, an increase of 5.8% and 4.6% respectively. The greatest year on year decrease for both Northland and the national economy came off the back of the global financial crisis in 2009, with GDP falling -1.1% and -1.2% respectively (Infometrics, 2020a). This indicates that Kaipara can go from strong growth to weak or no growth in a very short cycle.

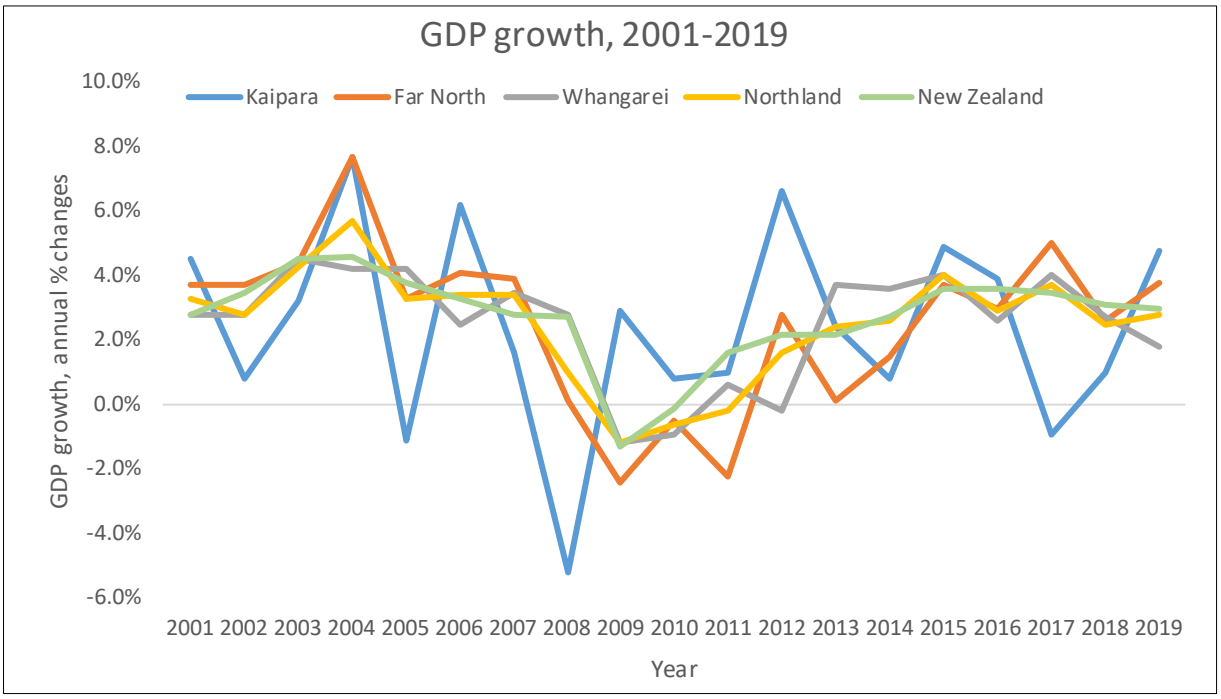

Figure 62: Year on year changes in the rate of GDP growth in Kaipara, Whāngārei, Far North, Northland and New Zealand (Infometrics, 2020a).

A comparison of Kaipara's GDP to the number of employed persons in the district, reveals Kaipara has lower productivity per worker than the national average (Infometrics, 2020a). Productivity can be measured using GDP per employed person and is a way of describing efficiency of production. While Kaipara's productivity has improved over time (from $91,942 of GDP per worker in 2000 to $104,997 in 2019) it has consistently remained below the national average (which increased from $100,421 per worker in 2000 to $117,134 in 2019). Kaipara's productivity sits near the Northland average, between that of Far North and Whāngārei districts (Figure 63).

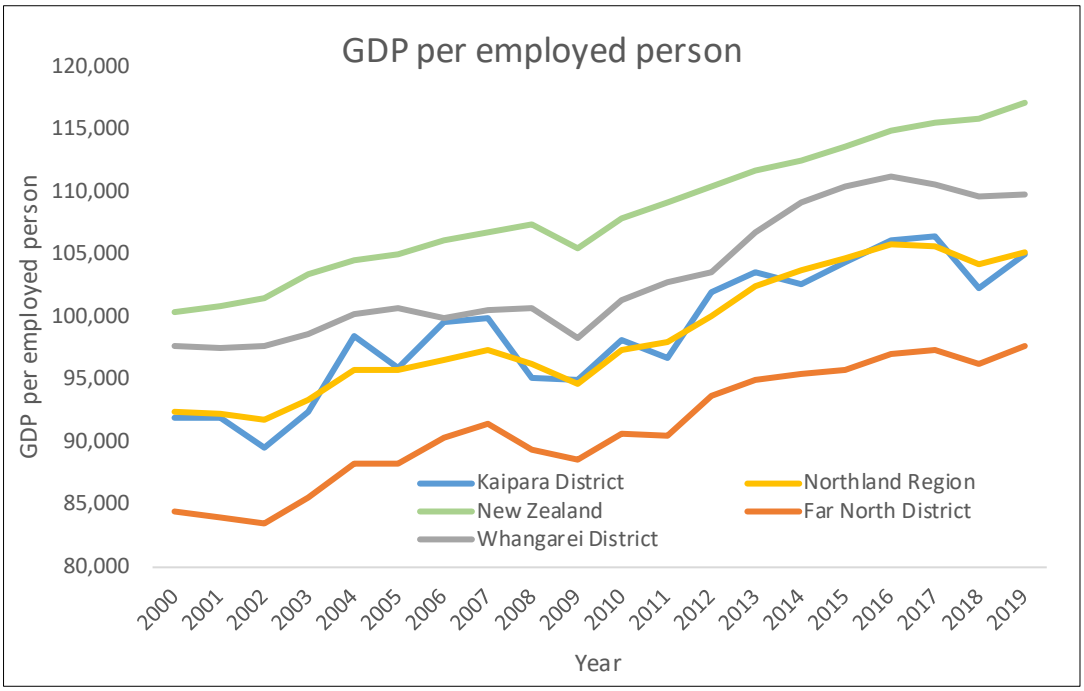

Figure 63: Changes in GDP per employed person between 2000 and 2019 (Infometrics, 2020a).

