TAI TOKERAU NORTHLAND GROWTH STUDY

OPPORTUNITIES REPORT

FEBRUARY 2015

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MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

Ministry for Primary Industries
Manatū Ahu Matua

MINISTERS' FOREWORD

As Ministers for Economic Development, Primary Industries and Māori Development, we believe strongly that building successful and more resilient regions is key to building a prosperous nation.

Recognising and capitalising on the opportunities and strengths of different regions is vital to enable each region to provide employment and a good standard of living for its people and to maximise each region's contribution to the economic and social wellbeing of New Zealand.

The Regional Economic Activity Reports (REAR) have allowed us to understand and compare regional performance at a high level. Through the REARs, we know that the current economic and social performance of regions varies significantly.

The Regional Growth Studies programme provides an independent view of specific regions (Northland, Bay of Plenty and Manawatū-Whanganui) – chosen because their potential is not yet fully realised. Within each of these regions there are pockets of high deprivation. This deprivation can only be fully addressed through wealth creation and higher levels of employment.

The Regional Growth Studies explore opportunities to achieve growth in investment, incomes and employment by sector. The reports pose the questions "what are the investable opportunities in this region and what is stopping investment in them?"

The Regional Growth Studies programme complements the Government's Business Growth Agenda, which works to grow New Zealand businesses, create jobs and improve the standard of living for all New Zealanders.

The Regional Growth Studies programme will also provide a deeper level of information to enable New Zealand Trade and Enterprise and regional economic development agencies to bring investment and ultimately employment into the regions.

The *Northland Regional Growth Study* is the first study in this programme and builds on the *East Coast Regional Economic Potential Study* released in April 2014. It provides a view that has been developed through evidence and with input from key businesses and economic players in the region. It provides the region and central government with a shared view of the potential of the region and its local communities.

Farming and forestry, and related processing, make a substantial contribution to the Northland economy. There is significant scope to increase incomes and employment in the region through increased productivity and added value in these, and other resource-based industries such as horticulture and aquaculture.

The Government is also committed to raising Māori economic performance. Achieving the goals of *He kai kei aku ringa: the Crown-Māori Economic Growth Partnership* will be realised if action is taken in regions where there are larger Māori populations.

He kai kei aku ringa literally means providing the food you need with your own hands. This concept of economic independence or self-sufficiency is a fundamental principle for Māori. The full potential growth of Northland will only be achieved if iwi/Māori actively work to raise the utilisation and productivity of their land and increase skills, employment and incomes of the regions' poorest whānau.

The timing of this report coincides with the launch of Northland's own regional Māori economic growth strategy: *He Tangata, He Whenua, He Oranga*. We commend Te Tai Tokerau Iwi Chief Executives' Consortium for moving forward on a set of common goals for Māori economic growth in this region. This *Regional Growth Study* identifies a number of actions that support the goals of *He Tangata, He Whenua, He Oranga* and *He kai kei aku ringa.*

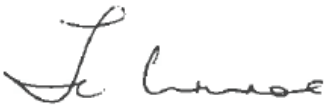
We are committed to maintaining and building on the partnerships established in this region and, through the development of a Regional Economic Action Plan, to further explore and realise opportunities identified in the report.

To be successful, the *Regional Growth Study* will need to inform and inspire industry, iwi and Māori, and central and local government to act individually and collectively to turn opportunities into realities.

We welcome this report and its findings.

Hon Steven Joyce
Minister for Economic Development
Minister of Science and Innovation
Minister for Tertiary Education, Skills and Employment
Minister for Regulatory Reform
Associate Minister of Finance

Hon Nathan Guy
Minister for Primary Industries
Minister for Racing



Hon Te Ururoa Flavell
Minister for Māori Development
Minister for Whānau Ora
Associate Minister for Economic Development

PREFACE

This report has been prepared for the Ministry of Business, Innovation and Employment and the Ministry for Primary Industries by Stephen Knuckey, Ulf Schoefisch, Jason Leung-Wai and Melissa Hall from MartinJenkins (Martin, Jenkins & Associates Limited) and Pelenato Sakalia from Sakalia Enterprises.

MartinJenkins advises clients in the public, private and not-for-profit sectors, providing services in these areas:

- Economic development
- Public policy
- Evaluation and research
- Strategy and investment
- Performance improvement and monitoring
- Organisational improvement
- Employment relations
- Financial and economic analysis.

Our aim is to provide an integrated and comprehensive response to client needs – connecting our skill sets and applying fresh thinking to lift performance.

MartinJenkins is a privately owned New Zealand limited liability company. We have offices in Wellington and Auckland. The company was established in 1993 and is governed by a Board made up of executive directors Doug Martin, Kevin Jenkins, Michael Mills, Nick Davis and Nick Hill, plus independent directors Peter Taylor (Chair) and Sir John Wells.

Data from Infometrics was provided to MartinJenkins for use in this report. Infometrics specialises in providing economic and employment data from both an industry and regional perspective via a web-based system. Infometrics is a privately owned and operated company, based in Wellington and was founded in 1983.

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REGIONAL PROJECT STEERING GROUP:

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Northland has significant untapped economic potential. The region's people and industries are currently not making the most of existing advantages, limiting economic growth. However, there is no 'silver bullet' initiative or industry that will transform the Northland economy. Growing the Northland economy will require a coordinated effort across a range of industry and cross-cutting opportunities.

Key messages

Some clear themes have emerged through this study and the identified opportunities:

1 Northland is well placed with a number of resource-based advantages and industries that, given the right stimulus, could grow substantially.

2 The significance of Māori/iwi/hapū as partners and co-investors in many of the opportunities for growth. This includes opportunities in tourism (as an integral provider of authentic experiences and investors in tourism offerings), forestry (partners in wood processing, indigenous forestry), dairy (the potential of Māori-owned land), aquaculture (as potential co-investors and developers), horticulture (particularly investment in apiculture), and initiatives to improve education and skills attainment. The finalisation of Treaty Settlements in the region will provide a significant resource base for Māori/iwi/hapū to realise these and a range of other opportunities.

3 Although there is the potential for significant employment growth across industries, a major challenge will be finding sufficient workers to meet this growth. This is because the working age population is shrinking in the region, there are perceptions that there are few attractive jobs and career paths in key primary industries, and many young people in Northland are disengaged from education and employment.

4 The importance of research and development (R&D) and innovation to contribute to improving the region's productivity performance. A fundamental element of all of the industry opportunities identified is developing new ways of adding value to existing practices and resources. This includes tourism (determining how to secure higher revenue from what are traditionally 'free' attractions, new marketing approaches), forestry and related processing (new engineered wood products, indigenous forestry systems), dairy (new approaches to on-farm management, the proposed innovation centre), aquaculture (commercialisation of kingfish production), marine manufacturing (new build techniques), horticulture (improved varieties, development of medical grade mānuka honey products), and digital capability (new and improved ways of learning and conducting business). Joining up national R&D programmes and expertise that is available with businesses in the region will be important for success.

5 The ability to implement the opportunities will require a concerted effort and the real commitment of resources by all stakeholders, including businesses, Northland Inc, Māori/iwi/hapū, and local, regional and central government. At a regional level, it is clear that the majority of the opportunities will impact on all three districts. Therefore opportunities need to be developed and resourced regionally. This means maintaining and jointly resourcing a regional economic development capability to help drive implementation. At a national level, it will mean central government agencies being prepared to commit people and potentially funding over the medium-long-term (where there is a good case) and working alongside industry, iwi and local government in the region. There are good models of such collaborative work (e.g., the Te Hiku Social Development and Wellbeing Accord process) that can be built on.

The next step is for Northland Inc, in consultation with industry representatives, Māori/iwi/hapū, local and central government agencies, to develop a full action plan to determine how each of the opportunities identified in this study will be implemented, how they will be resourced, the major tasks and milestones involved, and the roles of different organisations.

Introduction

This study identifies significant economic and investment opportunities to grow employment and incomes in Northland and contribute to the achievement of Business Growth Agenda (BGA) goals.

The study is industry focused and evidence based. It is not a strategy or an action plan. The purpose was to identify growth and investment opportunities and to assess how they might be progressed by the private sector, local government, central government and non-government organisations in the short to medium term.

Context

The Tai Tokerau region was the first area in New Zealand settled by Māori, and subsequently Europeans, because of its location at the northern-most tip of New Zealand and the advantages presented by its natural resources and temperate climate. Northland today still draws heavily on its pastoral, forestry and primary industry strengths built off its land and water assets.

The combination of Northland's natural assets and its rich historic and cultural heritage are valued by the region's communities and visitors alike and are an important source of distinctiveness for the region. Maintaining and enhancing these features is an important foundation for industry growth.

Current and forthcoming Treaty of Waitangi settlements will provide Māori/iwi/hapū with further opportunities to realise their aspirations for sustainable prosperity and wellbeing for generations to come, as well as for the broader economy. Northland's Māori asset base was estimated at $2.4 billion in 2012 and will continue to grow as Treaty settlements are finalised. Settlements include future co-management of natural resources.

Northland's economic development will occur in the context of stronger Asian economies that will continue to grow in significance as key markets for New Zealand's primary outputs. These are markets that value culture, long-term partnerships and natural products and experiences – all elements that Northland can offer.

The Northland economy

Northland is a small regional economy that has been underperforming relative to other New Zealand regions and relative to its resource base. The Far North and Kaipara districts have concentrations of (and hence comparative advantages in) primary industries, while Whangārei is the region's main urban and servicing centre and mainly has concentrations of manufacturing and service industries.

Northland's economy accounts for only 2.6 percent of New Zealand's GDP despite being home to 3.6 percent of the population. Real GDP in the region increased by 1.6 percent per annum on average over the past ten years, compared to the national average of 2.2 percent. Northland has an unemployment rate two percentage points above the national rate. Real GDP per capita is around 26 percent below the national average.

This poor economic performance is reflected in Northland's annual median household and personal income levels, which are the lowest in New Zealand. Northland's median household income, at $46,900, is $18,000 below the national median. Median household and personal incomes in the Far North and Kaipara districts are the lowest of all New Zealand's territorial authorities. Low rates of income growth over the past decade have widened the gap between the region's median income and the national median income.

Northland's relatively low population density and geographic remoteness have contributed to its economic underperformance. Even though Northland is in relatively close proximity to the strongly performing Auckland economy, travel times and limitations to transport connections make it difficult to benefit from that proximity.

A more significant factor impacting on incomes and growth is the high proportion of Northlanders not in employment and not engaging in education and training.

The region's population and potential workforce

While Northland's population is, like most other New Zealand regions, ageing and growing only slowly, it has several characteristics that are distinctive and need to be recognised when considering the region's future economic development potential. Northland has:

- A large and youthful Māori population: who currently comprise almost 30 percent of the region's population (relative to 14 percent for New Zealand) and are projected to increase to 33 percent by 2021.
- Low levels of growth from migration: the region's working age people are being attracted to employment opportunities elsewhere in New Zealand (and offshore) and the region attracts very few working age people from other regions or from offshore.

Northland has the highest age dependency ratio (proportion of people aged under 15 and over 65 year to the total working age population) of any New Zealand region, highlighting its lower proportion of working age people. The age dependency ratio is forecast to increase significantly over the next 20 years.

Northland's labour force participation rate is well below New Zealand's. A higher proportion of the region's working age population earn income from benefits, and a lower proportion derives income from wages or salaries. Māori in the region have a lower labour force participation rate, higher unemployment rate and a higher proportion of beneficiaries than non-Māori.

Communities in some parts of the region, notably in the Far North, have amongst the highest levels of socio-economic deprivation in New Zealand. High levels of deprivation are associated with (although not necessarily a predictor of) adverse impacts on health, education and employment outcomes.

Educational attainment levels in Northland, while improving, are also below national levels. The proportion of Northland's people (aged 15 years or over) with no qualifications is 27 percent (compared to 20 percent nationally), while the proportion of people with higher qualifications is 12 percent (compared to 20 percent nationally).

A relatively high proportion of Northland's young people/rangatahi are also not in education, employment or training (20 percent - twice the national rate). This suggests that a large proportion of Northland's potential future workforce continues to experience significant barriers to engaging in education, training and employment. This is despite employers consistently highlighting skills shortages in interviews undertaken for the study and previous regional research.

Northland's context suggests that the focus for growth needs to be two-fold:

- The development of industries that have natural advantages based on land, water, climate and cultural assets. Key industries that leverage the combination of resources and assets include land based industries (forestry and related processing, dairy and related processing, horticulture), marine based industries (aquaculture, marine manufacturing), and industries supporting the visitor economy.
- The development of Northland's workforce by encouraging and enabling people into employment, education and training to support these and other industries.

Categorising opportunities

Our analysis confirms that Northland has significant untapped economic potential and suggests that the region's people and industries are currently not making the most of existing advantages. This is affecting current income and employment levels and is limiting economic growth in the region.

The opportunities that emerged from the research and interviews can be categorised as:

- **Investment opportunities** – opportunities that are largely commercial in nature, require private sector investment, and involve one or a small number of firms. In some cases, these may require the involvement of other organisations, e.g., local government, to help overcome a barrier to their establishment.
- **Industry development opportunities** – opportunities that will benefit a large number of firms in a particular industry and will require the involvement of multiple businesses and other organisations in that industry to succeed (for example, the development of industry-specific productivity programmes or infrastructure).
- **Cross-cutting opportunities** – opportunities that will benefit a large number of businesses and individuals across several industries and will require the involvement of multiple businesses and other organisations and communities.

Several investment opportunities identified in the study were already being progressed by the businesses involved. There were only two specific investment opportunities that were at more formative stages of development (for forestry and wood processing and aquaculture, noted below) and where additional market assessment as part of this study was deemed of value. The majority of opportunities identified were industry development or cross-cutting in nature.

Major industry development and investment opportunities

Rather than uncovering a range of new opportunities, our work identified a significant range of existing industry opportunities in development (in some cases, over several years) through the efforts of industry, local and/or central government in the region. Some of these had stalled and some were at a point where it was unclear whether and how they should be progressed. This study focused on testing the rationale and likely feasibility of existing opportunities, identifying gaps in prior work, and suggesting how the opportunities might be progressed further or aligned with related initiatives. The scope of the study did not allow detailed assessment of the costs and benefits of individual opportunities.

The opportunities were assessed against a set of criteria, including potential impact, regional significance, the ability to leverage existing investment, practicality, international orientation and validity, to identify priorities for action (see Tables 1 and 2 for the overall ratings). Several opportunities did not rate well on our assessment criteria for significance, impact or validity and were not considered further (some of these are noted in different sections of this report under 'other considerations').

Major opportunities associated with key industries, and that rated sufficiently well on the criteria to be considered further, are summarised below:

- **Visitor industry:** Northland has a wide variety of natural attractions, a mature tourism offering in the Bay of Islands, and a unique cultural and historical experience. However, the current visitor offering does not do the region justice. There is real potential to support strong growth in the visitor economy by **developing a more compelling value proposition based on linking cultural and natural advantages and creating a 'round trip' of authentic visitor experiences on both coasts and up to Cape Rēinga**. This will be supported by stronger marketing of sub-regional offerings, private and public investment in a number of attractions and facilities currently being scoped or developed, including the substantial upgrade proposed for the Peppers Carrington resort in the Far North, the Manea – Footprints of Kupe Heritage Centre, the Waitangi Museum, Kauri Coast National Park, the Cape Rēinga visitor facility, and the Twin Coast Cycle Trail amongst several others. Developing and promoting this new set of experiences effectively, for example to the Auckland, Australian and Chinese markets, will require increased investment in the regional tourism organisation (Northland Inc).

- **Forestry and related processing:** Northland has a significant and high quality forestry resource that is suitable for value-added processing. However, large volumes of logs that could be processed in the region are being exported. Northland has the opportunity to achieve higher value-add through **reconfiguring current processing capability, for example through a combination of lower-grade processed products and higher end engineered wood products**. Industry representatives (for example, the existing regional Forestry Advisory Group), with Northland Inc's support, need to identify an appropriate mix of processing for the region, given wood supply and known transport constraints, and identify how that might be achieved. The region's Forestry Advisory Group could also develop a collective approach towards supply management, market access and investment attraction. The first stage could involve the development of a 'front-desk' for Northland to coordinate market intelligence and supply to markets, with support from central government agencies.

  The **co-location of a complementary saw and pulp mill near Kaikohe**, with access to geothermal heat and low cost energy from Ngawha, is a potential investment and commercial proposition. Based on the market and resource assessment that was undertaken and discussions with industry representatives, our view is that a large scale saw and pulp mill may not be feasible due to resource constraints, but that the concept deserves further investigation. A third opportunity is based on the rich native wood resource that exists in Northland. In particular there is the **opportunity to develop a new niche industry producing high value native wood products from tōtara**. A full business case is required to assess the opportunity in detail.

- **Dairy and related processing:** The dairy industry is a significant contributor to Northland's economy, but the sector's productivity performance is well below the national average. Although some of this can be attributed to comparatively poor soil and water management issues, there is significant scope to improve farm productivity through better farm management, by **supporting the expansion of productivity initiatives such as Focus Farms and Dairy Push throughout the region**. There is also the opportunity to increase dairy farming activity by **changing land use to dairy, including on Māori-owned land, if the physical and capital requirements can be met, and the land use change aligns with the aspirations of land owners**. There are good models of how to achieve this in the region, but further expansion will require support for Māori landowners and iwi to obtain commercial advice and bridging finance for dairy conversions. A third opportunity is to **increase investment in R&D to improve pastures, farming methods and to identify new added-value products, potentially through the establishment of an agricultural innovation centre for the region**. In some cases R&D also needs to be tailored to Northland, which has a different environment to many of the regions in New Zealand. The innovation centre concept is at an early stage and a full feasibility assessment needs to be commissioned to determine whether and how it can best be developed. It will be important to clarify the scope of the functions and sectors of interest, how the functions of the innovation centre would differ from existing research institutions, and the demand from the relevant sectors for those functions.

  To fully realise its potential, these dairy opportunities will need to go hand in hand with improved water and environmental management.

- **Aquaculture:** Northland's aquaculture industry is currently small and focused on shellfish. **An investment and commercial opportunity exists to enter the international market for higher value seafood products, by developing a kingfish production facility, initially land-based, with potential for sea-based in future**. Northland is a superior location for farming kingfish (water quality and temperatures) and NIWA's Bream Bay research facility has developed the science for a land-based operation. A market assessment has been undertaken and identified that there is currently sufficient demand for at least 500 tonne of kingfish per annum (the scale of an initial pilot facility) through a combination of domestic restaurants and supermarkets and offshore buyers. The venture still has to go through the initial 'proof of concept' phase and to identify a source of patient capital that is required for such a venture. The concept could also be expanded to sea-based farming over the long-term. A full business case should be developed as a priority to test the financial and commercial model, the economic costs and benefits and the best mix of public and private investment for the venture.

  There is **also the potential to scale up oyster and mussel production** in the region to take advantage of expected growing demand over the long-term and based on available space that is estimated to be productive and able to be developed. Potential sites will need to be assessed. Certainty in the regulatory environment about what can be consented or re-consented and the negotiation of a 'social licence' to operate with local communities and Māori/iwi/hapū is important to enable the expansion of aquaculture in the region.

- **Marine manufacturing:** Northland is home to the second largest boat building and refit industry in New Zealand behind Auckland. There is potential to take advantage of the current upward trend in the global marine sector, building on the region's reputation for quality, low-cost, innovative repair and refit work. The Whangārei marine precinct offers deep water access, as well as large areas of wharf space and vacant land but lacks shared haul-out facilities. **The procurement of a large scale mobile lift with shared access and establishment of suitable hardstand facilities** would enable the marine sector to engage in the construction and servicing of more and a wider range of vessels, including super yachts.

  The initial investment required will most likely depend on a public sector contribution, but it would enable Whangārei to broaden the boat build and refit offer currently provided through Auckland. The industry will need to collaborate to determine the scope and options for such a facility before a business case can be developed.

- **Horticulture:** The horticulture sector nationally has strong growth aspirations and is looking to more than double the value of the industry in New Zealand to $10 billion by 2020. With a temperate climate and as a major player in several crops, Northland has the potential to contribute to these aspirations. The sector in Northland needs to work on the combination of strategic actions that have been identified as critical at a national level, potentially through the creation of **a strategic action plan for the industry in Northland**. The action plan should identify options for key sub-sectors, such as avocados, kiwifruit and citrus, to achieve scale (for example, through collaborative management arrangements), to increase value-add through the application of R&D in the region, and to develop future leaders and workers.

  Mānuka honey has been identified as one of three horticulture areas in New Zealand with real growth potential. Honey exports have been growing by 30 percent per annum over the last 10 years and the value of exports has been driven by the higher price for 'active' mānuka honey. Northland produces some of the highest medical grade mānuka honey in New Zealand. However, the industry is fragmented with a number of small players with poor beekeeping practices. **The opportunity is for Māori/iwi/hapū and the industry to work together to increase production of highly active (medical/nutraceutical grade) mānuka honey and potentially establish a collective vertically integrated honey company and/or brand for the region**. A coalition of iwi and producers in the upper North Island is currently exploring how to combine resources to grow the industry. The next step is for a business case and operating model to be developed.

The petroleum and minerals industries also offer opportunities for growth in jobs and incomes but these are either currently unproven and subject to long development timeframes (e.g., petroleum and mineral exploration) or well underway (e.g., expansion of Refining NZ). Livestock farming is also a significant industry in Northland and has been growing in value terms. Future development will generally be driven by on-farm and supply chain productivity gains, and hence has similar opportunities as identified for dairy.

Cross-cutting opportunities

The ability of the region to take up the identified investment and industry opportunities depends on a number of cross cutting areas being addressed. These areas include increasing the skills base, improving road and rail infrastructure, improving water management and storage, and deepening digital connectivity and capability in Northland:

- **Education and skills:** there is potential for significant employment growth across industries, particularly primary industries, in Northland. As noted, significant impediments to achieving this growth include a shrinking working age population, perceptions that there are few attractive jobs and career paths in these industries, and many young people in Northland being disengaged from education and employment. Furthermore, there can be a lack of information about skill requirements for and likely occupational demands of growth industries, which can make it difficult to plan for the training and development of the future workforce.

  Although a range of education initiatives are being pursued in Northland, **a much more focused, substantive and longer-term approach needs to be made for and within specific industries that we have identified in this study; that is, the creation of skills investment programmes for key industries**. These programmes need to be based on real opportunities and real jobs, identify initiatives to improve both the supply of skills and the quality of demand for skills, and take a systemic approach when identifying interventions to include all levels of the education system, pastoral care and whānau support, and welfare and immigration. This will require the involvement of and commitment by a combination of major businesses in those industries, iwi, education providers and central government representatives and a genuine commitment of resources over the long-term.