Overall productivity is influenced by a number of factors such as labour and production inputs (e.g. machinery, technology and land) as well as the presence of any highly productive industries (e.g. mining for high value minerals) in the district. Kaipara's under performance could therefore be because of insufficient investment in plant and machinery rather than a reflection on the quality of its workforce.

It can further be seen that Kaipara's lessor productivity is not restricted to a single sector. As shown in figure #, only Kaipara's agriculture, forestry and fishing sector, accommodation and food services sector and administrative and support services sector were more productive than the national average. This means there may be opportunities for Kaipara to lift its GDP by improving the productivity of its industries.

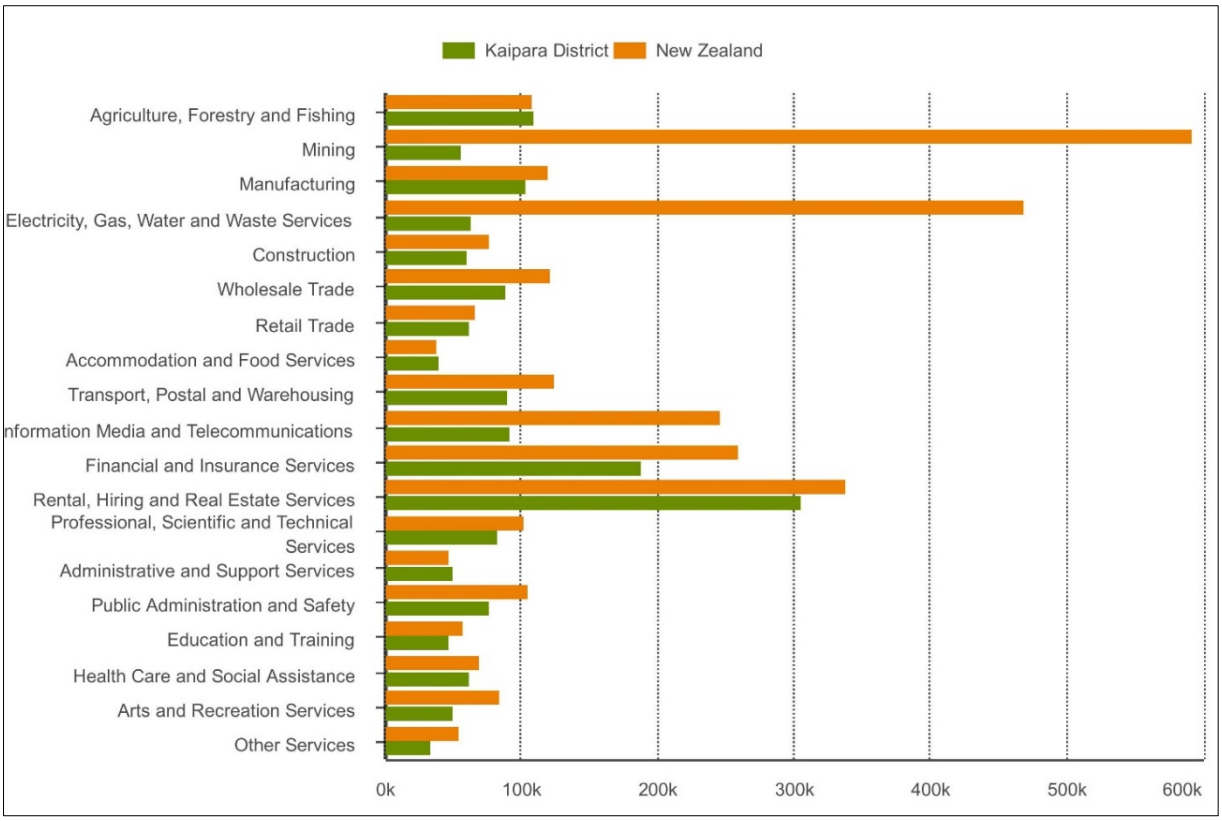

Figure 64: Productivity by industry as measured by GDP per filled job in 2019 (Infometrics, 2020a).

Over the long term, shocks affecting the primary sector (particularly the dairy sector) and the rate of population outflow from Auckland will continue to be the primary drivers of Kaipara's economic performance. Opportunities to diversify and de-risk the district's primary sector, as well as lifting productivity will help to reduce shocks and improve performance.

Some opportunities are already being progressed, including Te Tai Tokerau Water; a project to construct community scale water storage in the Dargaville and Te Kopuru areas, as part of a Provincial Growth Fund (PGF) funded project. This project will see water harvested during peak flows and used to de-risk and expand Kaipara's primary sector. Another PGF funded initiative, Kaipara Kai, is being overseen by Kaipara District Council and aims to diversify Kaipara's primary sector into additional, higher value crops. This is intended to help make Kaipara's economy less vulnerable to market shocks affecting any one sector. In addition, the government's COVID-19 Response and Recovery Fund is funding the improvement of stopbanks in the Te Kopuru and Raupo areas to better protect productive land from flooding. Collectively, these initiatives are anticipated to contribute to de-risking and enhancing Kaipara's economy.

6 Infrastructure

Infrastructure provision is a core function of local authorities and, together with a conducive regulatory framework, is often the key contribution for councils to encourage and facilitate economic development. In Kaipara, land drainage schemes protect large areas of productive land while infrastructure such as water and wastewater are key for processing and manufacturing. Roads, railway lines 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.

However, providing the infrastructure communities need to thrive is becoming more challenging. Gross debt levels in councils continue to increase at the same time as population pressures and ageing infrastructure come together to stretch councils' ability to fund its services (Infometrics, 2019e).

Infometrics' analysis shows the majority of local government gross debt levels increasing over the next decade, with a focus on renewal of existing infrastructure rather than investing to accommodate growth (Infometrics, 2019e).

Right across New Zealand, local government needs to address infrastructure deficits after decades of under-investment. Planning to address this deficit will not be easy, or cheap, but is critical to aiding growth and fixing New Zealand's housing issues (Infometrics, 2019e).

The current environment of needing to respond to the impacts of COVID-19 presents both challenges and opportunities for infrastructure. On the one hand, there is pressure to stimulate the economy through greater spending on infrastructure. To this end, central government have signalled they will greatly increase spending on infrastructure, including supporting local government to fund additional "shovel ready" projects. On the other hand, Council's revenue will be reduced as there is pressure to keep rates affordable.

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 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 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 1,572km of local roads of which 71% or 1,119kms are unsealed and 450kms 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 Whāngārei

(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 Whāngārei. 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 Whāngārei, 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 Whāngārei 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 bypass route through the Dome Valley is being planned, however there are currently no plans to bypass the Brynderwyn Hills (AECOM, 2019).

From Whāngārei, 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 Whāngārei.

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 recently been upgraded to cope with the increasing freight volumes going to the port. In addition, the government has announced it will spend $692 million upgrading the section of State Highway 1 between Whāngārei and Northport to four lanes. This section of State Highway 1 also connects State Highway 15 to Northport and is subject to high traffic volumes.

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 65.

Figure 65: 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 Whāngārei 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). For example, the 2015–18 National Land Transport Programme Northland forecast $460 million investment for Northland roads, walking and cycling; including some $31 million for road maintenance and operations (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).

At a local level, the Government, through the PGF, have granted $21.0 million to assist Kaipara District Council with upgrading its roads. This includes upgrading bridges to accommodate newer heavier trucks (known as 50max or high productivity motor vehicles), improving unsealed roads and sealing currently unsealed sections of Pouto Road. These upgrades are anticipated to improve connectivity within the district, particularly to rural areas such as Pouto.

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 Whāngārei 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 66 together with the state highway network. Collectively, the rail and state highway network form the region's core land transport network.

Figure 66: 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. 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. Furthermore, the NAL now only operates between Auckland and Fonterra's dairy factory at Kauri (just north of Whāngārei). The remainder of the line to the Far North is currently unused, however is in the process of being reconditioned and reopened, with a new container terminal and road-rail interchange to be built at Otiria. Services to the Far North are therefore anticipated to be restored and enhanced soon. The isolated section of railway between Kawakawa and Opua operates as the Bay of Islands Vintage Railway.

A report released by the Ministry of Transport revealed Northland's rail system is currently not fit-for-purpose to meet today's requirements for moving people or freight and has been maintained in a state of 'managed decline' for some years (AECOM, 2019). The network is no longer port-connected since Whāngārei'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 (AECOM, 2019).

This 'managed decline' meant that businesses no longer saw rail as a feasible way of moving freight to, from or within Northland (AECOM, 2019). Consequently, just over 110,000 tonnes of freight was moved on the NAL in 2019, with the majority of this being processed dairy volumes from Northland, along with logs from northern Auckland (AECOM, 2019). This is just 1.4% of Northland's total freight (AECOM, 2019).

As such, the region is almost completely dependent on road transport for moving freight (AECOM, 2019). The result of this has been an increase in heavy truck movements on the main State highway corridors within Northland, and to/from Auckland (AECOM, 2019).

Given this neglect, the Ministry of Transport considered it likely that rail services within Northland would have ceased all together without a substantial investment commitment within the next five years (AECOM, 2019).

Since these findings were released, the Government, announced it would invest $94.8 million from the PGF to maintain and improve the NAL between Swanson and Whāngārei (New Zealand First, 2019). The funding will see about 54km of the 181km track replaced or upgraded; tens of thousands of sleepers replaced, tens of thousands of cubic metres of ballast added; ageing bridges replaced; overdue maintenance work on tunnels carried out; ditches cleared and embankments stabilised (New Zealand First, 2019). Further funds have since been allocated to this project to also include a programme of works that will see tunnel heights increased to allow the movement of high-cube containers to and from Auckland. Previously, the restricted heights of the tunnels meant Northland's exporters could not use rail to move modern high-cube containers to and from Auckland (AECOM, 2019).

This upgrade programme, presently underway, is the largest upgrade and investment in Northland's rail network in more than 50 years.

While this funding will help to lift train speeds and assist with moving more freight to rail; to 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). Designation (DNZRC 2) for the Oakleigh to Marsden Point Line was approved following the relocation of the port, and the Government has recently announced it will spend $40 million purchasing 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 only oil refinery, Refining New Zealand, has its own wharves adjacent to Northport where it receives shipments of crude oil from overseas and exports refined petroleum products to other New Zealand ports. In addition, Refining New Zealand 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. Northport exported approximately 3,250,000 revenue tonnes in the year ended June 2018. Northport's exports are mostly logs (approximately 85% in the year ended June 2018). The remaining exports were made up of woodchip, laminated veneer lumbar, sawn lumber, veneer, tri-board, kiwifruit and steel (New Zealand Government, 2019A).

Northport's import volumes are much lower than its export volumes, at 311,000 tonnes in the year ending June 2018. In this period, Northport's imports were made up of palm kernel (46%), coal (24%), gypsum (17%), distillers dried grain (7%) and fertiliser (5%).

With its planned and proposed developments (including investing in cranes), Northport estimates it could potentially have the capacity to handle up to 400,000 Twenty-foot Equivalent Unit (TEU) containers a year, about the same as the Port of Lyttelton (AECOM, 2019).