  Another education opportunity is to **grow the scale and value of international education in Northland in order to meet the government's goal of doubling the value of international education nationally by 2025**. This will require the development of a clear plan that identifies the region's value proposition for international students and how to attract students from key markets such as China and India, building on NorthTec's plans for market development and growing international tertiary student numbers, and which is aligned with Education NZ's national sector roadmaps.

- **Road and rail transport:** Northland's transport constraints are well known. There are areas of low resilience along SH1 and other key tourism and freight routes. Diversion routes do not always have sufficient capacity to take heavy vehicles. The region has a relatively poor road safety record and the interaction of increasing flows of heavy freight traffic and visitor traffic impacts on the visitor travel experience. The rail line has only limited freight use and the standard of the line will restrict rail freight growth.

  Further investment is required in much needed road enhancements to ensure that the network will be able to cater for forecast growth in freight and visitors and provide for the dual needs of tourism and primary industries for transport and safety. **This will require improvements to the low resilient areas of the key SH1 freight route and the possible development of alternative freight routes**. Moreover, with key industries in the region such as forestry relying on heavy transport, further upgrading of the routes to High Productivity Motor Vehicle (HPMV) status is desirable.

  Although rail freight is currently small, there is the potential for more freight to be moved by rail in future, particularly if improvements are made to allow for low-floor wagons and increased freight capacity. Maintaining the line (even if mothballed in future) and the Marsden Point route designation will keep the long-term option of growth in container freight open.

- **Digital connectivity:** Despite growth in the proportion of households with internet and broadband access, Northland is falling behind other regions on the use of internet and uptake of broadband. Relatively high proportions of Northlanders perceive that the cost is too high or have limited interest in using the internet. ICT and broadband infrastructure in Northland needs to be further enhanced as it provides a platform to add value to primary and other industries in the region by enabling improved performance measurement, resource management, and connections to markets. The opportunity is to **finalise a digital development strategy, delivered through a regional digital office, to deliver programmes to youth, communities and businesses to showcase the benefits of adoption and stimulate demand, build levels of digital literacy and competence to enable the use of productivity enhancing applications**, and position the region to get access to increased investment in broadband roll-out.

- **Improved water management and storage:** Fresh water resources are essential for the growth of Northland. Decreased water quality or quantity will limit the potential of a range of downstream industries, such as dairy and horticulture. Northland is also a region that has a number of challenges associated with water. Droughts are common occurrences and are likely to become more frequent into the future. Flood events also occur regularly. The impacts of these events can be exacerbated by land use changes and water management practices.

  The topography of Northland does not allow for large-scale storage or irrigation schemes. **Further investment needs to be undertaken on collaborative processes to understand each catchment and how each can be managed, as well as detailed research on the demand for and supply of water, and the benefits and costs of different options to improve irrigation and water storage**.

Priorities for action

More information on the scope and potential benefits of each opportunity is summarised in the following table. The table highlights four major opportunities (two industry-focused, two cross-cutting) that rated the highest on our ranking criteria. These opportunities should be considered priorities for further development and implementation. The other opportunities rate more moderately on the criteria for various reasons. These opportunities are worth progressing but can be regarded as lower priorities if there are resource constraints. The extent to which the full set of opportunities can be progressed will need to be determined through the process of developing an action plan for the region's economic development.

Table 1. Highest rated economic development opportunities

Opportunity	Potential Benefits	Who	Current status & further work required	Investment required	Timing	Assessment
Visitor industry						
Twin Coast Discovery project	It is estimated that the project will: • Increase visitor expenditure by $20m • Create an additional 250 FTEs over the next five to seven years Broader benefits include social and community development, Māori economic development, regeneration of towns and communities and environmental benefits.	Northland Inc, Councils, MBIE, DOC, NZTA, ATEED, Tourism NZ, Māori/iwi/hapū, industry and local communities	A funding proposal is to be considered by Northland Regional Council.	$1.5m over three years (private and public)	2015-2017	High – clear evidence of issues that need addressing, high potential impact, regionally significant, leverages existing investment and work.
Development of new visitor products and supportive infrastructure Note that the development of new products and the Twin Coast Discovery project are mutually reinforcing	Various impacts depending on projects. For example: • Peppers Carrington expansion involves $200m of investment and >100 jobs • Cycle trail completion will result in direct expenditure benefits of $5m to $10m in the five years following completion of the trail and 30-40 direct jobs • Manea Footprints of Kupe Heritage Centre – estimated revenue of $2.5m annually by year five and employing 15 people. • Hundertwasser and Wairau Māori Art Centre: impact assessment suggests $3.5m net economic benefit annually and 30 jobs.	Various including private sector, central and local government, Māori/iwi/hapū, and local communities	Some of these initiatives are being considered for investment by local and central government, e.g., Twin Coast Cycle Trail. Others will require the development of business cases, such as the Manea Footprints of Kupe Heritage Centre and the Cape Rēinga facility.	Various related to each initiative	2015-2017	
Dairy and related processing						
Improving on-farm management through an expansion of productivity initiatives	On-farm productivity improvements that move the middle 50 percent of Northland farmers to the upper quartile could deliver an estimated additional $50m of value per annum to the industry.	Famers and sharemilkers, DairyNZ, Northland Regional Council	Assess the benefits of seeding support for the expansion of Focus Farms to more locations and the introduction of Dairy Push with DairyNZ.	Up to $750k over three years (private and public)	2015-2017	High – clear evidence of the need, potential impact over the long-term is likley to be high (although incremental), regionally significant, internationally oriented.
Realise the dairy potential of Māori land	Bringing all Māori freehold land in the region into production or improving current productivity levels could increase GDP by $339m and support a further 331 jobs annually.	MPI, MBIE, Tai Tokerau Iwi Chief Executives Forum, iwi Financial institutions	MPI and MBIE to work with the Tai Tokerau Iwi Chief Executives Forum and financial institutions to develop options for providing support for commercial advice and bridging finance for dairy conversions and expansions, until settlements are finalised.	Unknown at this stage	Next 5 to 10 years	

Opportunity	Potential Benefits	Who	Current status & further work required	Investment required	Timing	Assessment
Proposed innovation centre concept for dairy and primary industries Note: these are all mutually reinforcing	Specific benefits are unknown at this stage. Broader benefits are likely to include: • Increasing technology transfer from research institutions and organisation to industry • Improving the relevance of R&D • Development of new and improved inputs, processes and outputs for the dairy industry • Resource savings, for example, through the introduction of closed-loop farming systems.	Northland Inc, Northland Dairy Development Trust, MPI, MBIE, Callaghan Innovation	A feasibility study is required to determine whether and how a primary industry innovation centre could be best developed for Northland.	Unknown at this stage	2015 for assessment	
Education and skills						
Skill-based investment programmes to support key industries	Broad benefits likely to be: • Improved information about training and employment opportunities in the region, pathways from school to work and further study, and changing skill requirements • Improved information about demand for skills and future employment opportunities in the region • Increased investment in education and training • Increased participation by youth in education and training • Increased investment by businesses in on-the-job training • Improved quality and relevance of education and training offerings in the region.	Major businesses in key industries, iwi/iwi entities and education providers working with MBIE, MOE, TEC and other government agencies as relevant	Develop skills-based investment programmes initially to support 2-3 key industries, for example tourism, dairy and forestry and wood processing industries. Build on partnership models such as the Christchurch Construction Sector Workforce Plan.	Multi-stakeholder investment – levels tailored to identified investment programmes	2015-2020	High – is a valid opportunity, will have a high potential impact, is regionally significant and is consistent with national priorities.
Road and rail transport						
Future proof key road freight routes	Direct job benefits associated with construction and upgrades. Broad benefits will include: • Savings in accident costs • Savings in travel time, vehicle operating costs and improvements in freight efficiency • Improved visitor travel experience.	NZTA, Northland Regional Council and District Councils.	Work within the Regional Land Transport Plan 2015-21 process for prioritising and finalising additional investment. Commission an integrated regional transport study to provide evidence for future investment.	Various	2015-2021	High – based on clear evidence of issues, high potential impact, is practical and regionally significant.

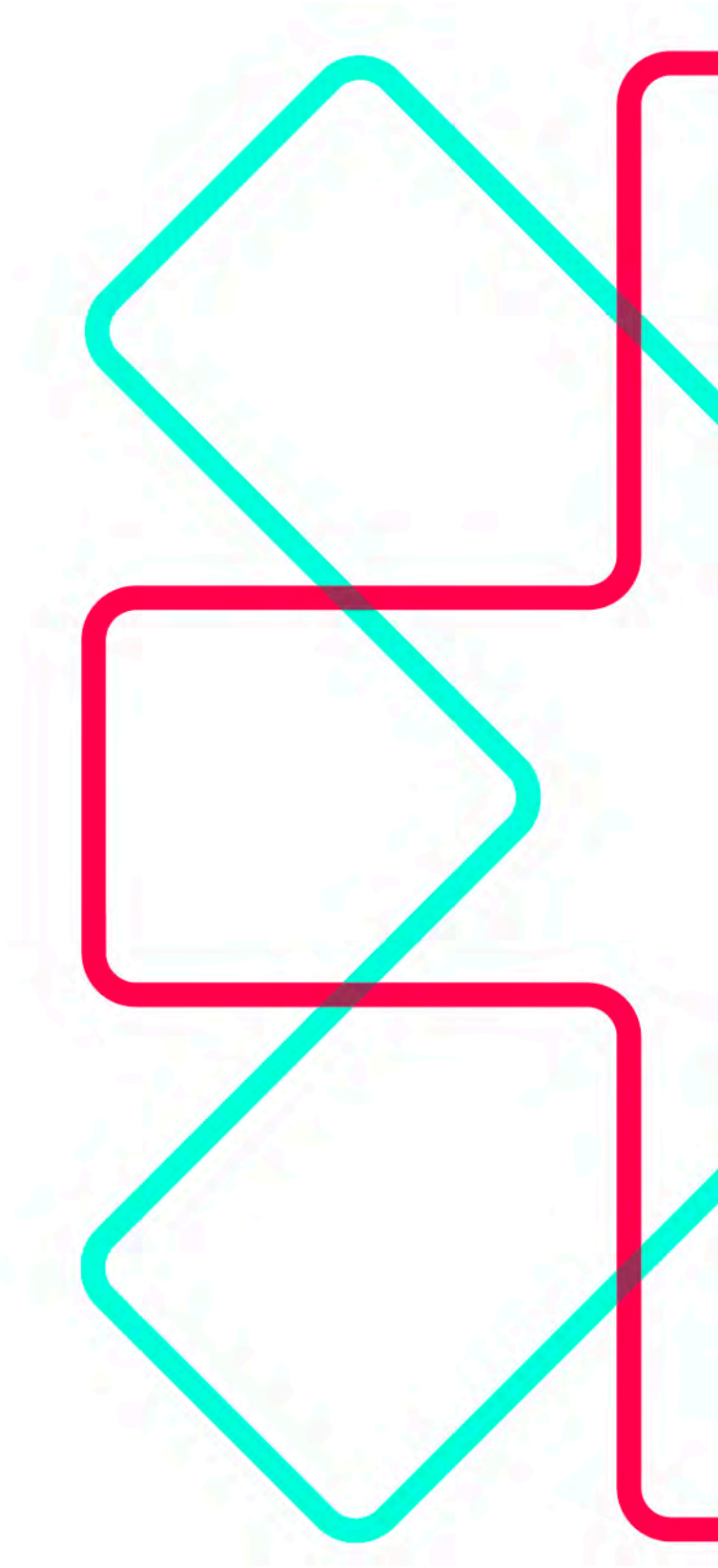
Table 2. Additional economic development opportunities

Opportunity	Potential Benefits	Who	Current status & further work required	Investment required	Timing	Assessment
Forestry and related wood processing						
Growing the wood processing industry	Will depend on the scale and type of production that result. Re-directing 1.0-1.2 million cubic metres of log exports to wood processing options could add $250m to the regional economy annually. Broader benefits would include reduced industry volatility, increased knowledge and improved productivity.	Regional industry group, Northland Inc, NZTE, MPI	Industry group is developing a forestry action plan. As part of this process, identify an appropriate configuration of processing for the region, a collective approach towards supply management, market access and investment attraction.	Unknown at this stage	Action plan to be completed in 2015	Medium – is regionally significant and potentially large impact, but implementation may be difficult.
Saw and pulp mill facility at Ngawha	Depends on the scale of the facility. A large scale facility could generate economic impacts of $35m to $45m in regional GDP and support 440-500 jobs annually. Broader environmental benefits from reducing green waste to landfill.	Northland Inc, NZTE, MPI	Desk-based resource and market assessment completed. Need to undertake a detailed feasibility assessment of the proposal, including the appropriate scale of such a facility and broader costs and benefits.	Depends on scale. Large scale would require over $600m of private investment	Feasibility study to be completed in 2015	Medium – regionally significant and potentially large impact, but feasibility is uncertain.
Development of indigenous wood products industry	Analysis suggests that tōtara could create a $7.5m industry within three years, growing to $70m in seven years, in a best case scenario. Broader environmental benefits from preserving and protecting an important species.	Scion, MPI, Northland Inc, Tane's Tree Trust	Opportunity analysis completed. Full business case required.	Unknown at this stage	Business case to be completed in 2015	Medium-low – good prospect and will complement existing processing, but impact will be small-moderate.
Aquaculture						
Kingfish farm facility	The venture could contribute around $14m to GDP and support 150 jobs (direct and indirect) annually once fully established.	NIWA, Northland Inc, MPI	Research on input and conditions for production completed, approvals for a facility exist, initial market assessment completed. Full business case required, including testing the financial and commercial model and demonstrating the economic case.	Up to $20m in the first ten years (private and public)	Business case to be completed in 2015	Medium – moderate impact, builds on existing work and investment, validity and achievability need to be confirmed.
Scaling up existing aquaculture production	An additional 150 ha of oyster farming and related processing can contribute $14m GDP and support 220 jobs (direct and indirect) annually. Broader benefits are possible such as the attraction of related businesses.	Oyster and mussel working groups, Northland Regional Council	Potential sites for development need to be assessed.	Unknown at this stage	Site assessment over 2015	Medium – as above.

Opportunity	Potential Benefits	Who	Current status & further work required	Investment required	Timing	Assessment
Marine manufacturing						
Investment in lift and retrieval facilities in Whangārei	A similar project was estimated to potentially contribute over $400m to regional GDP over eight years (direct and indirect). There will also be benefits to the tourism industry from visits generated by increased refit and repair work, and broader innovation and reputational benefits.	Northland Inc, boatbuilding/ marine industry, NZTE	Industry needs to agree on scope and options for such a facility, facilitated by Northland Inc.	Likely $10m to $20m (private and public)	Business case in 2015, subject to industry agreeing scope and options	Medium-low – high potential benefits but largely captured in Whangārei, may be difficult to achieve collective action.
Horticulture						
Horticulture Strategic Action Plan	It has been estimated that an additional 2,500 to 14,800 ha planted in horticulture crops could increase GDP by $80m to $490m (direct and indirect).	Northland Inc, Horticulture Forum, MPI, Horticulture NZ, Avocado Industry Council	Engage key stakeholders to determine the willingness and framework for developing a strategic action plan.	Unknown at this stage	Strategic action plan could be developed over 2015/16, subject to industry agreement	Medium-low – impact and significance depend on the outcomes of the proposed action plan and expansion undertaken.
Development of the Mānuka Honey Industry	2,000 tonnes of medical/cosmetic grade mānuka honey would generate revenue of about $70 million at current price of $35/kg.	Iwi, MPI, MBIE	In-market research and opportunity assessment has been undertaken. Full business case required.	Unknown at this stage	Business case over 2015/16.	Medium – builds off existing work, is internationally oriented, low to moderate impact on the economy (although depends on scale and focus).
Digital connectivity						
Build digital competence and use of broadband	Studies of the impact of broadband in other New Zealand regions have estimated that regions benefit by 4-9 percent higher GDP over 15 years. Internet and broadband use have a positive impact on productivity. Increased digital capability increases employment options for youth.	Business and industry, Northland Inc, MBIE, MOE	Northland Digital Strategy being developed. Options for delivering the strategy and digital enablement programmes need to be developed and assessed, such as a digital office.	Unknown at this stage.	Complete digital strategy in 2015	Medium – valid case for intervention and impact potentially large, but actioning a strategy may be complex.

Opportunity	Potential Benefits	Who	Current status & further work required	Investment Required	Timing	Assessment
Water management						
Improving water allocation and quality through water storage and management	Broad benefits would include: • Reduced costs of floods and droughts • Improved productivity for agricultural sector • Reduced negative impacts on downstream activities such as aquaculture • Improving the quality of water recreation experiences.	Northland Regional Council, Northland Inc, MPI, local communities and catchment groups	Collaborative processes to better understand water catchments underway. Strategic water management study to be completed.	Unknown – depends on options identified through collaborative processes and the study	Study to be completed by June 2015	Medium – highly significant and likely large impact, but very complex area of work and implementation of preferred irrigation and storage options may be difficult.
International education						
Grow the scale and value of international education	Aim would be to double the value of international education from $10m to $20m annually. Broader benefits would include improving international connections and increased tourism expenditure.	Northland Inc, NorthTec, other education providers in Northland, Education NZ.	NorthTec has already developed a plan to increase international tertiary student numbers. Broader plan is required to articulate the value proposition of Northland as an international education destination and identify ways of growing student numbers and value from key markets such as China and India.	Unknown at this stage	Plan could be completed over 2015/16	Medium-Low – impact will be relatively low and likely concentrated in Whangārei.

INTRODUCTION



Scope of the study

MartinJenkins was commissioned by the Ministry of Business, Innovation and Employment (MBIE) and the Ministry for Primary Industries (MPI), in partnership with Northland Inc, to undertake a Regional Growth Study for the Tai Tokerau or Northland region.

The region covers 13,789 square kilometres, extending from the Kaipara and Mangawhai harbours in the south to Cape Rēinga in the north. There are 10 harbours and 3200 kilometres of coastline and the region is less than 100 kilometres wide at its widest point.

Over 50 percent of the land is in pasture, 10 percent in forests and close to 0.5 percent in orchards and crops.

The geographic boundaries of the Northland region include the Far North, Kaipara and Whangārei District Council Local Authority boundaries.

The region is New Zealand's most rural, with only around 50 percent of the population in urban areas[1].

Whangārei is the largest city, comprising around a third of the region's population in its urban area. The Whangārei district (city-region) includes half of Northland's population.

Figure 1. Northland Regional Council boundary

Source:www.nrc.govt.nz/Living-in-Northland/About-our-region/

The purpose of the study was to identify significant economic and investment opportunities in order to grow employment and incomes and contribute to Business Growth Agenda (BGA) goals.[2] The study recognises that spatial factors influence the ability of New Zealand to grow, retain and attract globally competitive businesses and industries. It also recognises that focusing national interventions at the regional and local level complements national scale decision making, and creates scope for more innovative and diverse policy approaches at the sub-national level.

There is also an acknowledgement that not all regions have to, or will, grow at the same rate. However, every region has distinct advantages and specialisations that can be leveraged to improve performance, income and jobs. The Northland Regional Growth Study will help stakeholders understand better the industries, sectors and opportunities that have the most growth potential in the medium term.

[1] Rural and urban as defined by Statistics New Zealand.

[2] The BGA goals include lifting the ratio of exports to GDP to 40 percent by 2025; increasing business expenditure on research and development to more than one percent of GDP; related Better Public Service result areas for education and skills; and broader goals including reducing the real interest rate premium on New Zealand debt compared to US and Australian equivalents.

The study report is not a strategy or an action plan. Its purpose is to identify growth and investment opportunities and assess how they might be progressed by the private sector, local government, and central government and non-government organisations.

The development of the study has been informed by the views of a Technical Advisory Group and Steering Group of regional industry and iwi representatives.

Approach

The study followed five phases to identify and assess potential growth opportunities: data and research collation and review; key informant interviews; assessment and investment opportunity/action identification; validation of short-listed opportunities; and reporting. The key elements of each phase are discussed in Table 3 below.

Table 3: Study Phases

Phase	Description	Comment
Data and Research Review	1. Analysis of the regional economy and key indicators of prosperity to provide a long-term picture of its performance relative to other regions and to identify any major issues that exist. This included an analysis of trends in GDP, GDP per capita, earnings and household incomes, employment, labour participation, unemployment and beneficiaries, productivity estimates, population and population growth (including by ethnicity). 2. Analysis of industry value chains to robustly identify new or emerging industries with potential to grow, where strengths could be built, and industries with existing significant market opportunities. This included an analysis of regional industry employment, business numbers, GDP, export estimates, location quotients and multipliers; regional and national research that was available on the capability of, and issues and opportunities facing, the industries; research on New Zealand's international comparative advantage in these industries; and the national export performance of these industries in world markets and world market growth (where available). An important element of this phase was to define and identify relevant industry value chains upon which to undertake further analysis. 3. Analysis of cross cutting issues as they apply to Northland, and issues and opportunities that impact on a range of industries. This included a review and analysis of research and documentation that is available on the BGA themes as they relate to Northland, Northland's relationships with other regions (particularly Auckland), and to specific industries in Northland.	Over 200 studies and research reports on the region and key industries were reviewed, including economic research reports, economic strategy documents, local authority planning documents, infrastructure reports and industry studies. The analysis drew on official figures from Statistics New Zealand, the latest Regional Economic Activity Report, and estimates from Infometrics (for example, for district-level GDP). The defined industry value chains were agreed with the Technical Advisory Group. These value chains are discussed later in the report.
Key Informant interviews	Interviews and workshops focused on eliciting information about potential industry growth, constraints to that growth and specific opportunities for the region. Some questions related to the region as a whole, while some were specific to industries. We wanted to understand why businesses are investing in the region, their intentions, and the underlying advantages they see in the region. Interviews were also used to test the initial industry analysis and research review findings with stakeholders.	48 interviews undertaken with representatives from business, education, research, local government and iwi. Four industry workshops or meetings held with representatives from agriculture, horticulture, forestry and aquaculture.