However, if Northport is to increase its freight handling in this way, the Port will require a rail link (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). A rail connection from Marsden Point to the North Auckland railway line would therefore be a critical pre-condition of Northport's expansion (AECOM, 2019).

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 TEU) (New Zealand Government, 2019A). Port of Tauranga accounted for 35% of New Zealand's total export volume in the year ended June 2018. In addition to containers, Port of Tauranga handles bulk goods such as logs. Approximately 55% of Port of Tauranga's exports are of wood and paper products, the majority of which is logs. Dairy is another key export for Port of Tauranga, accounting for approximately 12% of its exports (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 (TEUs). 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 67 below compares the different exports and imports of key New Zealand ports, including the Upper North Island Ports.

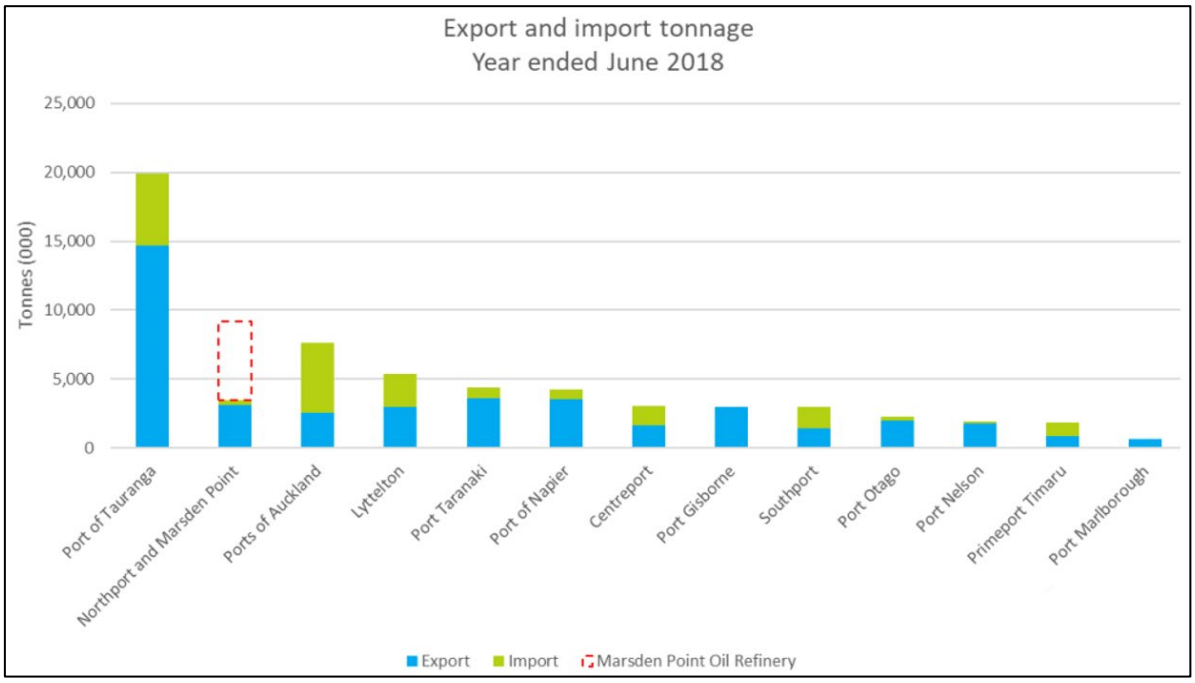

Figure 67: Comparison of export and import tonnage through New Zealand's key ports for the year ended June 2018. Note: the graph includes the 5,425,000 tonnes of import and 271,000 tonnes of export fuel oil products through Marsden Point Oil Refinery as a red dotted line (New Zealand Government, 2019A).

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, 2019C; Sapere, 2020).

In response to this issue, the government established the Upper North Island Supply Chain Strategy Working Group (the Working Group) to undertake a feasibility study on the options for moving the Ports of Auckland (New Zealand Government, 2019C). The Working Group's final report was considered by Cabinet in December 2019. This report recommended the Ports of Auckland be progressively closed, and that Northport be developed to take over much or all of Auckland's existing and projected future freight. This included recommendations for a rejuvenated North Auckland rail line and spur to Northport, and a new inland freight hub in northwest Auckland to complement and be connected to Metroport in the south (New Zealand Government, 2019C).

Under this scenario, Port of Tauranga would proceed with its existing expansion plans to accommodate growth while Auckland's cruise ship terminal would be modernised and the Waitemata Harbour would become a purely commuter, tourism and recreation harbour (New Zealand Government, 2019C).

In addition to the Working Group's analysis, the government also commissioned a report by independent consultants Sapere on the options for relocating the Port of Auckland's freight operations (Sapere, 2020). The report by Sapere also recommended relocating the Ports of Auckland. However, it favoured the development of a new port on the Manukau Harbour due to its proximity to the Auckland market and the existing road, rail, airport, industrial and inland port infrastructure in South Auckland. This option would see the construction of a new port on a man-made island in the Manukau Harbour, connected to the road and rail network via a bridge/causeway. A significant amount of dredging would also be needed to form a channel through the harbour entrance (Sapere, 2020).

Due to the need to focus on the impacts of COVID-19, the government has delayed setting policy direction on the future of the Ports of Auckland until 2021.

If the Ports of Auckland's freight handling were to shift to Northport (as recommended by the Working Group), Northport would emerge as one of two strategic ports (together with Tauranga) servicing the Auckland and Upper North Island area (New Zealand Government, 2019C). Conversely, if such a decision is not made but a rail link is nonetheless provided to Northport, economic factors alone will likely lead to a gradual shift of freight handling to Northport (New Zealand Government, 2019C). This would see Northport as one of three strategic ports (together with Tauranga and some form of Ports of Auckland, be it in its current location and capacity, in a reduced capacity or as an emerging Manukau Harbour port). Either scenario would result in a high level of economic development for Northland and would attract existing Auckland industry and businesses to relocate to Northland (AECOM, 2019; New Zealand Government, 2019C). In addition, the development of the state highway and rail networks to service an expanded Northport would result in a much more connected Northland. All this would have a high impact on the Northland community, particularly the already fast growing areas of Waipū, Mangawhai, Kaiwaka and Maungaturoto. 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.

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

The airport is currently certified to take aircraft of around 50 seat capacity. Apart from the services provided by air line 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 has a life-span of only 10 to 15 years. Whāngārei District Council is currently considering options for where a new Whāngārei airport could be located.

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 recently been upgraded with a new $4.75 million 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.

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.

6.2 Electricity

In 2017, 82% of New Zealand's electricity came from renewable sources (MBIE, 2018). New Zealand's renewable electricity percentage in 2017 was the third highest in the OECD behind Iceland and Norway (MBIE, 2018).

Hydro generation typically provides 55% to 60% of New Zealand's electricity supply (MBIE, 2018). However, New Zealand is unlikely to be able to develop additional largescale hydroelectricity supply due largely to a lack of social license for construction of new dams. There may still be opportunities for construction of smaller hydroelectricity schemes.

In 2018, electricity generation from geothermal accounted for just under 20% of New Zealand's total electricity supply (MBIE, 2018). Most of New Zealand's installed geothermal generation (about 1,035 MW) is situated in the Taupo Volcanic Zone, and another 25MW is installed at Ngawha in Northland. Geothermal capacity is increasing with capacity at Ngawha increasing from 25MW to 53MW in 2021 (MBIE, 2018).

Wind power is also making a significant contribution (MBIE, 2018). In 2017 there were 17 wind farms operating in New Zealand, comprised of 490 turbines with a total capacity of 690MW (MBIE, 2018). 2017 was not a great year for wind generation. While wind provided over 5% (2,178GWh) of electricity supply in 2017, this was down 5% on the 2016 level and down 7% on the 2015 level. Generation from wind farms is dependent on the amount of wind and that can vary day to day and year to year (MBIE, 2018).

Solar (photovoltaic cells) remain a small contributor to New Zealand's electricity generation providing less than 0.2% of total electricity (MBIE, 2018). 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, 2018). Photovoltaic cells are becoming increasingly popular for individual household use but are unlikely to contribute greatly to New Zealand's total electricity demands.

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 (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.). This highlights the value of geothermal power generation as it is a renewable source and not dependent on the weather. The growth in geothermal baseload generation has already resulted in the replacement of some fossil fuel baseload generation. Furthermore, Genesis Energy announced in early 2018 that it would stop using coal at its Huntly Power Station by 2030, with coal not being used in normal market conditions from 2025 onwards. The plant can instead be fired by natural gas which has a lower carbon footprint (MBIE, 2018).

In July 2020, Rio Tinto announced the planned wind-down of operations and eventual closure of New Zealand's Aluminium Smelter (NZAS) located on Tiwai Peninsula, across the harbour from Bluff in Southland. Closure is presently scheduled for August 2021, however both the Government and Meridian Energy have signalled a desire to work with Rio Tinto to keep the smelter operating, at least for a few more years. It is therefore uncertain exactly when the smelter will close, however its long term operation looks unlikely given falling prices for aluminium even prior to COVID-19. 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.

In terms of local generation, there are two power stations connected directly to the local distribution network which supplies power to the Kaipara and Whāngārei districts. These are Northpower's 5MW Wairua hydro power station and Trustpower's 9MW diesel powered peaking plant. In addition, as at December 2017 there were approximately 649 small, privately owned solar photovoltaic generators (average installed capacity 3.7kW) connected to the local network (Northpower, 2018).

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, 2018).

The distribution of electricity from the national grid to individual homes and communities is undertaken by Northpower in the Whāngārei 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 6,380km of overhead lines and underground cables, including 3,700km of high voltage lines and cables (Northpower, 2018).

Northpower takes electricity from the national grid at three substations; Bream Bay, Maungatapere and Maungaturoto, referred to as "grid exit points" as well as from the Wairua hydro power station and Trustpower's diesel peaking plant as mentioned previously (Northpower, 2018). 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 65, it comprises regional substations and zone substations interconnected by 110kV, 50kV and 33kV lines and cables (Northpower, 2018).

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, 2018).