Phase	Description	Comment
Investment opportunity / action identification	Thematic analysis of the data, research and collected interview notes to identify the most significant opportunities and constraints that should be assessed further. Advice from the Steering Group and the Technical Advisory Group to test the emerging findings and explore potential actions/ initiatives/ investments. Opportunities categorised as: • Commercial – involving one or a small number of businesses and focused on commercialising or growing a specific opportunity, and requiring private sector investment. • Industry development – involving several firms in an industry and focused on building up capacity or capability in that industry. • Cross-cutting – involving several industries in the region and relating to a BGA theme.	Assessing a long list of potential actions/ initiatives/ investments against initial criteria to identify the most important. Criteria included validity, potential impact, practicality, regional significance, international orientation, ability to leverage previous investments, and consistency with national priorities.
Validation	Potential cross-cutting and industry development opportunities assessed and validated through discussions with and feedback from relevant industry representatives and stakeholders. Questions related to the likely benefits of taking up the opportunity or addressing the constraint, likely costs, rationales for any intervention, and who would need to be involved in taking up the opportunity. Potential investment opportunities assessed and validated through interviews and feedback from businesses, investors and experts, and through market assessment research (separately commissioned). There were only two major commercial/investment opportunities identified. Questions related to whether Northland could provide a competitive location; what the key markets are for the proposal/opportunity; how the proposal compares to competing offerings; the level of investment required and whether appropriate and credible investors would be interested; desired outcomes and key next steps.	30 additional interviews and meetings held with representatives from business, local government and central government. A resource and market assessment report was separately commissioned (by NZTE and Northland Inc) on a forestry and wood processing investment opportunity. A market assessment report was commissioned (by Northland Inc and MPI) on an aquaculture opportunity.
Reporting	A report focussing on the identified, validated opportunities and initiatives. A more detailed evidence-based background report on the identified industries, their growth and investment potential, and BGA related issues and opportunities facing the region.	Feedback from the Technical Advisory Group, Northland Inc, local government and central government incorporated into the final opportunities report.

NORTHLAND ECONOMIC AND INDUSTRY CONTEXT

The regional economy

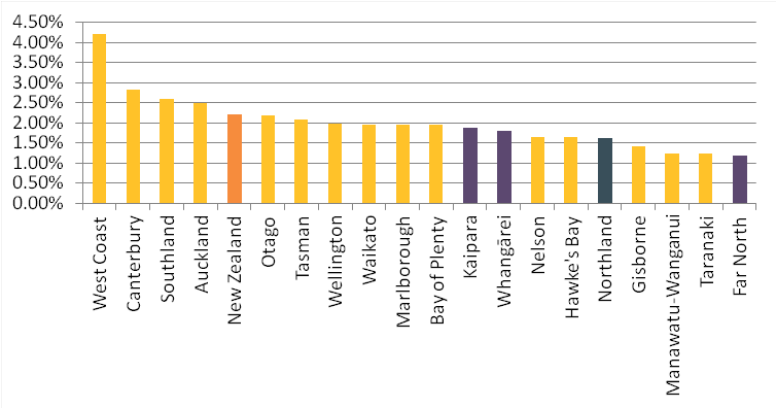
The overall picture of Northland's economy is one that is underperforming and where there is significant untapped productive potential.

The region has 3.6 percent of New Zealand's population, which contributes 2.9 percent of employment and 2.6 percent of New Zealand's GDP.[3]

In 2013, the region had 151,700 people. It provided employment to 67,000 people and generated $5.56 billion in regional GDP (in 2010 dollars).

GDP growth has been slower than nationally. Over the last ten years, real GDP increased by 1.6 percent per annum, which was below growth nationally (2.2 percent per annum- Figure 2). Over the last five years the region's real GDP growth has been minimal (-0.01 percent per annum). This will in part reflect the impact of the global financial crisis (GFC), although it is in contrast to New Zealand, where real GDP growth slowed but averaged 1.2 percent per annum.

Figure 2. Estimated GDP growth across regions, 2003-2013 (% pa)

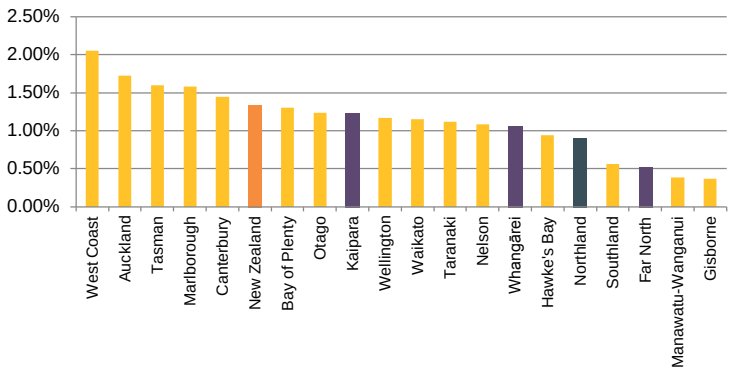


Source: Infometrics database, based on March years

Real GDP per capita in the region in 2013 was well below the New Zealand average ($35,068 compared to the national level of $47,532) and has been declining over the last five years.

In the last 10 years, the number of filled jobs increased by 0.9 percent per annum, which was slower than nationally, where filled jobs grew by 1.3 percent per annum (Figure 3). Between 2008 and 2013, the region experienced a decline in filled jobs of 0.94 percent per annum, while nationally filled jobs grew (albeit only slightly) by 0.03 percent per annum. Again, the decline in Northland and slow-down nationally followed the GFC.

Figure 3. Estimated growth in employment across regions, 2003-2013 (% pa)



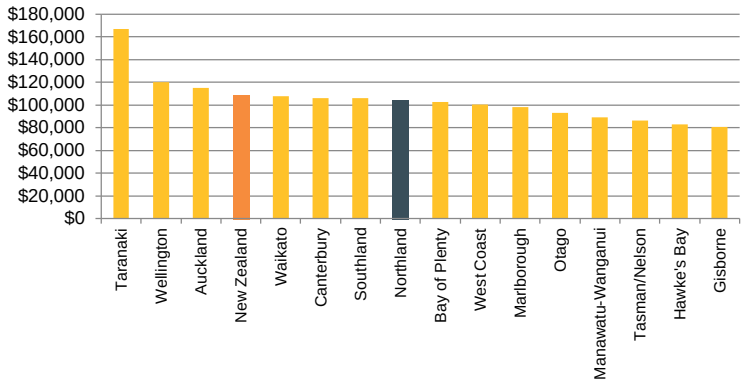
Source: Infometrics database, based on March years

[3] Note that we have used Infometrics regional GDP estimates rather than Statistics New Zealand's estimates. This is because Statistics New Zealand's estimates cover a more limited period (2007-2013 for regional GDP, 2007-2011 for industry GDP at the regional level) and do not include estimates for industries at the level of disaggregation we required for this study.

The region's labour force participation rate declined between 2006 and 2014 (from 65.8 percent to 60.9 percent), and the employment rate has also fallen over the period (a decline from 61.9 percent to 55.6 percent in 2014), and both are below New Zealand levels. The unemployment rate is well above the national rate (8.6 percent in the year to March 2014 compared to 6.1 percent nationally).

Estimated labour productivity (or GDP/FTE[4]) in Northland is close to national levels. In 2013, Northland's estimated average labour productivity was $104,500, which was only slightly below the national average of $109,000. This suggests that the workforce is as good as anywhere else in the country at creating value, and that Northland's low level of wealth is more to do with the significant underutilised pool of people.[5]

Figure 4. Regional GDP per FTE 2013 ($000)

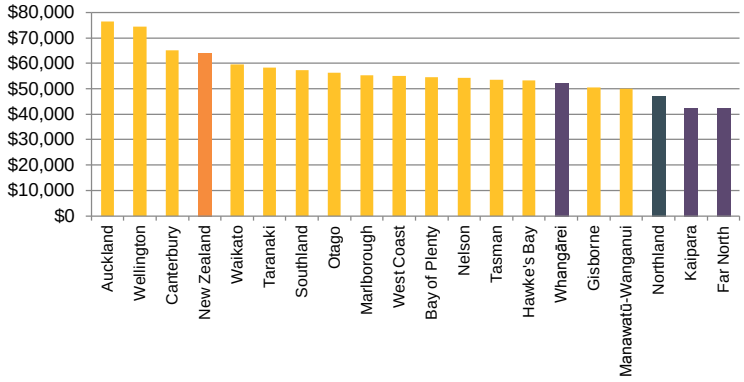


Source: Statistics New Zealand regional GDP series (March years) and Statistics New Zealand employee counts

But the region is at risk of falling further behind - estimated real productivity growth over 2003-2013 was at the lower end of regions. This may be, in part, because the region does not enjoy the productivity gains that arise from concentrations of businesses and people in cities and larger towns that occur in many other regions.

Median household income has increased over time, but is also well below the national average (annual median household income in 2013 was $46,900 compared to $63,800 nationally) and is the lowest of New Zealand's regions.

Figure 5. Annual median household income, 2013



Source: Statistics New Zealand, Census 2013, rounded to the nearest $100

Annual median earnings in Northland (of those employed or working proprietors) is also lower than the New Zealand median ($46,560 compared to $53,120), but is towards the middle of New Zealand regions. The region's relatively low household and personal incomes but moderate earnings is because of the low proportion of people deriving incomes from wages and salaries relative to those receiving benefits.

[4] GDP per FTE is only a rough approximation of productivity and tends to bias productivity upwards as GDP includes the rental value of owner-occupied dwellings. Productivity is typically measured as the value of output per hour of labour.

[5] Noting that petroleum pulls up the average but that several industries are not far off the national average.

About 47 percent of the working age population derive some of their personal income from wages or salaries compared to 57 percent across New Zealand as a whole, and around 46 percent of the working age population earn some of their income from benefits compared to 37 percent across New Zealand as a whole.

Population growth in Northland was less than half the national rate between 2006 and 2013 and lower than many regions. The populations in Kaipara and Whangārei increased over the period but the Far North experienced a decline in population. All of Northland's population growth over the seven years was due to natural increase, with a net migration outflow over the period.

Medium projections suggest the region is expected to achieve only moderate population growth over the next 20 years (around 0.5 percent per annum) relative to New Zealand as a whole (0.9 percent). The region has a relatively higher proportion of older (18 percent compared to 14 percent nationally are 65+) and younger people (22 percent compared to 20 percent nationally). This has labour market implications with higher proportions likely to leave the labour market as they reach retirement age and what appears to be a hollowing out of the working age population as youth leave the region.

Demographic projections suggest that the number of working age people in the region will fall. At the same time, demand for labour is expected to increase. The forecast demand for labour may reverse some of the outward migration of working age people. However, the region's own labour supply is insufficient to meet forecast demands.

Māori in the Tai Tokerau economy

Māori are a significant part of the Northland economy. A high proportion of the region's population identify as Māori (30 percent compared to 14 percent nationally in 2013) and Māori make up 23 percent of the total labour force. Māori are also significant participants in farming and forestry in the region, with almost 140,000 ha of land held under Te Ture Whenua Māori 1993 (The Māori Land Act). Through historical Treaty settlements and the transfer of farms and forestry land from the Crown, these interests will expand. Māori in the region are also entrepreneurial and have a higher rate of self-employment than do Māori in other parts of the country.

The assets currently held by self-employed Māori, Māori employers and land-owning Trusts and Incorporations in the region total $2.4 billion. Māori businesses account for $730 million of value-added or 13% of the total value-added in Northland (Te Tai Tokerau Iwi Chief Executives Forum, 2015).

However, much of the potential of Māori assets and capability is not being realised. Compared to Māori farms in other parts of the North Island, Māori farming units in Northland tend to be smaller and few farming businesses have the benefit of operating on a large scale. None are among the 10 largest Māori farming businesses in New Zealand. Prototype projects are being implemented in the region to identify how Māori farming businesses can move to more intensive land uses and higher value production.

Māori in the region also achieve lower performance than Māori nationally and non-Māori in the region on key labour market and income indicators. In particular, the employment rate of Māori is less than 50 percent of the regional rate and the unemployment rate of Māori in Northland is almost double the rate for Northland as a whole. As is discussed later in this report, a significant proportion of Northland Māori have low or no educational qualifications. The median personal income of Māori in Northland is also lower than for Māori in New Zealand and lower than median personal income across Northland. These figures highlight a significant opportunity to increase productivity and value-added in the region by improving human capital amongst Māori.

Iwi in the region are significant local investors and will become more significant through further settlements. Runanga o Ngāpuhi, based in Kaikohe, has substantial commercial assets through its holding company, largely arising from the Māori Fisheries Settlement completed in 1992. It has used the income from these assets to invest in property and businesses in both Kaikohe and Kerikeri.

There have been few settlements of historical claims under the Treaty of Waitangi in the region. Those that have been completed – Te Uri of Hau ($15.6 million) and Te Roroa ($9.5 million) – have been relatively small settlements for small groups. More recently, four of the five iwi (Ngāti Kurī, Te Aupōuri, Te Rarawa and Ngāi Takoto) that make up the Te Hiku grouping of the Far North (Te Hiku o Te Ika a Maui - the tail of the fish of Maui) have reached agreement on settlements totalling $120 million. The Crown is also to negotiate a settlement for Ngāpuhi, which will be significant in terms of cultural, financial and commercial redress (a settlement value of around $250 million has been publicly reported, but the actual value will be subject to the negotiations).

The settlements will also expand the Māori agricultural base in the Far North. Seven former Landcorp farms covering 14,600 ha will transfer to Te Hiku iwi, as will an additional 6,800 ha of the land under the Aupouri Forest. Te Hiku iwi have joined together to ensure the settlements assist in the economic and social development of their members.

The regional impacts of Treaty settlements

Although settlements were not created as part of a wider regional development policy, they have had significant regional impacts. For example, Waikato-Tainui and Ngāi Tahu have each become major investment forces in their regions. Waikato-Tainui has developed the largest retail centre in the Waikato on the site of a former RNZAF base at Te Rapa and has plans to build a significant freight logistics hub at Ruakura. Ngāi Tahu owns tourism businesses that are major attractions in Queenstown, Kaikoura and Rotorua. Both Waikato-Tainui and Ngāi Tahu are the largest residential land developers in their regions.

Iwi with smaller settlements have also invested effectively. Ngāti Whātua o Ōrākei has used access to surplus railway land gained in a settlement to become a major property investor and developer in central Auckland while Ngāti Whakaue have developed surplus railway land into the largest retail complex in Rotorua.

Investment choices are for each settling group to make. Experience has shown that those choices and their success depend on the state of the settlement assets that are received, the investment opportunities in the regions in which settling groups are based, the opportunities arising from the commercial redress in the settlements, the quality of the investment advice received and the capability of the management and governance of the commercial holding companies used to manage and invest in the assets.

Recognising the current unrealised potential of Māori in Northland and the opportunities to grow the Māori economy, seven iwi have worked together to create *He Tangata, He Whenua, He Oranga: An Economic Growth Strategy for the Tai Tokerau Māori Economy* (released at the same time as this study). The strategy is built on Tikanga principles and values and focuses on five high level strategic directions to create an environment to improve Māori prosperity and wellness in the region: advocacy and policy, research and innovation, education, leadership and collaborative growth.

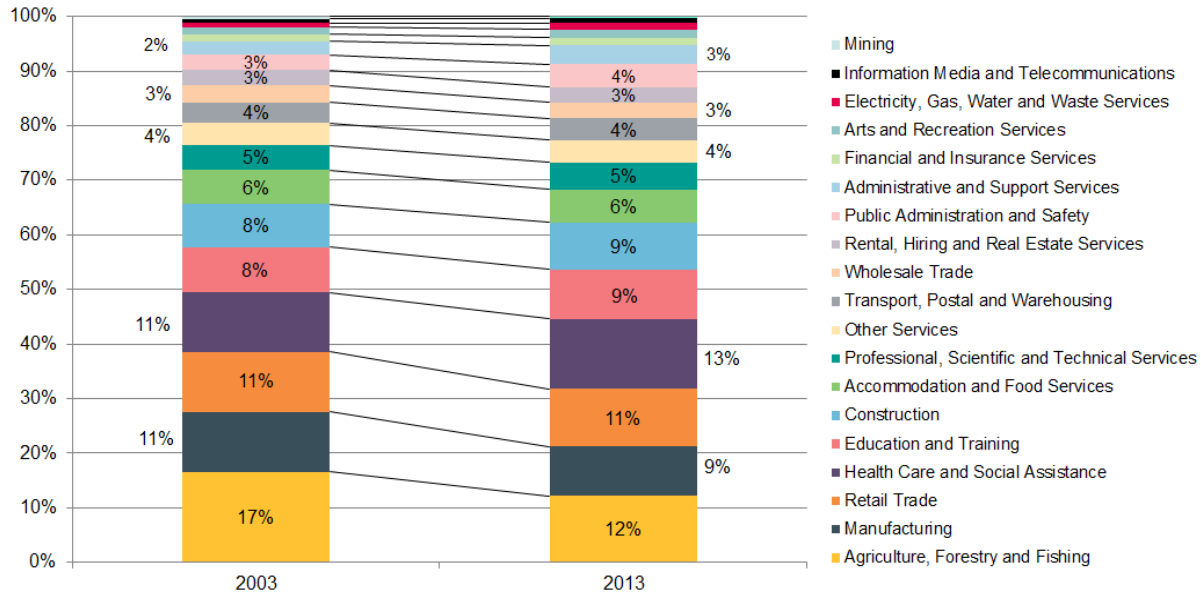
Additional detailed analysis of Northland's economic context is available in a background evidence report.

Sectors and industry value chains

The Northland economy is neither highly diversified nor highly concentrated in particular industries relative to New Zealand as a whole. However, seven broad sectors - manufacturing, agriculture, forestry and fishing, retail trade, education and training, construction and health care and social assistance – together comprise almost 60 percent of the region's GDP and over 60 percent of employment.

Northland's industry composition has altered only slightly over 2003-2013. Agriculture, forestry and fishing and manufacturing contribute a slightly smaller proportion of employment in 2013 than they did in 2003. Health care and social assistance, education and training, construction, public administration and safety, and administrative and support services contribute slightly more in 2013 than they did in 2003.

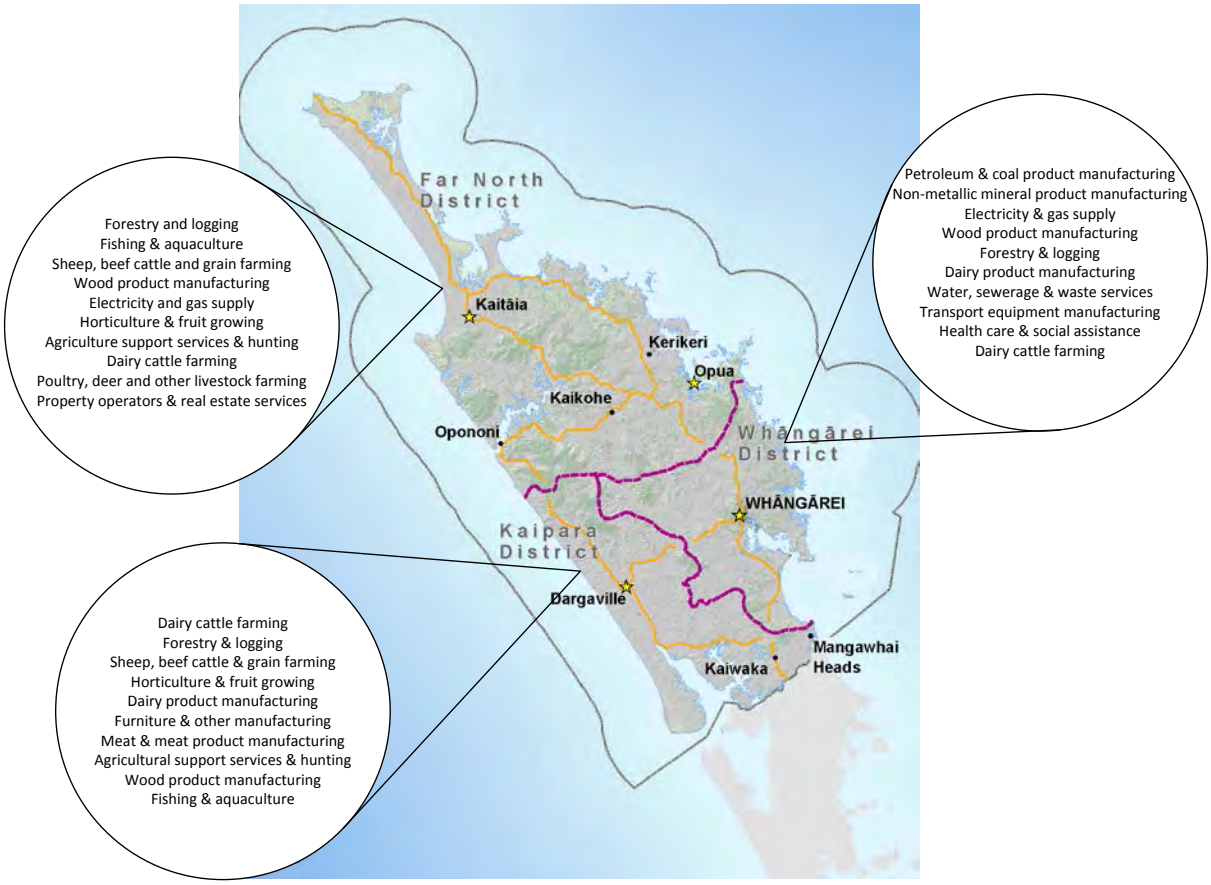
Figure 6. Employment contribution of industries, 2003 and 2013



Source: Infometrics database, filled jobs (calendar years)

There are some spatial differences in the concentration of industries across the region, with the Far North and Kaipara having comparative advantages in primary industries and Whangārei having advantages in some manufacturing industries and support services. The Far North and Kaipara have concentrations in forestry and wood products, livestock farming and horticulture. The Far North also has revealed advantages in fishing, while Kaipara also has advantages in dairy farming. Petroleum, non-metallic mineral manufacturing, wood product manufacturing, dairy product manufacturing and transport equipment manufacturing are concentrated in Whangārei, along with infrastructure services and health care.

Figure 7. Industry specialisation in Northland (based on employment concentration)



Source: MartinJenkins, 2014

To identify industries that would be most conducive to job and income growth in the region, we initially defined industry value chains. The industry value chain definitions generally reflected definitions used nationally or in other regions and the defined value chains generally capture resources to processing and supporting services in the same area of activity, but exclude wholesaling of that activity as wholesaling will be capturing products imported from other regions and elsewhere. However, in some cases we identified new groupings of industries, which we considered reflected the underlying capabilities in the region associated with those industries (e.g., specialised manufacturing).