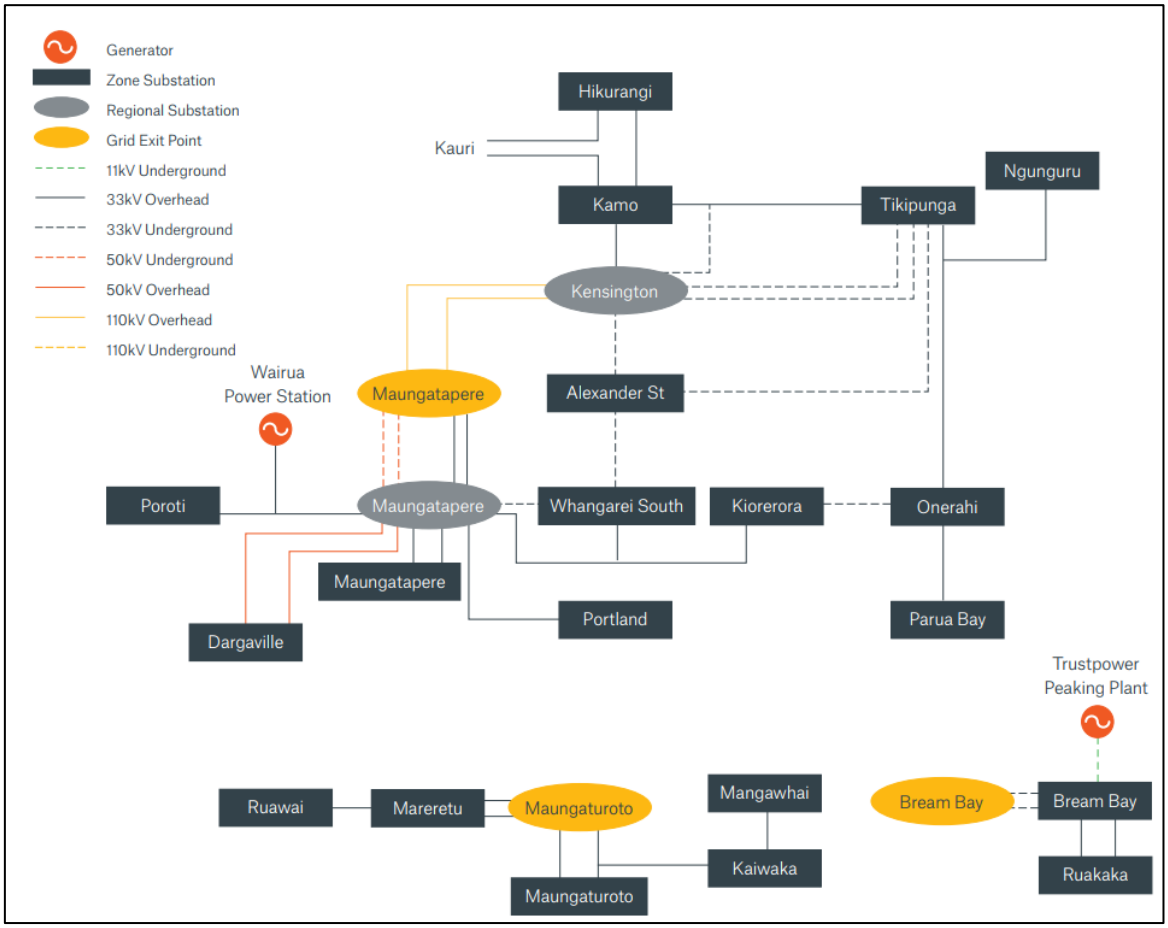

Figure 68: Northpower sub-transmission network (Northpower, 2018).

Figure 68 shows the Northpower distribution area and geographic location of zone substations (Northpower, 2018). Most remote zone substations are fed by a single 33kV line with reasonable back-feeding capability on the 11kV network. Where back-feeding capacity is not adequate, mobile generation is used for voltage support and Northpower own a 500kVA purpose designed mobile generating system (including transformer) for this purpose (Northpower, 2018).

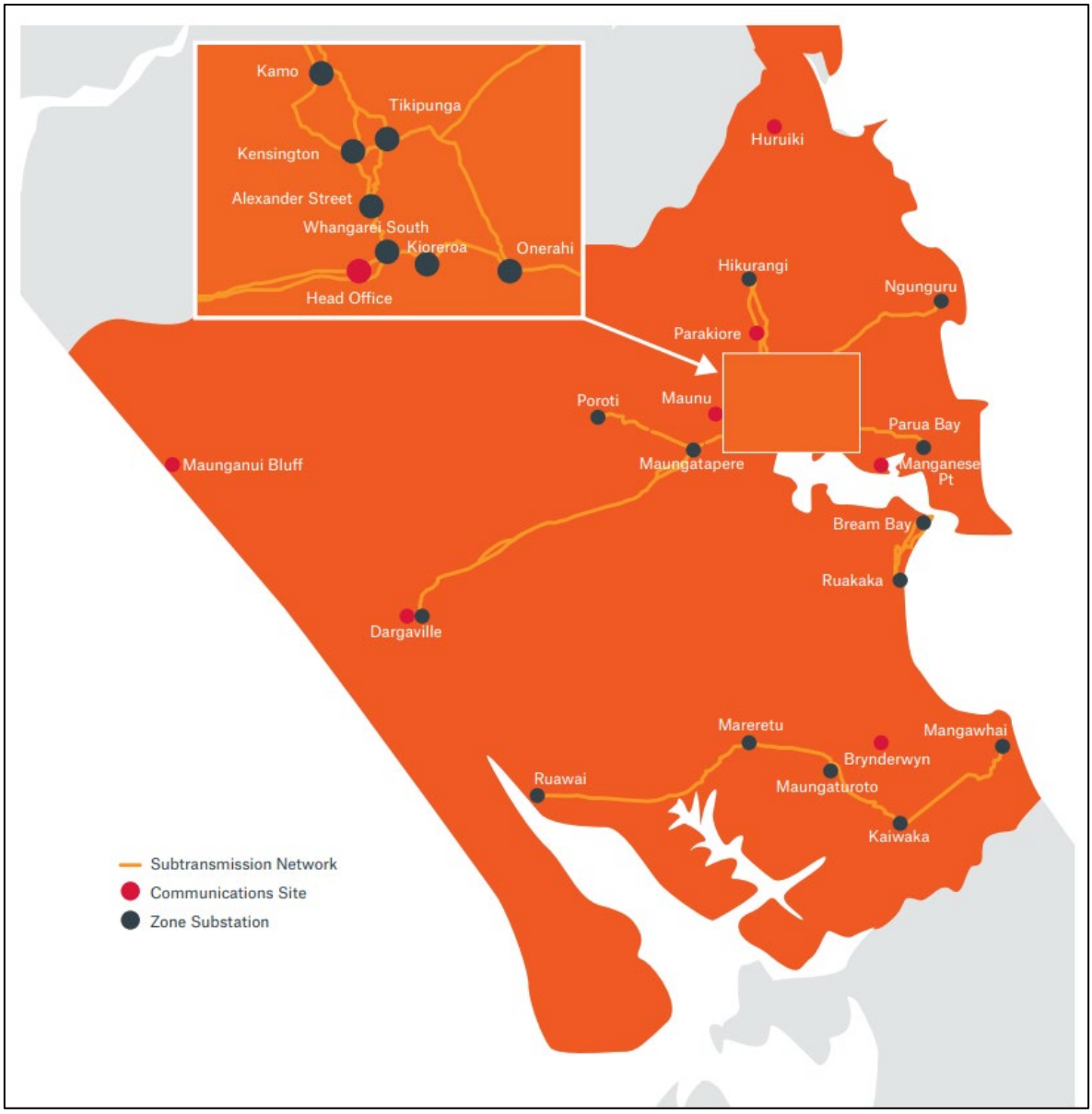

Figure 69: Northpower sub-transmission network, site locations (Northpower, 2018).

With the exception of a number of large customers supplied directly at 33kV, electricity is distributed to customers via 94 high voltage (11kV) feeders emanating from the zone substations (Northpower, 2018). Some customers are supplied directly at 11kV but the majority are supplied via 11,000/415V distribution transformers (either pole or ground mounted) (Northpower, 2018).

The Northpower low voltage (LV) network is a mix 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. In most cases this will be from poles or pillars near property boundaries (Northpower, 2018).

Over the past few years, Northpower's network has absorbed increases in connections and in demand (Northpower, 2018). The network peak demand forecast (Figure 70) shows continuing linear growth at a rate of approximately 1.5% per annum. The steady increase is driven largely by residential growth into areas around Whāngārei (Northpower, 2018).

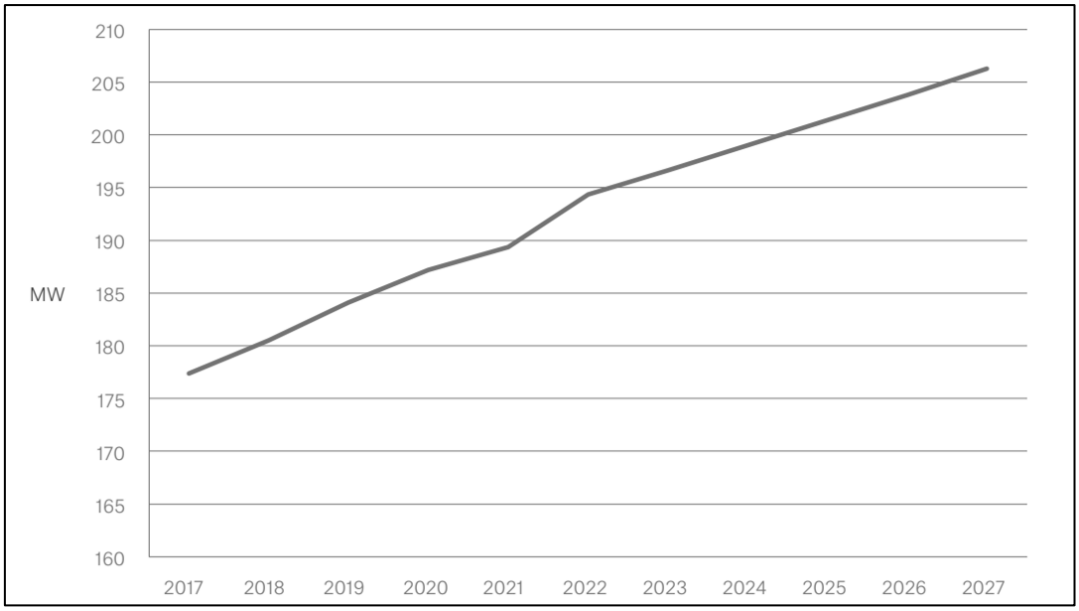

Figure 70: Northpower ten-year network load forecast 2017-2027 (peak demand) (Northpower, 2018).

Catering for this ongoing growth is a critical element of Northpower's role in supporting growth in the Northland region (Northpower, 2018). The network is now at a point where there is a need to lift investment to ensure an ongoing secure supply, including the need to build three new zone substations and maintain security through construction of new trunk feeders (Northpower, 2018). The cost of these upgrades will need to be passed on to consumers.

The weighted average domestic electricity price in Northland was 37.1c/kW in May 2020. This is a 0.1c/kW fall since February but is 0.3c/kW (1%) higher than in May 2019 (NRC, 2020). During the past five years, the average domestic electricity price in Northland has risen by 2.9% per annum. This is faster than the national annual average increase of 1.7% per annum over the same five-year period. Assuming 7100kW of power is used per year, the current price equates to an annual household power bill of $2,644. This is 21% higher than the national average of $2,186, equivalent to an additional $8.79 per week. (NRC, 2020).

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). Whāngārei'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, 2020).

The Government has since chosen Northpower Fibre to build UFB fibre networks in 12 more towns throughout the Kaipara and Whāngārei districts between April 2017 and the end of 2021 (Northpower, 2020). This will make another 9,000 Northlanders able to connect. Fibre optic broadband infrastructure has now been installed in Dargaville and areas of Mangawhai and Hakaru. The service is presently being expanded with Mangawhai, Mangawhai-Kaiwaka Road, Kaiwaka, Maungaturoto, Paparoa and Ruawai all being identified as present new build areas (Northpower, 2020).

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 instrumental in the delivery of four different kinds of water services in the district. These are; potable water (also called drinking water or municipal supply), wastewater (also known as sewage), stormwater and land drainage. These services ensure people have access to clean, safe water for cooking and washing, provide for sanitation and prevent flooding. The following sections look at the state of this key infrastructure around the district.

6.4.1 Potable water

Council operates community water supply schemes in the Dargaville (including Baylys), Glinks Gully, Ruawai, Maungaturoto and Mangawhai communities. There are raw water supplies for agricultural purposes on the Kaihu (Dargaville) and Maungaturoto bulk water mains.

The assets associated with the five water supply schemes in Kaipara include:

- 15 water source points;
- 4 water treatment plants;
- 7 pump stations;
- 17 storage facilities;
- 175km of reticulated piping;
- 3,583 connections; and
- 3,828 points (fire hydrants, valves, meters).