We assessed industry value chains on three dimensions:

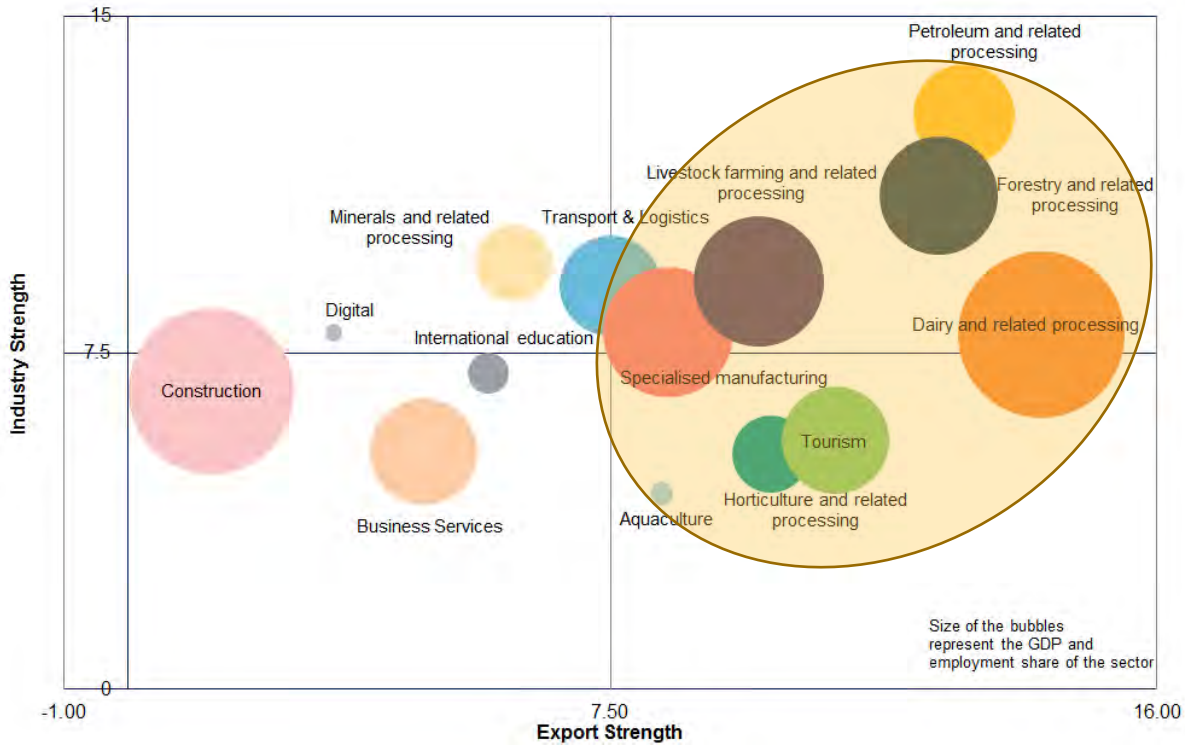
- Scale – in terms of GDP and employment
- Industry strength – in terms of labour productivity, labour productivity growth, GDP growth, employment growth, concentration and increases in concentration (employment based location quotients)
- Export strength – in terms of exports, export intensity and recent export growth.[6]

[6] Regional industry export estimates are derived from Infometrics database and are approximations only. There is no official data available on the number of businesses exporting or the value of exports at a regional or district level. Infometrics estimates exports at the regional level by assuming that industries in the region have the same export orientation as the national average. The estimates are thus based on the performance of the industry in the region and the export-output ratio of the industry at the national level.

Figure 8 summarises the outcomes of this analysis and overall position of each industry value chain. Those in the top right hand corner are those industries that demonstrate both industry and export strength in the region. Those in the lower right hand corner are not particularly strong in Northland currently, but have been growing exports and, if industry advantages can be built (for example on the back of research and development), they may be more important in future.

Industries in the top left hand corner are based on underlying advantages but have not been able to capitalise on this and develop exports or are domestically focused. Industries in the bottom left hand corner are generally not driving growth but instead reflect growth in other industries and in the population. They have limited export value to the region. Exports are important because they allow businesses in the region to achieve scale economies which would not be possible in the local or national market.

Figure 8. Assessment of industry value chains

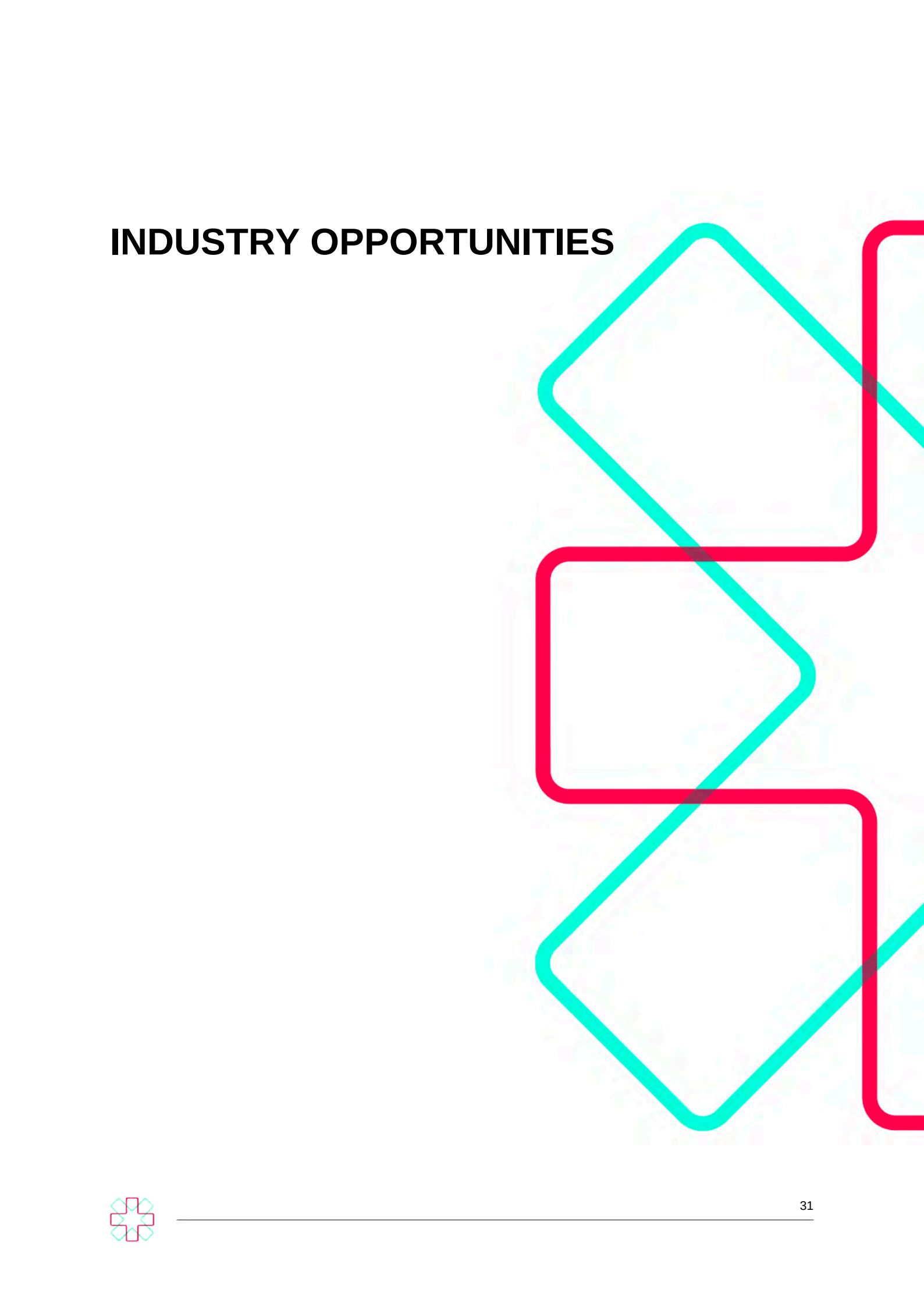


Source: MartinJenkins, 2014

In undertaking the more detailed research and interviews to identify opportunities, we primarily focused on industries in the right hand-side of the diagram (as shaded).

A detailed assessment of each industry is available in a background evidence base report.

INDUSTRY OPPORTUNITIES



Opportunity identification and assessment

A long list of investment, industry development and cross-cutting opportunities – and barriers – was identified on the basis of the research review and interviews with industry and regional experts in the selected industry value chains.

MartinJenkins and the Technical Advisory Group assessed these commercial and industry development opportunities on the following criteria.

Table 4: Criteria for identifying and assessing opportunities

Criteria	Explanation	Assessment rating
Validity	Actions/investments are based on clear problems impacting on industry performance or major opportunities for industry growth that are not being taken up (or not being taken up fast enough) based on evidence and/or are based on reasonably well researched/worked up proposals.	Low: based on conjecture and limited evidence Medium: based on what appears to be a clear issue or opportunity, but more evidence is needed (not yet definitive) High: based on systemic problems or opportunities and clear evidence
Potential impact	Actions/investments are likely to have sizable impact on the economy, i.e., will improve productivity, incomes and jobs (given the focus of the study) and have flow-on impacts to the wider economy (e.g., skills, market connections, reputation etc.).	Low: expected <$50m in direct benefit; limited wider economic benefits; or impacts not really known Medium: expected $50m-$100m direct benefit; some wider economic benefits High: expected $100m plus direct benefit; significant broader economic benefits
Practical and manageable	Actions/investments are realistic and able to be implemented.	Low: likely to be difficult to implement Medium: somewhat complex but achievable High: relatively easily implemented
Regionally significant	Actions/investments are likely to impact on a broad cross-section of the region (i.e., multiple districts and communities of interest).	Low: specific to one district or location; limited if any impact on other parts of the region Medium: impacts on a few locations High: will impact on the larger region; or impact across several locations
International orientation	Actions/investments have the potential to increase export earnings, overseas investment and/or attract international skills.	Low: limited and/or indirect impact on foreign investment, skills attraction or exports Medium: some impact on FDI, exports or skills attraction High: directly involves foreign investment, attraction of overseas skills and/or exports
Leverage existing local and regional investment	Actions/investments build on previous or current work and investments.	Low: is a new project to the region; has not been scoped Medium: some existing work, e.g., scoping or research undertaken High: has been a range of research, scoping, market assessment etc. work undertaken
Consistency with national priorities and central government investments	Such as those delivered under the BGA (and hence leverage national as well as local resources).	Low: only indirectly related to a priority Medium: related to a priority High: directly relevant to a priority or several priorities

The opportunities were scored and ranked. The highest scoring opportunities were then selected for further review and validation.

In several cases specific information about benefits, costs and the reach of an opportunity were not known, so judgements were made about the likely potential scale and benefits.

Our assessment of each opportunity is highlighted in the subsequent sections of this report.

THE VISITOR ECONOMY

Summary

Despite the region's unique attractions and amenities, Northland's visitor economy has not performed well over several years, with declining guest nights and limited growth in visitor expenditure. However, Northland has the potential to achieve a step change in the quality of its tourism offering and value derived from visitors. To do this will require:

- Developing a more compelling value proposition based on linking cultural and natural advantages in order to reduce seasonality and keep visitors longer in the region and spending more.
- Developing and aligning sub-regional brands and a range of tourism products to create a 'round trip' of compelling offers on both coasts and up to Cape Rēinga.
- Building up regional promotion capability and marketing efforts with local support, from a current low base.
- Developing a sufficient pool of people with relevant hospitality skills in the region to support the new products under development.

Figure 9. Visitor attractions on Twin Coast route

Source: www.northlandnz.com/images/uploads/pdf/TCDH_Map_-_drive_times.pdf

The initial marketing focus should be on Northland's strongest visitor markets of Auckland and Australia, with additional potential to leverage growing district and regional relationships with China. The proposals currently under development and consideration could result in tens of millions of additional visitor expenditure and more than 200 new jobs in the region.

Tourism and Northland's visitor assets

Tourism is a significant industry in Northland. Contributing an estimated $128 million to regional GDP in 2013 (2.5 percent per annum growth over the last decade), tourism employs 2,870 people (4.1 percent of Northland's workforce) (Table 5).

Visitors spent close to $590 million in Northland in 2013. Although the industry as a whole is not particularly concentrated in the region, several segments are, such as accommodation, scenic and sightseeing transport, museum operation and interurban bus transport – reflecting underlying regional advantages.

The sector's productivity is relatively low, reflecting the labour intensive nature of the services.

Table 5. Northland industry overview: Tourism[7]

	Tourism	Total
GDP (2010 $m)	$128	$5,623
Real GDP growth (2003-13, % pa)	2.5%	1.6%
Employment 2013	2,870	64,034
Employment location quotient	0.96	
Employment growth (2003-13, % pa)	0.7%	0.9%
Estimated Productivity (GDP/FTE, $2010)	$44,761	$87,819

The region has genuine points of difference for visitors compared to other regions in New Zealand. The core of the distinctive value proposition is the bringing together of rich historical and cultural assets and experiences in areas of outstanding natural amenity.

This is not just about the great scenery and coast and unique flora, such as Cape Rēinga, Bay of Islands, Waipoua Forest and Poor Knights marine reserve, but how those intersect with the authentic Māori cultural and spiritual experience and the region's history as the birthplace of our nation. A key challenge will be extracting greater value (i.e., revenue) from what are currently often 'free' experiences.

The region's value proposition extends well beyond the traditional visitor destination of the Bay of Islands. The combination of natural and cultural visitor assets is available on both coasts and the Far North (e.g., Ngawha, Te Paki Sand Dunes, Tane Mahuta and Te Matua Ngahere, Clendon House, Kerikeri Mission House and Stone Store). A range of projects are under consideration or development to build on these existing attractions including the proposed Waitangi Museum and Education Centre, Kupe Waka Centre at Aurere, a proposed visitor facility and art installation at Cape Rēinga, the Hundertwasser and Wairau Māori Art Centre or Harbourside development in Whangārei, and the Manea – Footprints of Kupe Heritage Centre at Opononi, to name only a few. If these go ahead, an impressive set of visitor offerings will be established in the region.

Northland also has the advantage of only being a couple of hours drive away from New Zealand's largest city and international airport. The completion of the Puhoi to Wellsford Road of National Significance will reduce real and perceived roading issues for visitors travelling to Northland from Auckland and the recent agreement to commence the Twin Coast Discovery route from Auckland Airport will help draw the attention of domestic and international visitors to the region.

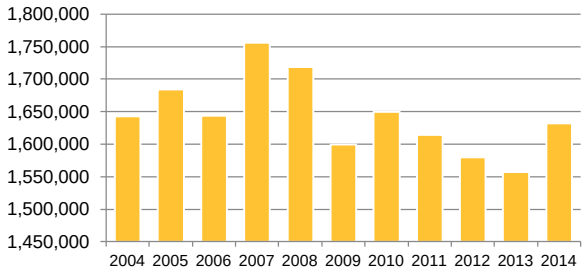
[7] Source: Infometrics database and MartinJenkins calculations

Performance of the visitor economy

Despite its unique attractions and strengths, Northland's tourism industry and visitor economy has not performed well over the last five and ten years overall, although there have been some years of growth.

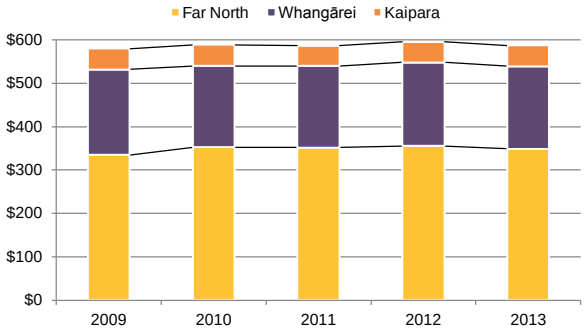
Employment growth has been limited over the last decade (0.7 percent per annum) (Table 5). Guest nights grew over 2004 to 2007 before declining over 2007 to 2013 (post global financial crisis) (Figure 10); and visitor spending growth (0.3 percent per annum between 2009 and 2013) is well below national levels (1.7 percent per annum) (Figure 12).

Figure 10. Northland commercial accommodation guest nights 2004-2014



Source: Commercial Accommodation Monitor, June years

Figure 11. Visitor expenditure in Northland 2009-2013 ($m)



Source: Regional Tourism Estimates, 2009-2013, Ministry of Business, Innovation and Employment, March years

The industry is seasonal, and the season appears to be shrinking to 2-3 months in the summer. The peaks and troughs of visitor expenditure are higher and lower than nationally.

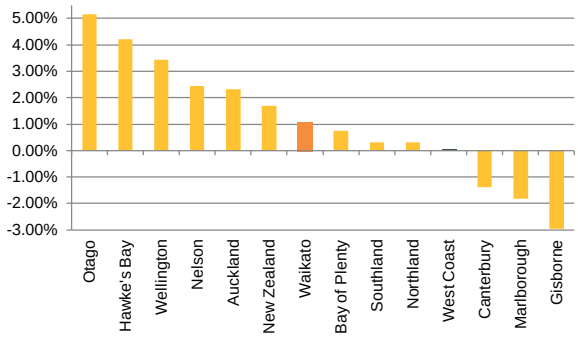
Northland also has one of the lowest annual average rates of occupancy in New Zealand, at just under 24 percent in the year ended June 2014.

There is a very strong concentration of visitor numbers and expenditure derived from Auckland and domestically, with almost 74 percent of visitor expenditure from domestic visitors (compared to 63 percent nationally) and 64 percent of domestic visitors being from Auckland.

The Far North area has the highest share of guest nights in Northland, but nights declined by 1.19 percent per annum during the last decade. Much of this decline was in international visitor nights, which decreased from 0.64 million to 0.57 million nights over 2009-2014 (-2.2 percent per annum). This decline is in contrast with international visitor night growth across New Zealand of 0.6 percent per annum over the same period.

Reflecting this, there was a relatively large decline in international visitor expenditure across the region over 2009-2013 at a rate of -1.74 percent per annum, much lower than the New Zealand average growth rate of 1.28 percent per annum. However, despite the overall decline, spending by visitors from Australia has grown solidly over 2009-2013 from $43 million to $58 million, or 7.6 percent per annum. This reflects, but is higher than, growth in expenditure by Australian visitors nationally.

Figure 12. Growth in visitor expenditure, Northland compared to selected regions, 2009-2013



Source: Regional Tourism Estimates, 2009-2013, Ministry of Business, Innovation and Employment, March years

There are indications of a recovery over 2013/14, with commercial accommodation nights in Northland increasing to 1.63 million in the year ended June, with strong growth apparent in Whangārei.

Despite this turnaround, on long-term trends it will be challenging for Northland to deliver its share of growth towards the national industry goal of increasing international tourism expenditure by six percent per annum and domestic tourism expenditure by four percent per annum up to 2025, which equates to $1 billion of visitor expenditure in Northland by 2025.

Issues and challenges

So what is holding the region's visitor performance back? The available research and stakeholder feedback suggests:

- There is not a clear value proposition for potential visitors beyond some well-known natural amenities and related attractions. Potential visitors know about the Bay of Islands but relatively little about other amenities. Distance and a lack of knowledge about offerings in the far north or west coast of the region discourage people from travelling across the region. There are numerous events across districts but they are generally small scale or are not sufficiently leveraged.
- There is currently limited public support for destination marketing to promote the wider offerings and to target segments appropriately, despite the broader public benefits of tourism (see the discussion on 'What are the potential benefits?'). In 2014, around $424,000 was provided for destination promotion from Northland's councils (representing $4 per ratepayer and $0.25 per guest night), which is the lowest local government contribution in New Zealand (the national average is around $24 per ratepayer or $1.25 per guest night) (MacIntyre, 2014). This low level of funding has contributed to a reduction in capability in the regional tourism promotion organisation (Northland Inc).
- There has been a lack of investment in new or improved tourism products post the global-financial crisis, although this situation is clearly changing. There are some gaps in the availability of offers between locations (e.g., between Kerikeri and the top of Cape Rēinga) which may discourage visitors from travelling further or staying longer. Visitors have reported a lack of satisfaction with restaurants, cafes and the nightlife in the region (Nexus Planning and Research, 2012).
- There are some infrastructure capacity constraints, such as a limited number and scale of flights into the region (although flight capacity to Kerikeri is expanding next year, flights to Kaitaia and Whangārei are reducing), variable quality roads and lack of Ultra-Fast Broadband (UFB) beyond Whangārei (although central government is currently considering further roll-out UFB).
- Many of the attractions are natural amenities in areas of conservation estate, which are administered by the Department of Conservation. Many areas are open to the public, but others have limited or restricted access to protect fragile or rare species or ecosystems. While the management of conservation areas can complement tourism (e.g., managing overcrowding, undertaking clean-ups, providing signage and walkways), stakeholders noted that at times it can be time consuming and costly for concessionaires to obtain access to these sites.

The opportunities

These issues can and should be addressed by the following opportunities:

1) Development of new visitor products and supportive infrastructure

As noted, several major projects are under consideration or development. These include:

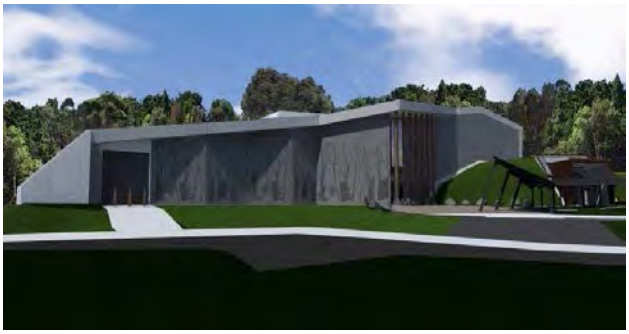
- An expansion of Peppers' Carrington Resort in Karikari Peninsula. It has been announced that the resort will be re-developed by Shanghai CRED Real Estate, who plan to establish over 750 new bedrooms and new conference facilities at the site over several years.

Figure 13. Peppers Carrington Resort

Source: Peppers Carrington Resort. http://www.peppers.co.nz/carrington/

- The development of cultural assets such as the Waitangi Museum and Education Centre, the Hihiaua cultural centre in Whangārei, improvements to the Kerikeri basin, the Kupe Waka Centre in the Hokianga, possible establishment of the Hundertwasser and Wairau Māori Art Centre in Whangārei, the Manea – Footprints of Kupe Heritage Centre at Opononi, and the proposed visitor facility and art installation in Cape Rēinga.

Figure 14. Waitangi museum & education centre



Source: Waitangi Trust

- The development of offerings based on the unique natural amenity value of the region such as the Kauri Coast national park, possible development of a marine park between Cape Brett and Whangārei heads, and completion of the Twin Coast Cycle Trail (national cycleway) in the region

Figure 15. Twin Coast Cycle Trail - Pou Herenga Tai

Source: NewZealand.com http://www.newzealand.com/us/article/take-a-ride-through-history-cycling-in-the-bay-of-islands/

- Initiatives to increase capacity for higher visitor numbers, for example:
  - Extra berthage space for cruise ship tenders in the Bay of Islands.
  - The introduction of larger planes on the Auckland-Kerikeri route from next year.

Figure 16. Cruise ship in the Bay of Islands

Source: Northland NZ. http://www.northlandnz.com/visitor_information/cruiseship_information_bay_of_islands

Several of these initiatives are in the process of obtaining or have obtained investment. Others will require the development of clear business cases. In our view, although individual projects such as the proposed Peppers Carrington Resort expansion and Manea project will generate important employment and visitor expenditure benefits on their own, it is actually the combination of a range of products across the region that will be the game-changer and make a significant difference.

2) A coordinated approach to develop and promote a round-trip that incorporates the visitor offerings and products on both coasts and up to Cape Rēinga

Recognising this, the region has already developed a proposal to build on the Twin Coast discovery route by:

- Establishing four new tourism sub-regional brands within a clearer regional value proposition that will be more easily understood and be based on Northland's unique intersection of cultural and natural assets.
- Improving existing attractions and products and assisting with feasibility studies for new investment. An important dimension of this will be identifying ways of commercialising and generating higher tourism spend from what are currently 'free' or low-cost attractions.
- Improving visitor facilities, online information and on-site signage and story-telling across the Twin Coast discovery route with potentially 12 visitor hubs. This could include the development of a Pou Pou trail across the region.
- Working with local communities and iwi to enhance streetscapes, open spaces, local art and other experiences.

The cost of the project is $1.5 million over three years. Initial discussions have been undertaken with a range of partners who may support the project, including councils, NZTA, MBIE, Department of Conservation, ATEED, Tourism NZ, industry and iwi. A funding proposal is being considered by Northland Regional Council as a first step.

The development of new or enhanced products and the Twin Coast discovery project should be seen as mutually reinforcing. The Twin Coast project is in a sense the glue that will bring the different tourism products that are under development or in concept stage into a coherent whole. The project will also provide support for getting requisite business case and feasibility work undertaken on new tourism product concepts.

For this to be successful the region will need sufficient promotion and marketing capability and increased investment in the regional tourism organisation to support these functions, i.e., Northland Inc.

Relevant current Central Government initiatives in this area

- Puhoi to Wellsford Road of National Significance
- Upgrades and maintenance of State Highways
- UFB rollout to towns beyond Whangārei
- Rural broadband upgrade across Northland
- National cycle trail – Northland Twin Coast Cycle Trail – Pou Herenga Tai
- Māori and Pasifika Trades Training – includes hospitality courses
- Tourism New Zealand promotion and marketing

What are the potential benefits?

Estimates of the benefits of several of the tourism products under development have been made or announced as part of their development process. For example:

- **Expansion of Peppers Carrington Resort** – announcements made about the project suggest that it will involve around $200 million of investment over three years and more than 100 jobs when completed. The owners are also talking to iwi about training young Māori to be employed at the resort.
- **Increase in cruise ship visitors, with the expansion of berthage for tenders at Bay of Islands** – there were 36 visits in 2012/13 and 44 visits in 2013/14, representing 77,000 passenger and 32,000 crew port days. Cruise ship visitors and crew were estimated to spend $14.3 million in the region in 2013/14 and total value-added was estimated at $17.1 million (Market Economics, 2013a). It was estimated that over 330 jobs were supported by cruise ship visits in the region in 2013/14.
- **Manea – Footprints of Kupe – Heritage Centre** – this development, by the Te Hua o te Kawariki Trust, is to establish a heritage centre in Opononi that will celebrate the journeys of Kupe, the local culture and places of historical significance, using a combination of guided tour, interactive performances and technology. Establishment will cost $3.8 million. The forecast is for 35,000 visitors in the year after opening, growing to more than 60,000 visitors in year five, with revenue increasing to $2.5 million (Te Hua O Te Kawariki Trust, 2014). It is estimated that Manea will employ 15 people and 25 volunteers, which would make it the Hokianga's third largest employer.
- **The completion of the Twin Coast Cycle Trail** – our assessment of the original business case suggests that there will be direct expenditure benefits of around $5 million to $10 million in the five years following completion of the cycle trail, and that expenditure benefits will exceed annual maintenance and operating costs each year. The cost to complete the trail is estimated at close to $6.9 million (McLaren, 2014). Employment opportunities will arise through construction of the remaining sections of the trail and Pou Pou as well as hospitality jobs for servicing visitors on the trail (based on updates to the original business case, this could be 30-40 jobs).
- **The Hundertwasser and Wairau Māori Art Centre** – the impact assessment and recent updates suggests that the Centre could attract around an additional 80,000 paying domestic visitors and 41,000 paying international visitors per annum (Crowe Horwath, 2014), create over 30 jobs and result in $3.5 million of net economic benefit per annum (Deloitte, 2011b). The estimated cost of the project is $13.7 million.

Other than the Twin Coast Cycle Trail, we have not reviewed in detail the robustness of the estimates, impact studies or business cases for the other tourism offerings noted above. The estimates seem reasonable given the scale of activities.

The tourism investment proposal for the Twin Coast discovery project estimates that the project itself will increase visitor expenditure by $20 million and create an additional 250 FTEs over the next five to seven years. We consider that this is a conservative estimate but note that the project will result in long-term incremental growth and increase confidence in the industry, rather than having the large, more immediate impacts of several of the specific projects noted above.

Beyond the direct expenditure and job benefits, wider benefits are also likely, including:

- **Social and community development** – tourism related employment may not be high productivity but provides labour market entry opportunities to those with lower qualifications and skills. Given Northland's labour market, these jobs will be important. Visitor, arts, cultural and heritage amenities also help bring diverse communities together, enhances creative thinking and improves quality of life. These amenities signal that communities value their culture and sense of place and can result in reduced crime and hence economic loss (e.g., less graffiti in the local area).

- **Māori economic development** – the proposal to integrate Pou and supporting stories into the planned visitor hubs and several of the projects under development represent opportunities for Māori to generate incomes and prosperity, showcase their matauranga Māori, taonga and tikanga, develop new skills and identify further business and employment opportunities.
- **Regeneration** – as well as the direct investment in new and improved buildings and landscapes associated with specific projects, higher numbers of visitors and increased attractions in towns throughout the region may encourage other businesses and amenities to develop around them and attract new residents. The developments may also encourage other property owners to 'fix up' projects of their own. This can lead to higher demand for space nearby, increasing property values and increasing support services. The various projects under development or consideration will also contribute to greater pride in towns, districts and the wider region and reinforce further investment.
- **Environmental benefits –** several of the proposals under consideration, such as the Kauri National Park and Tutukaka coastline marine park, will help maintain or improve biodiversity and the ecological qualities of the associated areas.

These potential wider benefits can be significant. The type and scale of these impacts will depend on the projects that end up being completed, the inputs used, and the extent of outreach and engagement with iwi, local business and community groups.

Assessment

The combined Twin Coast discovery project and development of new tourism products rates highly on our criteria for regional significance, validity, practicality, and potential impact (Table 6). There is genuine buy-in across industry and stakeholders to this approach.

As currently proposed, the opportunity will also support economic activity in deprived areas of the Northland region, particularly on the western side of the route through Hokianga and the Kauri Coast, and in the Far North.

Table 6. Assessment of the Twin Coast discovery project and new tourism products

Validity	High
Potential impact	Medium
Practicality	High
Regionally significant	High
International orientation	Medium
Builds off existing work and investment	Medium
Consistency with national priorities	Medium
Overall rating	**High**

Other considerations

Our view is that the Twin Coast project as currently scoped will address many of the issues and opportunities identified in the research and consultation. In addition, we believe that explicit consideration should be given to:

- **Managing the balance between achieving higher visitor expenditure while maintaining authenticity.** The desire for higher visitor expenditure and profitability needs to be considered against the risk of detrimentally impacting a real point of difference for the Northland visitor experience, i.e., authentic cultural and natural experiences.
- **Facilitation of initiatives to develop the hospitality skills base in the region.** Demand for around 200 hospitality jobs may emerge from the tourism products under development and the twin coast project and it is unclear how these demands will be met.

Although NorthTec and initiatives such as the Māori and Pasifika trades training programme will help develop the local labour pool, we suggest that Northland Inc and the tourism development working group review forecast demands against known supply and skills/capability shortfalls and work with key tourism organisations, relevant central government and education organisations to identify ways of addressing these. This could be done, for example, through new, improved or expanded programmes and on-the-job training (this could be progressed as part of the proposed industry-based skills investment programme discussed later in this report).

- **Focusing on major markets.** Feedback we received from stakeholders suggested that marketing efforts should focus in the first instance on improving the outcomes from the region's major markets of Auckland and Australia, before trying to diversify too much into smaller or emerging markets, except where there are clear opportunities to leverage other developments.

  In this respect, there are opportunities to grow visitor numbers from China based on the proposed expansion of the Peppers Carrington Resort, the recently established 'Friendly City Agreement' that Whangārei has with Haikou City in Hainan Province, the Far North's sister city relationship with China's Liaoning Province, and national efforts to grow tourism services to China as part of the NZ Inc China Strategy.

- **Reviewing events and conference opportunities.** As noted, there are a large range of events and conferences held in the region, although many are community based rather than major events and it is not always apparent how they align with Northland's point of difference. There are several conference facilities available in the region capable of small to medium sized conferences and operators can and do work together to host larger conferences.

  However, the Peppers Carrington Resort project may enhance the regional offering with a large scale (500pax) conferencing facility. A review of conferencing and events on a regional basis would identify strategic opportunities to attract more visitors to Northland. This could form part of regional promotion activities. There is also the possibility of scaling up a flagship regional event to one of national and international significance, such as the Ngapuhi festival, to provide shoulder activity for visitors and to promote a unique point of difference for the region.

- The development of more and better **partnerships between tourism operators and the Department of Conservation** (DOC) to facilitate access to more areas for concessionary activities and to undertake collaborative activities that will improve both the quality of ecosystems and the tourism experience. This is consistent with DOC's increased focus on stronger partnerships to support conservation activity.

What are the implications for stakeholders?

For industry:

- Support the Twin Coast discovery project and involvement in its development process.
- Collaboration and co-funding of marketing and promotion through the regional tourism organisation.
- Investment in on-the-job training.
- Ongoing investment in improving the quality and consistency of services and experiences.

For communities:	• Commitment to support hub/visitor precinct development. • Support for local government funding to be provided for regional tourism promotional activities and projects (when the business case is clear).
For Māori/iwi/ hapū:	• Commitment to support the Twin Coast discovery project and involvement in its development process. • Ongoing investment in improving the quality of services to increase visitor expenditure while maintaining cultural authenticity. • Continued support for and championing of cultural attractions under development, such as the Manea – Footprints of Kupe heritage centre, Waitangi Museum, Kupe Waka Centre, Pou Pou trails, and Māori art centre.
For local government:	• Provide support for the tourism investment proposal for the Twin Coast discovery project. • Review local government funding support for regional tourism promotion and marketing, with a view to bringing it in line with comparable support in other regions (a proposal is being developed for the Northland Regional Council's consideration). This should include a review of conference and events activity and promotion. • Support the development of feasibility studies, business cases for tourism product proposals and co-investment in major tourism initiatives, where appropriate. • Support the regeneration of towns and communities through investment in infrastructure and amenities.
For central government:	• Co-fund opportunities with good economic development cases (e.g., through the MBIE Tourism Growth Partnership Fund). This could include the Manea – Footprints of Kupe project, the Pou Pou trail and story development, the Cape Rēinga attraction, and the completion of the Twin Coast cycle trail. • Provide resource support for the Twin Coast discovery project. For example, the Department of Conservation may need to be involved in visitor hub development alongside NZTA in signage development. • Provide support for the establishment of the Kauri National Park and related tourism experiences. • Continue investment in regional road projects which underpin access to many visitor attractions.

FORESTRY & RELATED PROCESSING

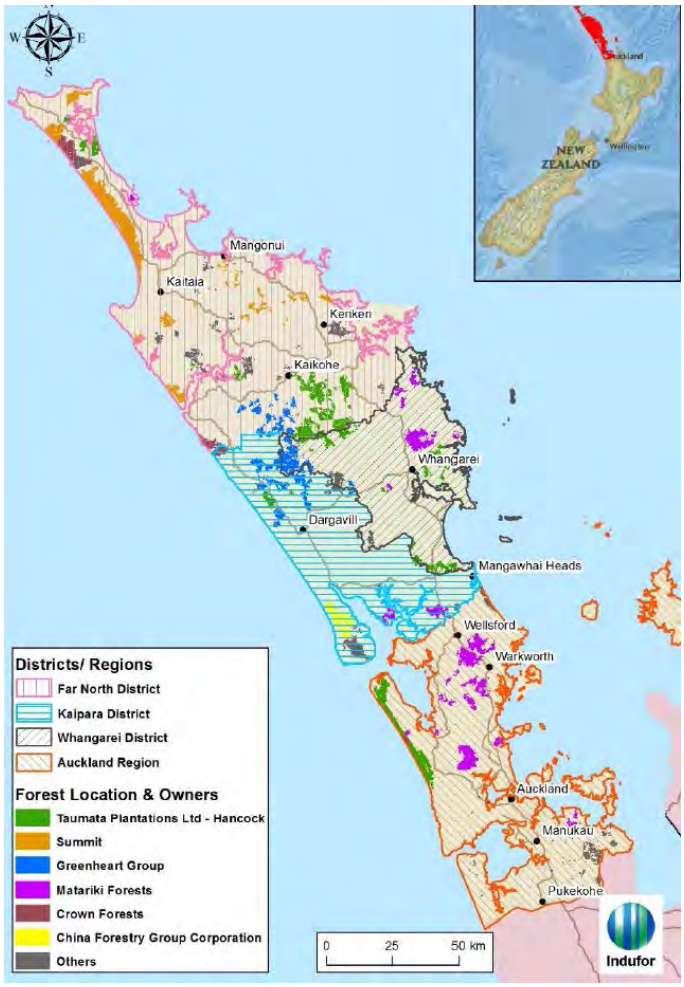
Summary

The forestry and wood processing industry in the Northland region has growth potential based on the region's resource and capability advantages, demand from Auckland for structural timber to meet housing needs, and strong demand from growing economies in Asia (particularly China) for lumber and wood products. Forestry and wood processing companies have access to a bulk export port and are relatively close to the Auckland market.

These advantages are not reflected in the performance of the industry, which has experienced low GDP and employment growth. Although it will be challenging, the region needs to move beyond being primarily a radiata pine log exporter and invest in further processing and higher value species. This can be achieved by:

- Industry representatives finalising an action plan that focuses on how current regional processing capability should be reconfigured, for example through a combination of lower-grade processed products and higher end engineered wood products, given expected supply constraints and known transport constraints. Re-directing 1-1.2 million cubic metres of log export to wood processing could add $250 million per annum to regional GDP.

Figure 17. Forest locations and owners in Northland



Source: Indufor (2014)

- The potential development of a complementary saw and pulp mill near Kaikohe, utilising low-cost heat and energy from Ngawha. Further investigation of this concept is required. A large scale facility could generate around $40 million in regional GDP and create several hundred jobs.
- The development of a tōtara processing industry in the region, subject to an acceptable business case. The industry has the potential to grow to $70 million in revenue once fully established.

Forestry & related processing in Northland

Forestry is a significant sector in the Northland region. With 151,800 hectares (ha) of planted production forest area, Northland has the third largest standing volume and the fifth largest area in forest compared to other regions in New Zealand. Radiata pine accounts for 97 percent of the region's forest estate compared to about 90 percent nationally.

The Far North District has the most significant forestry resource in the region, with 85,900 ha (26.7 million cubic metres), followed by Kaipara District (36,200 ha or 12.4 million cubic metres) and Whangārei District (29,700 ha or 9.5 million cubic metres).[8]

The industry's contribution to regional GDP was estimated at $255 million in 2013 (2010 prices), and the industry's real GDP over the last 10 years grew relatively slowly at 0.4 percent per annum (Table 7).

In 2013, there were around 2,200 people employed in the forestry and related processing sector in Northland (Table 7). By employment, log sawmilling and logging are the largest segments, followed by forestry support services, veneer and plywood manufacturing and forestry (Figure 19).

Most forestry and related processing employment is in Whangārei (48 percent), followed by the Far North (37 percent) (Figure 18). Employment over the last 10 years declined by 1.9 percent per annum (Table 7).

Most sub-sectors are concentrated[10] in the region, reflecting underlying advantages. Forestry services and wood product manufacturing are also estimated to have a moderately large flow-on impact to other industries.

Currently, wood processing in the region uses more than 1.5 million cubic metres per annum, leaving just under 2.0 million cubic metres per annum of logs for export or other processing. The bulk of the available resource is unpruned log grade, with limited availability of pruned logs.

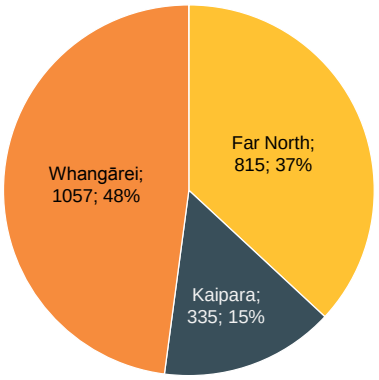
The main wood processing in Northland is sawmilling (16 sawmills), laminated veneer lumber (LVL) and tri-board manufacture, and a wood chip facility.

There are two main centres for wood processing: Kaitaia (sawmill, tri-board) and Whangārei/Marsden Point (sawmilling, LVL). Golden Bay Cement is a large user of forest biomass for energy.

Table 7. Northland industry overview: Forestry and wood processing[9]

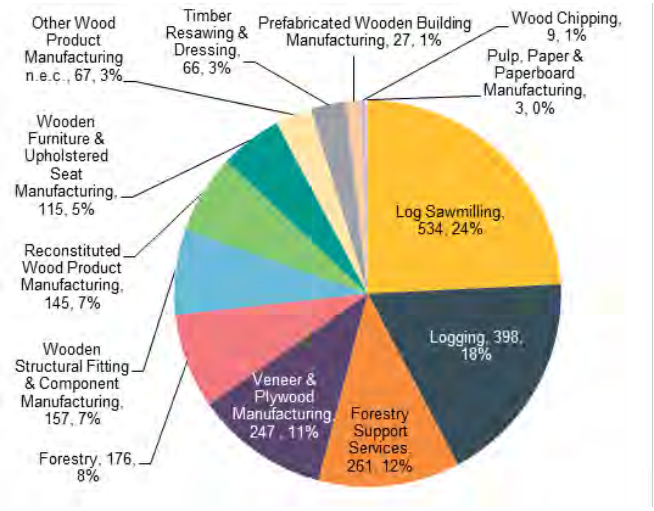
	Forestry	Total
GDP 2013 (2010 $m)	$255	$5,623
Real GDP growth (2003-13, % pa)	0.4%	1.6%
Employment 2013	2,203	64,034
Employment location quotient 2013	2.18	
Employment growth (2003-13, % pa)	-1.9%	0.90%
Estimated Productivity 2013 (GDP/FTE, $2010)	$115,833	$87,819
Estimated exports 2013 ($m 2010)	$291	$1,789
Export growth (2008-2013, % pa)	-2.5%	-2.4%

Figure 18. Forestry and related processing employment by district, 2013



Source: Infometrics database and MartinJenkins calculations. Note: there are small differences in total employment for industry value chains across territorial authorities and total employment by sector due to rounding differences.

Figure 19. Forestry and related processing employment by segment, 2013



Source: Infometrics database and MartinJenkins calculations

[8] New Zealand Farm Forest Association, Forest Owners Association, Ministry for Primary Industries (2014).

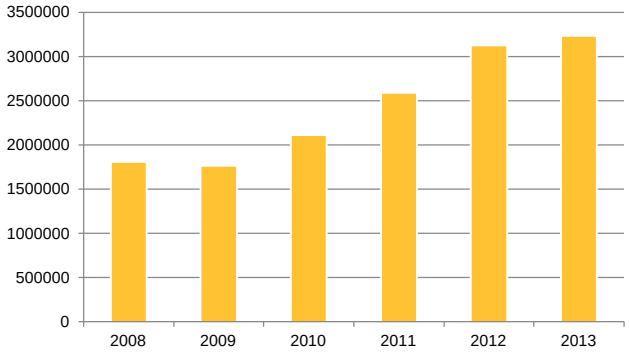
[9] Infometrics database and MartinJenkins calculations.

[10] As indicated by location quotients, i.e., the region has a relatively large share of employment in that sub-sector relative to the national average.

Harvesting volumes have increased rapidly in the region. Harvesting has grown by 8.4 percent per annum over the last 10 years and by 12.4 percent per annum over the last five years. Harvesting reached 3.24 million cubic metres in the year ended March 2013 (Figure 20).

Growth in harvesting reflects strong demand from China for logs and low-grade lumber for construction purposes, as it has experienced rising standards of living and a significant growth in real estate development (China takes around 72 percent of New Zealand's log and wood chip exports (Ministry for Primary Industries, 2014d)).

Figure 20. Northland exotic timber harvesting, m^3



Source: Statistics New Zealand, Forestry by regional council, year ended March

Although the market in China has slowed over the last year as the construction market has stagnated and inventories have built up, forecasts suggest that demand from China will be high over the long-term due to major housing and urbanisation projects. Demand for low-grade lumber and other wood products is also expected from South East Asian markets as their economies grow.

The annual harvest in Northland could grow to 4-4.5 million cubic metres over the next ten years. Based on Ministry for Primary Industry forecasts, the longer-term sustainable harvest (e.g., post 2030) is around 3.5 million to 4 million cubic metres per annum (Ministry of Agriculture and Forestry, 2010).

However, those figures were based on a stocktake of the forestry resource undertaken over 2009 and harvesting forecasts of around 3.5 million cubic metres per annum over 2010-2020. It is clear that harvesting may grow considerably more strongly than expected, and hence the long-term harvesting profile may be lower than expected. If harvesting levels continue to grow and stay around the 4 million cubic metre per annum level over the next ten years, then there may be a significant reduction in the availability of wood post 2025.

Northland does have a number of potential advantages over most other locations for growing the value of and employment in forestry and wood processing:

- Northland has good quality structural wood resource. Because of the temperate climate, the wood tends to be of higher density and stiffness than other regions, making it more suitable for structural products.
- The region has a variety of indigenous tree species suitable for harvesting on managed reserves and private land, such as kauri, tōtara, kowhai and kahikatea.
- The industry has good access to the major domestic market in Auckland, where there is increasing demand due to the growing market for new housing.
- Export markets are serviced through Northport, which is a deep water port and well suited to bulk exports. However, it does not have containerisation facilities, which will limit the export of processed wood products.
- The ability to take advantage of a significant range of research and development that is being undertaken in the industry, including converting radiata pine forestry waste into liquid biofuels, the development of a steep slope felling machine, research into reducing the time it takes to plant and breed radiata pine trees, and developing design scenarios for forestry systems on Māori owned-land for indigenous species, exotic species and secondary crops.

Work has also commenced on the development of a regional forestry strategy and action plan by an advisory group of industry representatives, with a focus on partnerships, value-added processing and infrastructure.