Dargaville has approximately 108km of local distribution pipes comprised predominantly of concrete lined steel and asbestos cement pipes. The sizes range from less than 100mm to 300mm diameter and 54% are older than 50 years old.

The ***Baylys*** local distribution network consists of approximately 15.75km of polyethylene pipes.

The Dargaville water supply is used by both the Dargaville and Baylys communities. It services about 4,683 people with 2,782 connections to the system (most use water treated by the system but there are some connections to the raw water lines as well). There is a significant amount of deferred renewal work to be addressed in this scheme. Furthermore, the tendency of the main water source at Waiparataniwha Stream to dry up in droughts makes it hard to provide security of supply. Silver Fern Farms meat works is a significant employer in Dargaville and consumes on average 30% of the water supply annually (peak and off-season), security of supply is a very important issue for these production facilities in Dargaville.

Maungaturoto's local distribution network consists of approximately 35km of predominantly asbestos cement pipes. The sizes range from less than 100mm to 200mm diameter and 37% are older than 40 years old.

Maungaturoto water supply services approximately 895 people with 447 connections; 410 from the Township and 37 from the Railway Village. One of these connections is Fonterra's Maungaturoto Dairy Factory which uses the majority of the water from this scheme. Key issues are the age of the infrastructure, a backlog of deferred renewals and affordability.

Ruawai's local distribution network consists of approximately 6.7km of predominantly asbestos cement pipes. The sizes range from less than 100mm to 150mm diameter and 94% are older than 30 years old.

Ruawai's water supply system has 251 connections and services approximately 500 people. Much of Ruawai's water supply infrastructure is aged and renewals have commenced. Ruawai's relatively small population may make affordability challenging.

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 may mean high costs.

Mangawhai has a small water scheme with only 18 connections. The scheme 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.

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.

Remaining compliant with drinking water standards represents a significant cost across all public potable water schemes in the district. There is the risk that drinking water standards will be raised in future and any raising of drinking water standards may be unaffordable for Kaipara. Current standards are already challenging though all of Kaipara district's treated drinking water systems are currently compliant.

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 has no plans to do this and in fact is not increasing connections at the periphery of towns because of supply and demand issues.

In particular, the tendency of Dargaville and Baylys' main water source at Waiparataniwha Stream (near Kaihu) to dry up in droughts makes it hard to provide security of supply to these communities and industries located in these communities (including Silver Fern Farm's Dargaville meat works which is a major local employer). .

A Provincial Growth Fund funded project, Te Tai Tokerau Water, is currently working to construct reservoirs on the Pouto peninsular, south of Dargaville to provide water for agriculture and horticulture. Council is working with Te Tai Tokerau Water Trust to secure water for Dargaville's municipal supply from this community scale water supply and distribution scheme.

6.4.2 Wastewater

Council operates six community wastewater schemes in order to protect public health by providing Kaipara district with reliable wastewater service in a manner that minimises adverse effects on the environment. These schemes service the communities of Dargaville, Glinks Gully, Kaiwaka, Maungaturoto, Te Kopuru and Mangawhai.

The assets that form Kaipara's wastewater systems include six treatment plants, 32 pump stations, 31km of rising mains, 107km of gravity lines, approximately 1,565 manholes and about 4,323 connections. The

condition of Kaipara's wastewater assets is not well documented. A programme of data cleansing and condition assessments is underway, beginning with critical assets including those above ground. The least knowledge is in respect to underground assets. Known issues are:

- There are sections of the older schemes that have old asbestos cement pipes in poor condition;
- Dargaville has over 10,000m of pipes aged over 60 years; and
- Maungaturoto, Te Kopuru and Kaiwaka have most of their pipes aged over 30 years.

Dargaville is serviced by 40km of pipeline, 15 pump stations, 6km of rising main and a single treatment plant. Wastewater is collected from the urban area, apart from a section of the Beach Road industrial area that has onsite treatment. The wastewater system and pipelines are aged and there is a significant amount of deferred renewal work to be addressed.

Te Kopuru's wastewater treatment system and pipelines are also old and there is a backlog of renewal work to be undertaken. Te Kopuru's small population makes affordability a challenge. A full upgrade and replacement may hence be uneconomic and unaffordable under the current funding model. 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 wastewater scheme servicing ***Glinks Gully*** is designed to service a peak period population of 72 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 may make a full upgrade and replacement uneconomic.

Maungaturoto is serviced by 11km of gravity reticulation pipelines, 3 pump stations and 1.2km of rising main and a single treatment plant which was constructed in 1992. The system is ageing and there are deferred renewal works to be addressed.

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, 71 manholes, 1 pump station and a single treatment plant. A significant upgrade to the treatment plant was constructed in 2019. Nonetheless, Kaiwaka's wastewater system is ageing and will need replacing.

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.

Council is currently undergoing projects to increase capacity at the treatment plant and investigations into different disposal options to cater for the continued growth of Mangawhai and its urban area.

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, for some communities where populations are small funding these renewal programmes may be very difficult.

There is also the risk of unplanned sewage discharges from pump stations occurring during power failures. This creates environmental risk as overflows of raw sewage can go into waterways.

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 mainly serviced by a reticulated system consisting of a piped network with manholes and kerbside sumps discharging to the receiving environment. It is also at the lowest point of a large cultivated 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, most pipes are 300mm in diameter and the predominant known pipe material is concrete.

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.

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. Most pipes are 300mm in diameter and the predominant known pipe material is Reinforced Concrete Rubber Ring Jointed (RCRRJ).

Mangawhai has approximately 24.8km of stormwater pipeline, and 7.3km of open drains. Most pipes are 300 or 525mm in diameter and the predominant known pipe material is RCRRJ.

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 and floodgates. 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).

Council does not operate but rather facilitates the operation and maintenance of 29 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 29 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 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.

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