Issues and challenges

Although Northland provides advantages, there are some key challenges facing the sector:

- **Wood Supply.** A key issue for processors, and their investment intentions, is ensuring certainty of supply:
  - If the export price of logs remains high over the long-term, then forest growers are incentivised to export logs rather than necessarily supplying domestic processors (who may not be able to afford the higher input costs). There have been cases of shortages of logs for domestic processing over the last few years in different regions.
  - The estimated long-term sustainable harvest of 3.5 million to 4 million m^3 per year assumes:
    - Harvesting over the next ten years does not grow to 4 million m^3 or more per annum. As noted above, it is quite possible that this will occur and that the available wood supply post 2025 will be considerably lower than current forecasts suggest.
    - That there will be replanting of harvested forests (and in radiata pine). There are questions about whether all areas will be replanted in future. For example, some current forests operating under Crown Licence arrangements that pass across to Māori may not necessarily be replanted after the next harvest as iwi may not:
      - have the capital available to invest in replanting
      - currently have commercial expertise to enter into joint venture arrangements with parties that can invest in replanting, and/or
      - be interested in pursuing commercial forestry and may want to pursue other land use and forestry options, such as indigenous forestry rather than radiata pine.
  - The Emissions Trading Scheme (ETS) will influence land-owners' decisions regarding when and if to harvest their plantations, and when and if they will replant them (as they receive carbon credits for trees). If carbon prices are low over the long-term, it provides less of an incentive for replanting.

- **Transport constraints.** The forestry resource in Northland is geographically widely dispersed across the long, thin region. There is one key freight route through the middle of the region from Kaitaia to Whangārei and then down to Auckland, which includes sections of State Highway 1.

  Feeder routes into forests are generally unsealed and poor quality. Dust created by logging traffic on unsealed roads can cause health problems for residents, contaminate drinking water and cover homes.

Figure 21. Northland timber harvesting

Source: NorthTec

There are road resilience issues in several areas of the region and, as was demonstrated last year, severe weather events can cause landslips and flooding. Diversion routes can be insufficient for heavy freight. Log traffic competes with tourism traffic in sections, creating safety issues and potentially detracting from the visitor experience.

There are also many weight restricted bridges throughout the region which limits the operation of heavy vehicles at full load. Although significant investment is being made to improve the quality of roads in flood and slip prone areas, to improve high productivity motor vehicle (HPMV) routes, increase the length and number of passing lanes and to replace or strengthen bridges, disruptions and closures will continue to impact on the productivity of the forestry and wood processing industry.

Relatively little log and wood freight is transported by rail and the efficiency of the rail network is limited by low clearances, single tracking and speed restrictions. In addition, there is no rail link to Northport and the Port does not have the large container facilities required for the movement of processed wood product.

Transport issues are covered in more detail later in this report.

The opportunities

Based on the analysis of the sector and investigation of a number of opportunities in the region, three areas of opportunity have been identified with potential to grow the value of the forestry and related processing industry in the region, and incomes and jobs for communities.

1) Growing the wood processing industry

Northland has the potential to undertake further processing of logs. Processing will need to move beyond the predominantly structural timber products, to include a combination of low-grade outputs (e.g., packaging), and structural engineered wood products (e.g., laminated veneer lumber, optimised engineered lumber and cross laminated timber). In the long-term, there is also the potential to develop biofuels and chemicals from forest and solid wood processing residuals although at a national level there are still technical issues to work through to produce petrol and diesel from residuals that meet New Zealand fuel quality specifications.

Northland is currently processing over a third of the regional harvest, largely producing structural lumber such as posts, boards, beams, panels and laminated veneer lumber. If high harvesting levels continue over the next decade, the existing wood processing industry in Northland will face a reduction in the quantity of wood available, particularly higher grade wood suitable for structural timber. Some of the existing processors will have to move into processing of lower grade logs for packaging, furniture, formwork and feedstock for other processing.

For those that can continue to source supply for structural lumber, the domestic market for structural lumber is relatively small, although it is forecast to grow on the back of increased construction activity in Christchurch and Auckland. Although Northland processors can capture a greater share of the Auckland market in particular, further wood processing of scale in Northland will need to be focused on new or expanded export markets or new, innovative products, such as optimised laminated timber.

Expanding exports will require identifying the right market opportunities where processed radiata pine products are or can be valued. New Zealand and Northland producers do not currently export higher value wood products to a significant extent and sawn timber and wood product export volumes have varied over the last few years, due to increasing competition from timber processors in other markets and reduced demand in some key markets.

Developing exports will also require investment in building long-term relationships in the growing markets of China, South Korea and South Asia. This will need to be based on a good understanding of in-market requirements and the log to customer supply chain. Given the scale of processors in Northland, servicing markets such as China is also likely to require further investment to grow the scale of production of individual companies and/or pooling capability and supply across companies and forest owners. A lack of market insight can also make it difficult to prepare investment proposals to attract investment to grow.

Industry representatives indicated that undertaking the market engagement required and the potential development of a 'front-desk' for Northland to coordinate market insights, access and supply to markets would be prohibitively expensive for the individual companies.

Public support (facilitation or co-investment) in our view is likely to be required to help overcome the coordination problems involved in such undertakings and to account for the broader benefits that would result from the exchange of knowledge and learning between businesses. However, a necessary pre-condition is for the industry to come together and be willing to share the costs of participation in any collective activity.

Expanding processing into new products, such as biofuels and chemicals, will require further investment by industry in R&D and the commercialisation of that R&D. Significant R&D projects are occurring at a national level, such as the Stump to Pump programme (Primary Growth Partnership), which has investigated how to generate more value from forestry waste by converting it to liquid biofuels. The commercial partners involved are committed to continuing to work on bio-fuel optimisation to produce petrol and diesel that meet New Zealand fuel quality specifications. The industry in Northland needs to be linked into such projects and able to assess and, where warranted, apply the outcomes of the research once commercial potential has been proven.

Northland Inc has been facilitating a process with a group of industry representatives (Forestry Advisory Group) to develop a 'forestry action plan'. This would be a suitable group and process to identify an appropriate configuration of processing for the region, given wood supply and known transport constraints, and how that might be achieved.

The Forestry Advisory Group and process could also develop a collective approach towards supply management, market intelligence and development, investment attraction, pooling of resources and assessing and applying R&D, with additional input and support from NZTE and MPI. This process should also identify further opportunities for Northland processors in the Auckland market. We suggest that the process focus on an initial 'win' for the businesses involved, such as the development of a 'front-desk' for Northland to coordinate market intelligence and supply to markets.

Assessment

Co-investment in a series of actions to develop value-added wood processing in the region rates moderately on our criteria. Although this is regionally significant and could have a large impact on value-added and growth, collective action initiatives can be difficult to implement.

Table 8. Assessment of the value-added wood processing opportunity

Validity	Medium
Potential Impact	High
Practicality	Low-medium
Regionally significant	High
International orientation	High
Builds off existing work and investment	Medium
Consistency with national priorities	High
Overall rating	**Medium**

2) Development of a sawmill and pulpmill facility at Ngawha

A potential investment opportunity is the development of an integrated sawmill and mechanical pulp mill at the Ngawha geothermal field near Kaikohe in the Far North.

The current proposal, which is being assessed by Northland Inc and NZTE, is for a large scale facility. Large-scale in this case means the ability to process around 1 million to 1.2 million m^3 of logs per annum, producing 400,000 to 450,000 tonnes of sawn timber and 250,000 tonnes of pulp.

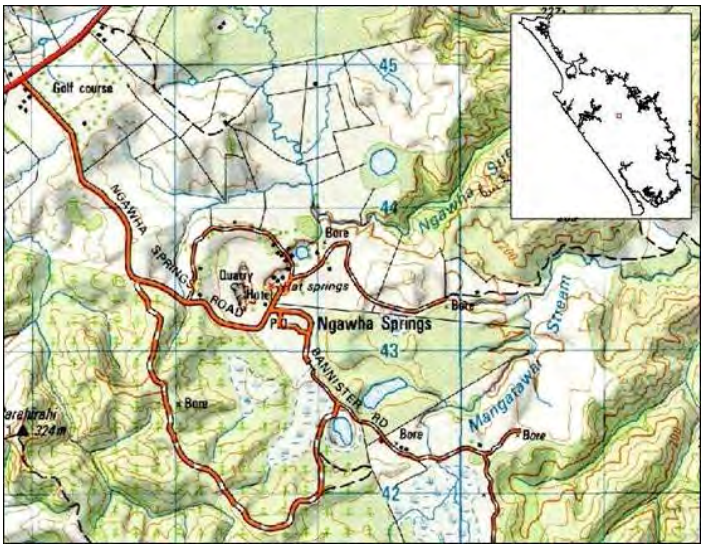
Combining pulping and sawmilling makes sense as they are complementary – the sawmill provides residues for the pulpmill. The sawmill would focus on producing lower grades of lumber to be used for furniture, packaging, and for construction uses.

Long-term forecasts of demand for this type of lumber are positive, as demand from China is expected to be strong due to government investment in housing projects, the China Urbanisation Plan and a growing young Chinese middle-class seeking housing. Strong-growth for low-grade logs is also expected from South East Asia as their economies expand.

Key to the competitiveness of this opportunity is the availability and cost of power supply. A mill located at Ngawha would offer the potential for using low cost geothermal power and to use the heat for drying wood, freeing up low-value residues that are often used as fuel.

Top Energy is planning to expand the Ngawha site's geothermal electricity generation and is seeking to allocate some of the increased heat production. A direct electricity supply arrangement and the use of geothermal heat reduces the capital costs that would be involved in setting up such a facility in another location as well as ongoing operating and maintenance costs.

Figure 22. Ngawha Geothermal Field



Source: Northland Regional Council, 2008

The total investment required for a large-scale facility would be around $660 million (around $510 million for the pulpmill, $125 million for the sawmill, and $25 million for a heat plant for drying pulp and lumber). Total sales could be around $285 million to $320 million per annum once fully operational (MartinJenkins calculations based on Indufor, 2014).

A large-scale facility is considered notionally possible, based on a desk-top assessment (Indufor, 2014) of the region's forestry resource about the future regional harvest, significant quantities of low-grade unprocessed logs that are being exported, and low-cost heat and electricity that can be generated by the Ngawha field. The assessment also determined that such a facility would be competitive against competing mills in other countries (based on assumed prices and costs). This is due to the high yields possible from denser wood available in Northland, lower power costs from Ngawha and transport costs. However, a full feasibility analysis and assessment of costs and benefits has not been undertaken.

We have identified two issues that will need to be considered as part of a further assessment of the proposal:

(i) **Whether there will be sufficient long-term supply of logs for such a facility.** Although the desk-based opportunity assessment has identified that there is a large volume of logs potentially available as input for such a mill, this is questionable.

- As noted, if high levels of harvesting occur over the next ten years, then there may be a significant reduction in wood availability post 2025
- Logs are currently exported, and the mill would need to pay the world price for logs, which has, until the recent past, been high. Existing forest owners will not enter into long-term supply contracts at favourable prices with such a facility to provide certainty of supply when they can enjoy such high export prices and the potential for price increases. They may also be disinclined to consider altering their existing supply and export arrangements. Moreover, many of the forest owners are very small in scale and capturing the required supply may be difficult and involve high transaction costs.

(ii) The potential impact of the facility on domestic industry. Around half of the sawn timber produced in New Zealand is sold in the domestic market, with the rest exported. We note that the intention is that such a facility would produce lower grade sawn lumber for export markets. However, that will depend on the investors' interests and configuration of the plant. If the proposed facility is established and sells a significant proportion of its lumber in the domestic market then it may have a detrimental effect on existing saw mill operations in the region and further afield, particularly given the proposed scale.

We also note that Red Stag in the Bay of Plenty is increasing its log processing capability (1.2 million tonnes of logs and producing 700,000m^3 of sawn timber per annum), further adding to domestic supply. Of course, if the Ngawha opportunity is developed as purely a private sector arrangement then that will be a commercial decision. However, if local and/or central government provide support to attract investment in such a facility, then the wider economic costs, as well as the benefits need to be considered.

Given the potential log supply issues, a smaller scale facility may be more realistic, although this would have a different cost profile (and may not be as competitive) and will limit the ability to incorporate a pulpmill. The next step is for Northland Inc, with NZTE and MPI, to undertake a detailed feasibility assessment of the proposal, including broader costs and benefits. This assessment will need to consider the ability to access sufficient supply of logs and the implications for the scale of such a facility, the target markets, and the impact on the domestic market.

Assessment

The large-scale sawmill and pulpmill proposal rates moderately on our criteria, largely due to the uncertainties that still exist about the feasibility of the project and the broader costs that may result.

The proposal does rate well for regional significance and potential impact.

Table 9. Assessment of the sawmill and pulpmill proposal

Validity	Low-medium
Potential Impact	High
Practicality	Low-medium
Regionally significant	High
International orientation	Medium
Builds off existing work and investment	Low
Consistency with national priorities	Medium
Overall rating	**Medium**

3) Development of indigenous wood products industry

Northland also has the opportunity to develop a new niche industry producing high value wood products from tōtara, based on the management and use of tōtara stands in the region. The opportunity builds on previous research by Scion and iwi in the region.

An opportunity analysis has been undertaken by Scion, MPI, Northland Inc and the Tane's Tree Trust to assess the available resource, potential market, risks and the potential for growth. This analysis has identified that there is around 200,000 ha to 350,000 ha of tōtara in unmanaged stands across Northland (Scion, Tane's Tree Trust, Northland Inc, Ministry for Primary Industries, 2014). It is possible that there is sufficient volume of quality wood to provide for consistent production until new plantings become available, although further analysis needs to be undertaken to assess the overall volume and wood quality. Applying silviculture practices could improve volume and quality over the next decade.

The wood provides for high value output for furniture and interior applications, with analysis suggesting that it could sell for around $2,500 per cubic metre for appearance grade timber and could create a $7.5 million industry within three years, growing to $70 million in seven years, in a best case scenario (Scion et al, 2014).

Developing consistent supply and demand is key to the success of the venture. Supply is fragmented and will need to be coordinated, although there is sufficient interest among partners to do this. This option will resonate with iwi that are interested in pursuing additional land use options beyond radiata pine. The analysis suggests that tōtara can be processed in existing commercial sawmills and there are no particular processing challenges. However, until plantations come on stream, onsite milling may need to be employed.

Log grade specifications will also need to be developed and ideally a 'brand story' that will help sell the advantages: i) of using an indigenous resource, ii) that harvesting and management will have positive environmental impacts through sustainable management and iii) that tōtara produces superior products. The potential market is initially domestic and there may be export restrictions for offshore markets to be worked through.

The next steps are to do further analysis of market demand, pricing, financial modelling, harvesting planning, piloting processing and to confirm a base of interested investors and key partners to provide a full business case. This work will be undertaken by the existing lead parties but could be co-funded by government (e.g., through the Pre-Seed Accelerator Fund, subject to it meeting the criteria).

Assessment

This opportunity currently ranks at the lower end of the opportunities identified, mainly because further work needs to be undertaken to determine the feasibility and case for developing such a niche industry and that the industry will be of small to moderate scale. However, we consider that this will complement the existing and potential wood processing capability in the region, based on a real point of difference.

Table 10. Assessment of the indigenous forestry opportunity

Validity	Low
Potential Impact	Low
Practicality	Medium
Regionally significant	Medium-Low
International orientation	Low
Builds off existing work and investment	Medium
Consistency with national priorities	Medium
Overall rating	**Medium-Low**

Potential benefits

The impact of an expansion of wood processing in the region will depend on the scale and type of production that eventuates. The national Woodscape Study (Scion and FPInnovations, 2013a; 2013b; 2013c) has estimated that wood processing has a greater impact on GDP on a per log basis than log exports. Work undertaken in the region based on the Woodscape study suggests that redirecting 1-1.2 million m^3 of log exports to wood processing options could add $250 million to the regional economy per annum and create 1,200 to 1,400 new jobs.

Initial estimates of developing a tōtara processing industry in the region suggest economic impacts of $380 million to $550 million per annum (Scion et al, 2014). However, we believe that these are over-estimated and that, assuming the industry generates around $70 million of revenue when fully developed, economic impacts of around $35-$45 million in regional GDP per annum and employment of between 440-500 people would be a more realistic ballpark based on our understanding of regional multipliers.

Beyond value-added and employment impacts, broader benefits from the opportunities would include:

- **Reduced industry volatility** through a more diverse base of products and markets.
- **Increased knowledge and learning** about the development of new products and markets across the industry in Northland, resulting in subsequent productivity improvements.
- An expansion of wood processing is also likely to require foreign investment, and this may result in **additional productivity benefits** to supplying firms due to the introduction of new techniques, quality or delivery standards.
- **Environmental benefits** such as reduced green waste to landfill. If processing options also include biofuels in the long-term, there are environmental benefits from the use of a 'greener fuel' (e.g., reduced greenhouse gas emissions). The indigenous forestry opportunity would also help to preserve and protect an important species in the region.

Figure 23. Northland forestry worker

Source: NorthTec

Relevant central government initiatives

- The MBIE supported *Growing Confidence in Forestry's Future* programme to make radiata pine forests more productive, sustainable and profitable through precision technology, improved environmental practices and better use of genetic resources (involving Scion and other CRIs).
- MPI Primary Growth Partnership and Sustainable Farming Fund projects with the forestry industry including:
  - Prosperity from Trees – investigating how to protect kauri and radiata pine from current and future diseases.
  - Research on radiata pine breeding to produce new technologies that will reduce the time it takes to breed and commercially plant improved radiata pine trees.
  - Research into biopolymers, including bioresins and biofoams.
  - The stakeholders in the Methyl Bromide Reduction programme, which identified alternative fumigants to reduce methyl bromide use and the effects of methyl bromide until suitable replacements were found.
  - The recently completed Stump to Pump programme, which investigated how to generate more value from forestry waste by converting it to liquid biofuels (further commercial investment in the R&D is continuing).
  - The Steepland Harvesting programme, focused on reducing steepland harvesting costs by 25 percent using innovative log harvesting technologies.
- The Emissions Trading Scheme.
- Te Pūnaha Hiringa: Māori Innovation Fund.
- Investment in roads and bridges to support HPMV/50 MAX vehicles.
- The Permanent Forest Sink Initiative.

Other considerations

- **Skills demand and supply.** Higher value wood product manufacture will demand further improvements in skills. With increased automation and technical advances in the growing and production process, there will be greater demands for design engineers, skilled assembly workers, chemical engineering, maintenance, harvesting and equipment know-how, in-market marketing skills and forestry researchers (Infometrics & Nimmo-Bell, 2014).

  There will also be continued and growing demand for forestry workers for harvesting and replanting but this part of the industry is perceived by some to involve hard work and be dangerous. At the same time as the Northland industry expands, the equivalent industries in the Bay of Plenty and East Coast are also forecast to expand and hence will be demanding similar skills. If Northland is to compete, it will need to improve the perceptions of the industry and the region as a viable career choice and encourage more youth into the industry and attract out-of-region workers. The proposal for a skill-based investment programme for the industry (discussed later in this report) and a new approach between education and training providers, key businesses in the industry, iwi and central government agencies will help to address these issues.

- **Design standards.** The current timber design standard (NZS 3603) specifies characteristic stresses and limits and design methods for the design of timber structures to meet the performance requirements of the New Zealand Building Code. Stress values for visually graded timbers listed in Australian Standard AS 1720.1 may also be used.

  For timber species or grades not listed in the New Zealand standard or available from AS 1720.1, evidence must be produced to establish a sound basis for characteristic design stresses. This means that producers of a wide range of engineered wood products, such as LVL, must undertake tests and audits of their product to demonstrate and provide evidence that they meet New Zealand Building Code requirements. Some manufacturers consider that this effectively excludes their specialty timbers from the structural market in New Zealand.

  MBIE and the forestry and wood processing sector have set up a programme of work to update NZS 3603, including potentially recognising engineered wood product (LVL and glulam) grades. In the first phase of this work, New Zealand will replace the old standard by the adoption of AS 1720.1 with modifications to include New Zealand structural timber grades, amongst other things. However, it is unclear whether it will be possible to develop meaningful standardised grades for engineered wood products – grades in terms of strength and stiffness are at the discretion of the manufacturers, and manufacturers wish to protect proprietary grades.

  A review of AS/NZS 4357 (which is the joint Australian New Zealand material standard for structural laminated veneer lumber) is also about to commence, and this may present a more appropriate place to consider LVL grades. Indeed, this may be a better way to get agreement on standardised processes for producing broad LVL grades. This will require that the industry agree to, and co-fund, an update of this standard.

- **Transport.** The transport constraints caused by the road network and its susceptibility to weather events were noted earlier. Options for alleviating some of these constraints, such as identifying and strengthening alternative freight routes and accelerating investment in HPMV routes and bridge bottlenecks are outlined later in this report in the section on transport.

- **Trade barriers and market protection.** There is differential import treatment in key offshore markets between raw logs and processed wood products (for example, China), with processed products facing tariff and non-tariff barriers. Moreover, some countries also put barriers on their own exports of logs, effectively reducing the input costs for their own processing industries. These policies make it difficult for New Zealand processors to cost effectively compete in some markets. It also means that timber from some markets can be imported at a lower cost than the domestic production cost. Overall, these barriers incentivise the supply of unprocessed logs and discourage exports of processed wood products.

The development of new trade agreements and future reviews of existing free trade agreements should consider options for reducing these differential tariffs and non-tariff barriers.

- **Māori/iwi/hapū investment intentions.** It was noted earlier that Māori/iwi/hapū may not have the capital to invest in replanting or new forestry options or be able to access commercial expertise to advise on best resource use options. Funding support for iwi to obtain commercial advice and develop business cases for the best use of land currently used for radiata pine forestry and investment in replanting is available from MBIE's Māori Innovation Fund.

What are the implications for stakeholders?

For industry	• Work with Northland Inc, MPI and NZTE to finalise the forestry and wood processing action plan and agree a collective approach to (including co-funding of) market research and engagement. • Co-invest in a full feasibility analysis of the Ngawha sawmill and pulpmill opportunity (relevant participants in that project). • Continue to invest in R&D in added value wood products. • Co-fund an update of NZS 4357 and agree on an approach to incorporating engineered wood product grades in the update of NZS 3603.
For Māori/iwi/ hapū:	• Work with Northland Inc, MPI, NZTE and other industry representatives to finalise and implement the forestry and wood processing action plan. • Support the development of a business case for the indigenous forestry opportunity. • Work with MPI and Māori freehold land owners to identify opportunities to improve Māori participation in the forestry industry and the ongoing development of undeveloped Māori land best suited to forestry.
For local government	• Work with industry to finalise the action plan and facilitate collective engagement in market research and engagement. • Provide funding support for a full feasibility analysis of the Ngawha sawmill and pulpmill opportunity. • Support the development of a business case for the indigenous forestry opportunity.
For central government	• Work with Northland Inc and industry to develop the forestry and wood processing action plan. • Provide funding support for the local industry to undertake offshore market research and engagement. • Support the development of a full feasibility analysis of the Ngawha sawmill and pulpmill opportunity. • Continue to support R&D into forestry and wood processing through the Primary Growth Partnership and MBIE research funding. Facilitate Northland business connections into national R&D programmes. • Continue to update NZS 3603 and co-fund an update of AS/NZS 4357. • Provide funding support for Māori Trusts and incorporations to obtain advice on land utilisation and appropriate commercial arrangements.

DAIRY & RELATED PROCESSING

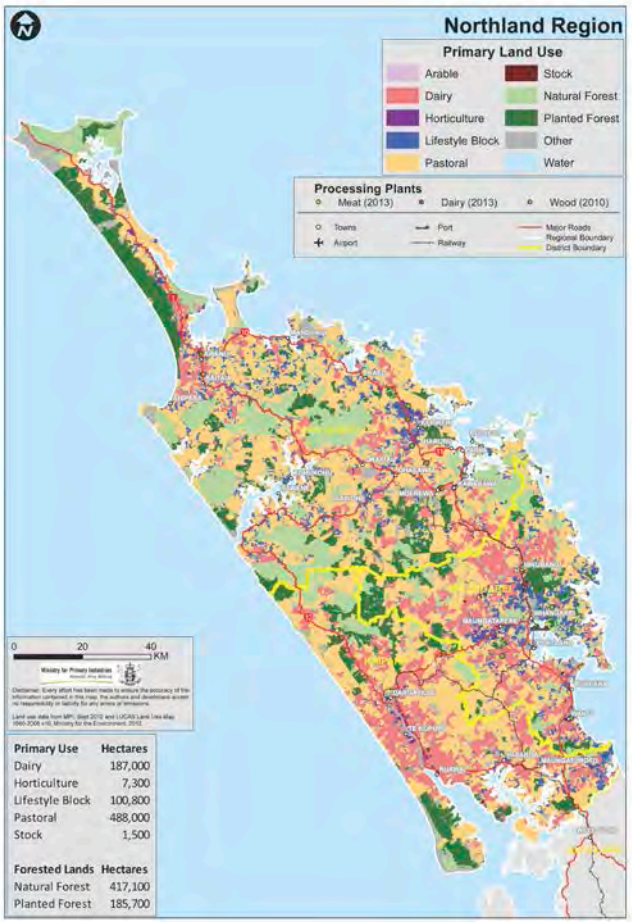
Summary

Northland is well positioned to benefit from the rising demand for protein in emerging markets. The dairy industry is significant for Northland and there is potential to grow the industry by:

- Building on and extending dairy farm productivity initiatives. Moving the middle 50 percent of farmers to the upper quartile of performance could deliver an additional $50 million of value per annum.
- Collaboration/consolidation of small farms and land use change on Māori-owned land. The impacts will depend on the scale to which this occurs.
- Continued investment in R&D in pastures, added-value products and processing, and the potential development of an agricultural innovation centre for the region.

To realise this potential, industry development will need to go hand in hand with improved water and environmental management.

Figure 24. Dairy and other primary land use in Northland



Source: Ministry for Primary Industries

Dairy & related processing in Northland

187,000 ha of Northland land is in dairy, with 935 dairy herds (Ministry for Primary Industries; LIC & Diary NZ, 2013). As can be seen in Figure 24, the majority of production is concentrated in the Whangārei and Kaipara districts. In 2013 Northland produced around 92 million kilograms (kg) of milk solids or 5.5 percent of national production (LIC & DairyNZ, 2013).

Dairy and related processing is a significant industry for Northland. It contributed $331 million to regional GDP and employed 3,462 people in 2013. The dairy industry is strongly concentrated in Northland relative to other regions, suggesting that the region has clear resource advantages.

Despite these strengths, Northland's dairy industry experienced a decline in both value and employment over the last decade by 1.3 percent and 2.1 percent per annum respectively (Table 11). Employment fell in part as farms amalgamated and farming technology improved.

In 2013, estimated exports were $384 million (2010 prices) (Table 11). Estimated exports declined by 6.3 percent per annum over the previous five years.

The decline in the overall value of the industry in the region is largely down to a contraction in dairy product manufacturing of 5.7 percent per annum, which is likely due to the combined effect of drought and flood events in Northland.

Employment in the industry is dominated by dairy cattle farming, followed by cheese and other dairy product manufacturing (Figure 25). All dairy segments are relatively concentrated in the region. Dairy and related processing employment is split between Whangārei (41 percent), followed by Kaipara (35 percent) and then the Far North (24 percent) (Figure 26). Significant organisations in the region include Fonterra's Kauri and Maungaturoto sites, Fresha Valley milk, Māhoe Cheese, DairyNZ and Landcorp.

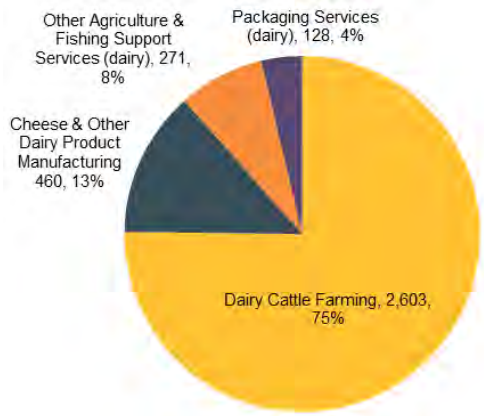
Total numbers of dairy cattle in Northland have fluctuated over the last six years between 350,000 and 400,000 cattle (Figure 27). Overall, there has been a slight decline in dairy cattle numbers and growth is low relative to other regions and the New Zealand average.

However, the outlook for the industry over the long-term is positive. Northland has a large land area suitable for dairy and its subtropical climate supports stock growth in winter and spring months. Milk production nationally is expected to grow by around 2-3 percent per annum (Fonterra, 2014a), driven by offshore demand and resulting farm conversions and productivity improvements. Although export revenue will fall in the short-term as a result of lower international prices, prices are expected to recover as the demand for protein from China, South East Asia and emerging markets increases over the long-term due to population growth and rising income levels (Ministry for Primary Industries, 2014d).

Table 11. Northland industry overview: Dairy and related processing[11]

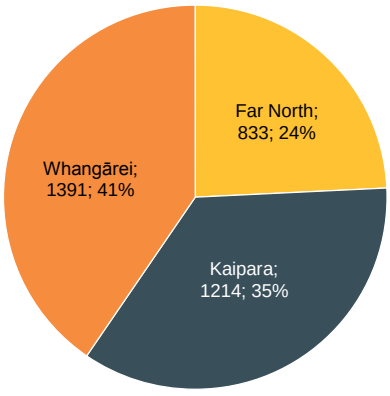
	Dairy	Total
GDP 2013 (2010 $m)	$333	$5,632
Real GDP growth (2003-13, % pa)	-1.3%	1.6%
Employment 2013	3,462	64,034
Employment location quotient 2013	2.21	
Employment growth (2003-13, % pa)	-2.1%	0.9%
Estimated Productivity 2013 (GDP/FTE, $2010)	$91,194	$87,819
Estimated exports 2013 ($m 2010)	$384	$1,789
Export growth (2008-2013, % pa)	-6.3%	-2.4%

Figure 25. Dairy and related processing employment by segment, 2013



Source: Infometrics database and MartinJenkins calculations

Figure 26. Dairy and related processing employment by district, 2013



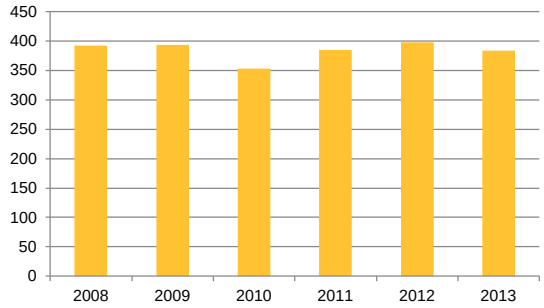
Source: Infometrics database and MartinJenkins calculations

[11] Infometrics database and MartinJenkins calculations.

Dairy production in Northland could grow from 92 million to around 100 million kg of milksolids within the next ten years (Fonterra, 2014a).

The industry in the region, along with broader agricultural interests, has collaborated to develop an agreed roadmap to grow the value of the pastoral industry (Northland Agricultural Forum, 2012a). The vision is for the pastoral industry to increase its contribution to Northland GDP through sustainable productivity gains. Strategies include: strengthening rural communities and their networks; enhancing pastoral extension and research; planning ahead for environmental challenges; supporting successful Māori farming development; and developing leadership and human capability. The Northland Agricultural Forum operates as a representative and networking group in the region.

Figure 27. Total dairy cattle in Northland, 2008-2013



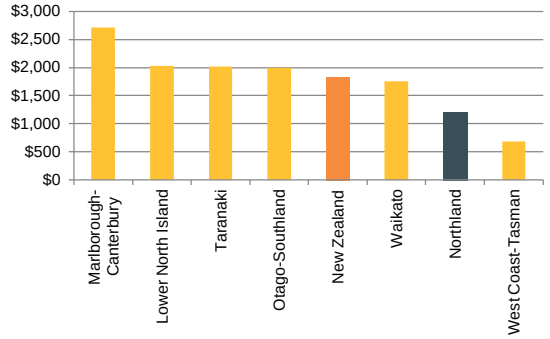
Source: Statistics New Zealand Agricultural Production Statistics

Dairy industry development is also supported by investment in innovation and research in the region, including the DairyNZ Focus Farms, the Northland Dairy Development Trust (NDDT), Northland Agricultural Research Farm and a range of research programmes.

Issues and challenges

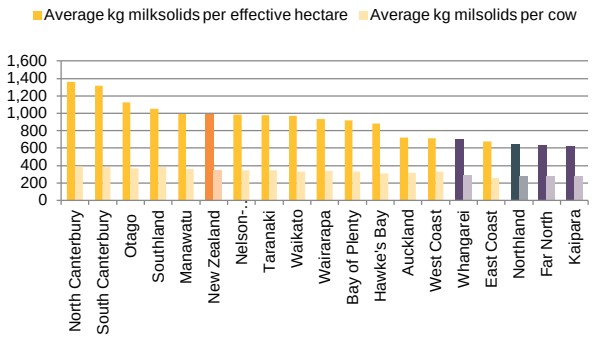
The region's pastoral industry roadmap notes that, on average, pastoral production and profitability in the region are 30-40 percent lower than comparable regions. Dairy farms in Northland produce less milk solids per effective hectare (645kg compared to 988kg) and per cow (282kg compared to 346kg) than farms nationally (LIC & DairyNZ, 2013) (Figure 29). Northland farmers are also less likely than farmers nationally to carry out regular herd testing to inform their decision making and herd management. Not surprisingly, the operating profit per hectare from Northland's dairy farms is relatively low, at $1,214 per hectare, compared to $1,830 nationally (DairyNZ, 2014d).

Figure 28. Operating profit per hectare, 2012/13



Source: DairyNZ (2014d)

Figure 29. Dairy productivity across regions, 2012/2013



Source: LIC & DairyNZ (2013)

There are multiple factors underpinning the lower productivity performance:

- **Scale and intensity.** Dairy farms in the region typically have smaller herd sizes than the New Zealand average (306 compared to 402 nationally), fewer cows per hectare on average (2.3 compared to 2.9 nationally) and fewer cows per hectare across all farm sizes (LIC & DairyNZ, 2013). This may be inter-related with soil and pasture quality issues as well as more limited farming capability.
- **Soil and pasture quality.** Only approximately 10 percent of Northland's land area is considered to have highly productive and versatile soil (Northland Regional Council, 2012c). In the Far North, soil composition is an issue – much soil has a sand base and hence it is hard to retain moisture in the ground; in other areas there are peat soils which can either get too wet or too dry. Although the warmer winters and longer pasture growth period in the region should provide an advantage, pasture has been found to be lower quality (with low dry matter percentage), which limits the intake of cows and leads to lower milk production. There can also be considerable variability in pasture growth over a season and between seasons resulting in large feed deficits.
- **Climatic events and water management.** Northland's farmers have been affected by droughts in 2010 and 2013 and flooding in 2014. Droughts and floods harm pasture cover, result in stock feed shortages and impact on animal health, costing hundreds of millions of dollars. Climate change is expected to increase the frequency of these weather events in Northland.
- **Challenges in the management of Māori land.** An estimated 4,600 hectares of the region's Māori freehold land is currently used for dairying (Ministry for Primary Industries, 2013d). Māori freehold land in the region, as in New Zealand generally, has diverse and dispersed ownership, with large numbers of owners holding small land interests. There can be a wide range of aspirations for the land that can prevent consolidation into larger, more efficient farm units. Multiple-ownership and the fact that several iwi in the region are pre-settlement also constrains access to capital to invest in land and farm development.
- **Farm operations and attractiveness for young people.** Industry stakeholder feedback suggests that young people in the region are not attracted to the industry because of the long hours, hard work and isolation of farming. Operating structures for dairy farms in Northland also differ in some ways to New Zealand as a whole. The region has a higher proportion of owner-operators and a lower proportion of sharemilkers (LIC & DairyNZ, 2013). Progression opportunities are limited because there are fewer herd-owning sharemilking jobs. For New Zealand as a whole, sharemilkers have higher production per herd and per effective hectare (LIC & DairyNZ, 2013). Sharemilking incentivises productivity improvements, is a path for farm workers to become farm owners, and supports succession planning.

The opportunities

Even incremental increases in dairy productivity across farms will provide a good long-term return to the Northland economy because of the scale of the industry. In our view improving productivity in the industry will require tackling the identified issues on several fronts, i.e., a comprehensive rather than piecemeal approach. Opportunities to do this have already largely been recognised by industry, government (central and local), and Māori/iwi/hapū in the rohe.

1) Improving on-farm management

Improved productivity will be driven by farmers through the adoption of new and improved farming practices. This could include improvements in information collection and benchmarking, uptake of regional herd testing services, improvements in breeding and animal welfare, more formal management and more automation.

A good example in the region where such improvements have occurred is the DairyNZ Focus Farm project in Okaihau, which has implemented improved pasture management, reproduction management and expenditure management. Milk production increased by 38 percent, costs per kg of milksolids reduced by 30 percent and the farm surplus increased by 280 percent. Another Focus Farm was established last year near Kaitaia.

Figure 30. Far North Focus Farm

Source DairyNZ, Far North focus farm project

The Focus Farm is co-funded by DairyNZ and participating farms and sponsored by a variety of supplying companies and the Northland Regional Council (at a total cost of around $150,000 over three years). Additional Focus Farms could be established in the region, although without additional support this will take several years. Support is required to upskill farm advisors and bring together a willing coalition of farms.

In addition, DairyNZ has been contemplating the introduction of Dairy Push in the region. This intiative, which has operated in the South Waikato, extends the Focus Farm concept to a broader group of farmers who hold learning workshops each year and also have regular one-on-one visits with a farm advisor. The concept resulted in the South Waikato group (which were below average farms) reaching the regional average on profit per hectare (DairyNZ, South Waikato District Council & Fonterra, 2011). It has been extended for another three years with a joint focus on profit and environmental performance improvement, i.e., to reduce nitrogen leaching by 20 percent over the next three years. The local council has provided funding support for the initiative in addition to the contribution made by the farmers and DairyNZ.

Given the direct and broader benefits of Focus Farms and Dairy Push, our view is that if the region wishes to accelerate productivity improvements in the dairy industry, then the regional council could consider seeding support for the expansion of Focus Farms to more locations and the introduction of Dairy Push with DairyNZ.

2) Realising the dairy potential of Māori land

There are opportunities to increase Māori owned land used for dairying in the region and to consolidate multiple owned small land units into larger scale farms. The Ministry for Primary Industries estimates that an additional 5,601 hectares of Māori land in Northland is potentially available for conversion to dairy (MPI, 2013d), if this land use aligns with the aspirations of the land owners.

Northland Māori/iwi/hapū are already working with government agencies and major industry players to advance their dairy aspirations, for example through the Rangihamama dairy project and Treaty settlement.

- The Rangihamama Dairy project converted 278 hectares of Māori-owned land into high productivity dairy with the agreement of more than 3,000 shareholders.

  Supporting partners in the project include the Ministry for Primary Industries, Te Tumu Paeroa (Office of the Māori Trustee) and the Bank of New Zealand (BNZ).

  The Rangihamama Dairy Project estimated that investment will see production grow from 180,000 kg of milksolids in the first year to 230,000 kg of milksolids from year three.

Figure 31. Opening ceremony Rangihamama Dairy Conversion March 2014

Source: Agri HQ, 2014

- Part of the Crown's settlement with Te Rawara and Ngāi Takoto includes the 2,480 ha Sweetwater farms, which Landcorp sharemilks on behalf of the Office of Treaty Settlements. Te Rawara and Ngāi Takoto are working together to advance their shared dairy and pastoral farming interests following their treaty settlement, which is currently being finalised. This agreement provides for Māori to consider future sharemilking/sharefarming arrangements with Landcorp and other suitable industry partners.

Although these two projects are models for other Māori landowners and iwi who want to grow the value of land through dairy, a major issue is the ability of Māori/iwi that are pre-settlement to identify the best land use and structures to develop and manage the land, and to invest in major land holdings that are coming on to the market in the interim.

We note that MPI supported the Rangihamama Dairy Project with funding for professional advice to the governance body during its establishment. The Ministry also works closely with Iwi Asset Holding Companies on the development of Treaty settlement lands.

In our view it would be useful for MPI and MBIE to work with the Tai Tokerau Iwi Chief Executives Forum and financial institutions to develop options for providing support for commercial advice and bridging finance for dairy conversions and expansions, until settlements are finalised.

A potential source of support is MBIE's Māori Innovation Fund, which can provide financial support for Māori collectives to engage a commercial advisor to identify opportunities to obtain higher economic returns from their asset bases, and develop and evaluate business cases for those opportunities.

3) Dairy industry R&D and a proposed innovation centre

The region has benefited and will continue to benefit from a range of public-private R&D projects on pasture, environmental management and new technologies. These include Primary Growth Partnership initiatives to improve nitrogen and phosphorous use efficiency and to develop new dairy products with health and wellness benefits; Sustainable Farming Fund initiatives to improve pastures, control weeds and economically exploit dairy farm effluent through freshwater aquaculture; and programmes through the NDDT on pasture management, calving and silage.

Figure 32. Proposed Northland innovation centre

Source: Northland Development Trust, 2014

It has been proposed that the activities of the NDDT be expanded through the establishment of an innovation centre focused on primary sector R&D but tailored to Northland's specific opportunities and challenges. The centre could also be a mechanism for disseminating the outcomes of R&D initiatives (e.g., through education programmes and workshops). The current concept proposes that the centre be established by local government in partnership with industry and central government.

An initial focus area could be closed loop farming, which involves using dairy farm effluent as a basis for farming freshwater fish such as carp (either through methane output to generate energy for tanks, or to grow aquatic plants on which fish can live), which in turn can be used for animal feed. Further areas of focus could include soil quality and managing the impacts of climate change. Iwi with commercial dairy interests are also potential partners for the centre.

The concept is at the early stages and the logical next step is for a feasibility study to be commissioned by Northland Inc and the NDDT in partnership with MPI and MBIE, to determine whether and how a primary industry innovation centre be best developed for Northland. This would include articulating the value proposition; identifying critical success factors and potential barriers to success; defining the centre's key parameters, resources required and areas of focus, potential benefits and costs; and articulating the potential involvement and roles of research institutions, businesses, local and central government. It will be important to clarify the scope of the functions and sectors of interest, how the functions of the innovation centre would differ from existing research institutions, and the demand from the relevant sectors for those functions.

Relevant central government initiatives

- MPI Primary Growth Partnership and Sustainable Farming Fund projects with the dairy industry including:
  - Clearview Innovations – increasing efficiency in the use of nitrogen and phosphorous and reduce environmental impacts.
  - Transforming the dairy value chain – development of new premium products with health benefits; initiatives to improve on-farm productivity and reduce environmental impacts, and improve agricultural education.
  - Whai Hua – developing immune enhancing dairy milk products for Asian and New Zealand markets.
  - Pasture development programmes focussed on improved pasture renewal, pasture improvement using plantain and tutsan weed control.
  - Integrated Aquaculture Solutions – a programme to explore how to exploit the discharge of dairy farm effluent through freshwater fish.
- Rural broadband initiative and further roll-out of ultra-fast broadband roll out – creating a platform for adoption of technology in the dairy industry.
- Treaty Settlements currently being progressed that include commercial dairy farm elements.
- Support for the Northland training hub.
- Te Pūnaha Hiringa: Māori Innovation Fund.
- Māori agri-business programme and support for the Omapere Rangihamama Trust to accelerate the transformation of 278 hectares of Māori land from grazing to high productivity dairy farming.

What are the potential benefits?

On farm productivity improvement initiatives such as Focus Farms and Dairy Push increase milk production, reduce costs per unit and increase farm profitability. The government estimates that on-farm productivity improvements that move the middle 50 percent of Northland farmers to the upper quartile could deliver an estimated additional $50 million of value per annum to the industry (Ministry for Primary Industries, 2013b).

In addition to the direct and indirect impacts on value, these productivity initiatives have broader benefits to the wider economy through the exchange of information and knowledge between farmers that participate and other farmers in the region.

Although employment in the industry has been reducing and productivity and technology improvements point to further reductions in the use of labour per farm in future, the potential for a much more positive employment scenario exists for Northland, particularly if there is increased dairy processing in the region, for example through premium specialty cheese and dairy-based processed foods and beverages.

While optimistic in our view, forecasts released by MPI suggest that, with moderate growth in milk production and strong growth in processing and wholesaling, an additional 3,400 jobs could be created in the industry in the region by 2025 (Infometrics & Nimmo-Bell, 2014).

The potential for Māori from dairy conversion and Treaty Settlements in the rohe is also significant. Work undertaken for MPI estimates that bringing all Māori freehold land in the region into production or improving current productivity levels will increase gross output by $731 million over business as usual, increase GDP by $339 million (nominal prices) over business as usual, and create an additional 331 employees per annum (Ministry for Primary Industries, 2013d).

Only a small proportion, around 10 percent of the land (around 10,000 ha) identified in that report was regarded as currently in dairy or potentially suitable for dairying, so the benefits flowing specifically from dairy would be substantially less than these figures. The report did provide an illustrative case study of a 573 ha block of land being introduced into dairy, which was estimated to increase output by $40 million over ten years and create 18 jobs over the period.

Assessment

Improving dairy industry productivity through better on-farm management, realising the dairy potential of Māori owned land and dairy industry R&D rated highly against other opportunities we assessed based on the criteria. It rated particularly highly on regional significance, validity and potential impact, noting that productivity improvements would result in improvement over time rather than a large upfront impact.

Table 12. Assessment of initiatives to improve dairy industry productivity

Validity	High
Potential Impact	High (over the long-term)
Practicality	Medium
Regionally significant	High
International orientation	Medium
Builds off existing work and investment	Medium
Consistency with national priorities	Medium-high
Overall rating	**High**

Other considerations

- **Skills development and attraction.** The dairy industry in Northland will require more highly qualified farmers and farm workers if it is to achieve its potential, with competencies in farm systems, information management, effluent and irrigation management, resource use efficiency, and financial management. The region's providers are already tailoring offerings to meet skill demand, including the NorthTec-Taratahi Agricultural Training Centre and Lincoln University-Northland College Farm partnerships, and the mid-North community Northland Training Hub. The industry itself needs to promote the benefits of careers in dairy and provide sharemilking opportunities given the reluctance of young people to enter the industry.

  As Māori/iwi/hapū in the region increase their commercial interests in dairy there will also be increasing demands for local Māori with dairy farm management expertise, and who can advise on commercial and investment models. The proposed industry-based skills investment programme discussed later in this report will be a step toward better mapping of skill demand and supply requirements for the industry, involving local and central government agencies, major dairy organisations and iwi.

- **Reducing environmental impacts.** The environmental impact of dairying, particularly effluent and leaching or run off into waterways, will become increasingly important in the region as dairy production and intensification increase. Through its 2013-14 effluent monitoring programme, Northland Regional Council found that over 20 percent of farms were significantly non-compliant and just under 60 percent of farms fully compliant with effluent disposal requirements. The Waiora Northland Water initiative, a community engagement process with the Northland Regional Council to improve the quality and management of freshwater, will set goals and standards for managing freshwater resources. Further investment by industry in R&D and programmes to reduce the impact of effluent will be required in future, such as Fonterra's 'living water' initiative with the Department of Conservation in the Hikurangi catchment.

- **Water storage and management.** As noted, Northland has experienced severe droughts over the last few years that have detrimentally affected pasture cover and milk production. The likelihood is for more frequent weather events such as droughts in future, requiring investment in water storage and irrigation. A study is being commissioned to better understand existing irrigation schemes and short-falls, required irrigation and storage infrastructure to meet demand, and the economic benefits of better water management. This will provide the foundation for further investment in this area (discussed later in this report in the section on Water Quality & Management).

What are the implications for stakeholders?

For industry:	• Increase farm productivity and profitability through investment in new and improved farming practices, monitoring and benchmarking of performance and participation in productivity programmes. • Co-invest in R&D programmes to improve pasture quality and management, effluent management and new dairy products. • Promote the benefits of careers in dairy and provide more sharemilking opportunities for career progression. • Co-invest in water storage and irrigation projects.

For communities:	• Encourage young people/rangātahi to consider careers in the dairy industry and participate in tailored education and training.
For Māori/iwi/ hapū:	• Continue to work with MPI and others to establish additional dairy conversion and consolidation projects on Māori-owned land where appropriate, based on the successful pilots so far. Investigate options for co-funding conversions and expansions. • Use available funding support to obtain advice on the best uses of land and appropriate commercial arrangements for taking up land-based opportunities.
For local government:	• Consider co-investing in an expansion of Focus Farms and the introduction of Dairy Push in the region. • Investigate the feasibility of a Northland innovation centre tailored to regional primary industry needs, in partnership with industry and central government. • Proceed with the planned water usage study as a priority to map the demand for and supply of water and to identify required irrigation and storage options to meet demand.
For central government:	• Continue to support the Northland dairy industry through research and development and agricultural extension. • Continue to work with Māori/iwi/hapū to establish additional dairy conversion and consolidation projects on Māori owned land, where it aligns with their aspirations, based on the successful pilots so far. Investigate, with iwi CEs and financial institutions, options for co-funding conversions and expansions. • Provide funding support for Māori Trusts and Incorporations to obtain advice on land utilisation and appropriate commercial arrangements. • Work with industry on programmes to reduce the impact of effluent on waterways.

AQUACULTURE

Summary

Northland's aquaculture industry is currently small and focused on shellfish but has the potential to grow and develop into higher value seafood products, primarily finfish, to meet expected increasing global demand for fish.

The key investment and commercial opportunity is to develop a land-based kingfish production facility. Northland is a superior location for farming kingfish due to its water quality and temperature, and NIWA's Bream Bay research facility has developed the science for a land-based operation.

The venture could contribute around $14 million to GDP per annum and up to 150 jobs. The 'proof of concept' still needs to be confirmed through an initial pilot facility. Sources of patient capital that are suitable for such a venture also need to be identified. A full business case is required as the next step.

There is also the potential to scale up oyster and mussel production in the region, and potential sites for doing this should be assessed. Expanding oyster production by an additional 150 ha alone would contribute around $14 million to GDP and 220 jobs.

Figure 33. Existing marine farms in Northland

Source: Ministry for Primary Industries (marine farms in red)

The expansion of aquaculture in the region would be facilitated by having greater certainty in the regulatory environment and processes to encourage greater acceptance by local communities about the benefits of aquaculture.

Aquaculture (& fishing) in Northland

Northland has around 270 hectares of developed aquaculture area. Most of this is for Pacific oysters, with a relatively small area for greenshell mussels and a single commercial pāua farm at Bream Bay. The majority of oyster farms are located in Whangaroa Harbour, Bay of Islands, Houhora, Kaipara and Parengarenga Harbour. Mussel spat collection is focused on Ninety Mile Beach, but this is important nationally because this is the most significant area for spat collection in New Zealand, and farms throughout New Zealand are reliant on it. There is also a large scale mussel farm on the northern side of Houhora Harbour.

In 2013, Northland produced 514 tonnes of oyster and 190 tonnes of mussel (AquacultureNZ). There are no active finfish farms in the region. Some freshwater aquaculture is being undertaken in Mangawhai (grass carp) and Ruawai (eels).

Aquaculture and fishing is currently a relatively small scale industry in Northland.

It contributed $18.5 million to regional GDP and employed 383 people in 2013. Value-added declined by 3.2 percent per annum and employment contracted by 2.8 percent per annum over the last decade. Estimated exports declined from $101 million in 2008 to close to $38 million in 2013.

The decline was largely a result of the oyster virus OsHV-1. In 2010 up to 80% of juvenile oysters on some farms were lost. The value of seafood processing in the region fell from $20 million in 2008 to $11 million in 2013.

The majority of employment in the aquaculture industry is in the Far North District (59 percent) and Whangārei (31 percent) (Figure 35). Seafood processing, line fishing and longline and rack aquaculture are the largest sub-sectors for employment (Figure 34). Line fishing, other fishing and longline and rack aquaculture are all highly concentrated in the region, suggesting that the region has clear resource advantages for these industries.

'Other fishing' (pāua, eels and includes spat catching) is relatively small in scale but was the only subsector that increased in value and employment over the last ten years.

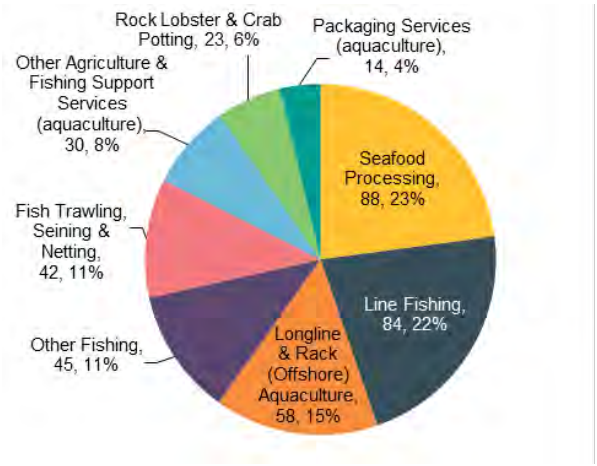
The outlook for the aquaculture industry nationally is positive, with exports expected to grow strongly in the short-medium term due to the recovery of oyster production, and in the long-term due to expanding markets in Asia, Europe and North America (Ministry for Primary Industries, 2014d).

The aquaculture industry locally is positive about prospects, having established an ambitious strategy for growth in 2012. The aim is to double the value of oyster and pāua production, increase greenshell mussel production twenty-fold, and to develop kingfish into a major industry by 2030 (Northland Aquaculture Development Group, 2012).

Table 13. Northland industry overview: Aquaculture & related processing[12]

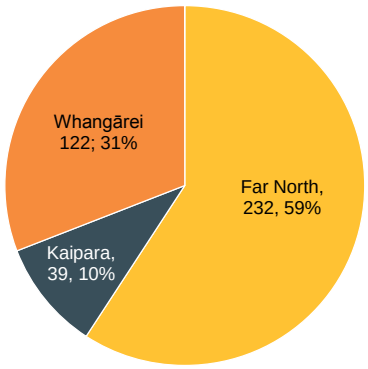
	Aquaculture	Total
GDP 2013 (2010 $m)	$18.5	$5,623
Real GDP growth (2003-13, % pa)	-3.2%	1.6%
Employment 2013	383	64,034
Employment location quotient 2013	1.31	
Employment growth (2003-13, % pa)	-2.8%	0.9%
Estimated Productivity 2013 (GDP/FTE, $2010)	$48,293	$87,819
Estimated exports 2013 (2010 $m)	$38	$1,789
Export growth (2008-2013, % pa)	-18%	-2.4%

Figure 34. Fishing and aquaculture employment by segment, 2013



Source: Infometrics database and MartinJenkins calculations

Figure 35. Fishing and aquaculture employment by district, 2013



Source: Infometrics database and MartinJenkins calculations

[12] Infometrics database and MartinJenkins calculations

Northland has several advantages for aquaculture not shared by many other regions in New Zealand (other than perhaps Nelson-Marlborough). In particular:

- Northland has accessible, sheltered harbours, moderate offshore conditions and a mild climate – conditions that support the production of temperate-water species, such as kingfish.
- The region is home to a major aquaculture park at Bream Bay. Established in 2002 and developed by NIWA, it undertakes R&D to bridge the gap between small-scale research and commercial-scale production. Research currently focuses on the next generation of farmable aquatic species, notably yellowtail kingfish, hapuku and salmon, with continuing interest in mussels, oysters, eels and pāua. The park is co-located with New Zealand's largest commercial pāua farm – OceaNZ Blue Limited.

There is also a supportive and collaborative local industry. The Northland Aquaculture Development Group was formed in 2011 and is made up of representatives of iwi, oyster and pāua farmers, and investment consultants, and supported by NIWA, Cawthron Institute and Northland Inc. It developed the Northland Aquaculture strategy, and has working groups developing actions to grow finfish, oysters and freshwater aquaculture.

Māori in the region also have significant interests in aquaculture as tangata whenua and ensuring that the management of aquaculture is consistent with traditional management concepts such as kaitiakitanga. Māori /Iwi/hapū are and will continue to be important partners in the development of aquaculture in Northland. Māori are entitled to 20 percent of new aquaculture space (coastal space) under the Māori Commercial Aquaculture Claims Settlement Act 2004 with delivery of that entitlement to be based on regional agreements between Iwi Aquaculture Organisations and the Crown. 45 hectares of space have been identified for potential settlement options. The region has until 30 June 2015 to agree and sign the regional agreement.

The region is also well placed to leverage national aspirations and investment in the industry, including: the Government's Aquaculture Strategy and Five Year Action Plan to grow the industry in New Zealand to $1 billion of sales by 2015 (New Zealand Government, 2012); investment in R&D such as developing selectively bred greenshell mussels to improve quality; and the development of freshwater aquaculture based on exploiting the discharge of dairy farm effluent. Researchers and businesses in New Zealand are exploring a number of new products (e.g., mussel pastes, crumbed products), new and other species (e.g., geoduck, sea cucumber), nutraceuticals, live exports, and different forms of packaging (vacuum packaging to extend shelf life). MPI, industry and science providers are also working on a range of projects to improve oyster resilience to OsHV-1, including a selective genetic breeding programme at the Cawthron Institute hatcheries.

Issues and challenges

The industry has stalled in the region largely due to a combination of biological and climatic conditions affecting oyster and mussel production. This illustrates the vulnerability of the industry and the need to diversify. In addition, the ability to expand aquaculture in Northland and diversify into other species is hindered by regulatory uncertainty and public opposition:

- Implementing the coastal planning framework has been complex and protracted. This can make it difficult for organisations to obtain consents for sea-based aquaculture and to obtain new space to expand. There is complexity and resulting uncertainty created by:
  - The number and nature of amendments that have taken place to the Resource Management Act that affect aquaculture proposals, and the ongoing nature of the reforms.
  - The evolving interpretation of key policies relating to coastal protection that are contained in the New Zealand Coastal Policy Statement.

- The inter-relationship between the changing RMA and changing regional frameworks. It is not clear how the proposed reforms of the RMA may impact on aquaculture. Central government is currently assessing the issues and options to improve how aquaculture is managed.

- There is provision for resource consent applications for new aquaculture areas in Northland through the Regional Coastal Plan. Plan Change 4 was introduced to enable the creation of Aquaculture Management Areas (AMAs) required by the 2004 RMA aquaculture reforms. The 2011 Aquaculture Reforms removed the requirement for AMAs, and Plan Change 4 has been amended to reflect that change by considering aquaculture development in general rather than specific to AMAs. Plan Change 4 is currently under appeal to the Environment Court. A review of the Coastal plan is currently being initiated.
- The impact of the New Zealand King Salmon Supreme Court decision last year is being debated by different interest groups. While the decision clarifies that there will be a very high threshold for marine farming to meet if it is to be located in areas with high or outstanding natural features and landscapes, the extent to which specific aquaculture projects and existing operations may be restructured as a result can only be determined on a case by case basis.
- Public opposition to expansion of aquaculture, which is typically based on concerns about environmental impacts, navigational impacts, visual impacts, reduced harbour space and clean-up costs. Concerns may not necessarily reflect reality, and a recent survey by Colmar Brunton suggests that the majority of people have positive views about the aquaculture industry and the benefits it provides (Colmar Brunton, 2014). However, in the absence of clear evidence about the benefits of aquaculture and how risks may be mitigated, such views can stall or eliminate further developments.

A proposed 85 hectare mussel farm in Whangaroa Bay was granted resource consent last year despite concerns about being in an area of outstanding natural landscape and some public opposition, with the Environment Court determining that the islands in the area did not exhibit outstanding natural character or qualities and also being convinced about the economic benefits of the proposed farm.

The opportunities

Growing the scale and value of the industry in the region will be difficult, but is achievable if the following opportunities are proven and pursued.

1) Kingfish farming

The establishment of a land-based kingfish farming facility in Northland has been proposed for several years, building on the investment that has already occurred at the Bream Bay aquaculture park.

NIWA has researched and identified the necessary inputs and conditions for production and can now reliably produce commercial quantities of juvenile yellowtail kingfish. All approvals exist for starting a land-based finfish farm at Bream Bay.

The establishment and development of such a facility could evolve as follows:

Figure 36. Kingfish fingerlings hatched at NIWA, Bream Bay

Source: Northland Inc. http://www.northlandinc.co.nz/regional-partnerships/northland-aquaculture-development-group

- Initially establishing a pilot facility producing 500 tonne of kingfish per annum as proof of concept in order to prove the performance of the equipment in a full production situation and hence de-risk the longer-term investment opportunity. Market assessment work suggests that there is currently sufficient demand for at least 500 tonne of kingfish per annum through a combination of domestic restaurants and supermarkets and offshore buyers (Young, 2014).
- Obtaining investment to expand that pilot plant in several phases to a 3,000 tonne facility (possibly within 5-6 years). On current assumptions, the existing hatchery at NIWA can support production of up to 3,000 tonnes per annum and has the capacity to produce juveniles to supply a wider industry of 10,000 to 20,000 tonnes per annum.
- Trialling of sea-based rearing cages. Initially focusing on land-based aquaculture may offer some advantages over sea-based aquaculture as it provides greater control over growing conditions and is more readily consented. However, given lack of scale economies possible with the current proposal and costs associated with transport of produce offshore, it is not clear that a land-based production facility will be cost competitive except in the domestic and Australian markets. It would be useful to test the economics of sea-based facilities relative to land-based operations and the ability to achieve greater scale economies through a combination of sea and land based farming.
- Developing a strong brand and "product story" to create and maintain market awareness and acceptance of the product (Young, 2014). Assuming it is possible to be competitive on price offshore, competing kingfish commercial operations already exist in the US, Japan and also Australia. The point of difference for New Zealand kingfish offshore is unclear and hence branding will be important – although market research suggests that demand for yellowtail kingfish currently exceeds supply in world markets (as a premium grade sashimi).

A key issue for the feasibility of this venture is that there is a long-lead time (around 10 years) before positive cash flow is achieved. Significant investment (over $10 million for facilities) is required in the first five years for infrastructure, combined with a substantial amount of working capital.

Private sector investors would need to have the ability and risk appetite in the face of variable market conditions to take on this timeframe before achieving return on investment.

Public funding could potentially be used to support the initial pilot facility, which might be circuit breaker for private sector co-investment. From an economic development perspective, the broader economic benefits for the region (or nationally) from such a development have not yet been estimated, including employment (both directly through the development and indirectly through suppliers and associated businesses), skills development, innovation and market access.

In our view a full, detailed business case needs to be developed as a priority.

This needs to include finalising and peer reviewing: the financial case, including cash-flow forecasts and construction and operational costs; the economic case, including economic cost-benefit analysis and sensitivity analysis; the commercial case including the operational requirements and facility design; and the management case, including the best long-term arrangements for the venture (including the potential mix of private and public investment and interests to manage benefits and risks). Work has commenced between NIWA, Northland Inc and the MPI on some, but not all, of these elements. Assuming the business case is proven, the next step would be to develop a proposal for investment for the proof of concept and subsequent phases, for both private and potential public investment.

2) Scaling up existing aquaculture production

Northland has around 750 hectares of consented aquaculture areas but only around 270 hectares is currently used for oyster (240ha) and mussel (around 22ha) production. Around 100-150 hectares of the remaining oyster consented area is estimated as productive and able to be developed (Enveco, 2010).

National forecasts, based on environmental suitability and capacity for new space, regional coastal plan rules, and competition for coastal spaces for other uses, suggest that oyster production in Northland could increase to 1,150 tonnes by 2035 (Ministry for Primary Industries, 2014e). This represents output growth of around 4 percent per annum over the next twenty years. This assumes that consented productive space for oysters increases by an additional 70 hectares by 2025 and a further 100 hectares by 2035 (Ministry for Primary Industries, 2014e). This is close to the estimated productive area that is consented and still to be developed.

Figure 37. Oyster farm, Bay of Islands

Source: Northland Regional Council, 2008. http://www.nrc.govt.nz/Resource-Library-Archive/Environmental-Monitoring-Archive2/Annual-Environmental-Monitoring-archive/2008/2007---2008-Annual-Environmental-Monitoring-Report/Coasts/Aquaculture-Monitoring/

The same forecasts suggest that mussel production could increase from current levels to almost 3500 tonnes by 2025 and over 4800 tonnes by 2035, assuming that space increases by 160 hectares by 2025 and an additional 50 hectares by 2035 (Ministry for Primary Industries, 2014e). This represents substantial growth in output of around 17.5 percent per annum over 20 years. Much of the required space will not be currently consented.

Figure 38. Mussel farm, Northland

Source: Northland Regional Council, 2013. http://www.nrc.govt.nz/Resource-Library-Summary/Environmental-Monitoring/State-of-the-Environment-Monitoring/Our-coast2/Marine-biodiversity-and-biosecurity/

This suggests the potential for aquaculture, but demand for space and investment will be driven by local and global demand for aquaculture products, industry profitability (which is impacted by prices, exchange rates, productivity, costs of production), technological change (e.g., new farming techniques), environmental factors (e.g., diseases, water quality, temperature changes) and the favourability of the regulatory and local environment.

Demand for mussels and oyster is forecast to average around 2 to 3.5 percent per annum over the next ten to twenty years (Wyatt, van der Scheer and Moore, 2010), which is lower than the forecast growth of production potential in Northland. However, demand from China and South East Asia is growing significantly and could absorb increased production.

As New Zealand is a world market leader for Pacific oysters and greenshell mussels, the industry will need to continue to grow these markets if higher demand is to be achieved. Again, this will depend on investment in marketing and branding.

The next steps for Northland would involve assessing potential sites for development and completing feasibility assessment for those sites, with the work overseen by the oyster and mussel working groups established as part of the region's Aquaculture Development Group. We understand that site assessment work is planned.

The success of both of the above opportunities will also depend on:

a) Establishing a 'social licence' for aquaculture developments

Communities in Northland have not always been convinced about the benefits of aquaculture or that the benefits will exceed the costs. There has been opposition in the past from recreational users of waterways and environmental advocates to resource consent applications for aquaculture developments. Opposition can be based on ecological concerns, issues associated with conflicts with other uses, or issues associated with visual effect of aquaculture. The opposition can be real or perceived. It will be easier to achieve the above opportunities and to improve overall outcomes if the projects have the ongoing approval of local communities, iwi and other stakeholders, i.e., there is a 'social licence' to operate. This requires that the industry and local government invest in practical actions to improve community understanding of the aquaculture industry and the specific projects. This could involve the Aquaculture Development Group, Northland Inc and relevant industry representatives:

- Identifying stakeholders and groups with interests in aquaculture developments, whether they be directly or indirectly impacted and/or may have an influence.
- Opening communication with these stakeholders, using appropriate approaches and methods for engagement for each stakeholder group.
- Identifying what each stakeholder group wants, such as up-to-date information on progress with the industry or on individual projects, or discussion of and input into options.
- Providing information transparently about the industry and the relevant project/s (including benefits and costs). As a starting point, we consider that it would be useful for an economic impact assessment to be completed to demonstrate the relative importance of the industry in the region.
- Maintaining communication and building two-way relationships with stakeholders over time.
- Identifying potential problems and seeking solutions prior to applications for resource consent.

MPI and Aquaculture New Zealand have been working on a social licence work programme over the past twelve months. This has included a report on best practice and lessons learnt from other industries which have worked through social licence issues, sharing knowledge and expertise with Australian experts in social licence and community engagement, and the establishment of an aquaculture industry social licence working group (Ministry for Primary Industries, 2014b).

The Northland region will be well placed to benefit from and link into this existing social licence work programme.

b) Improving the regulatory environment for aquaculture

The current regulatory environment represents a challenge to the establishment, expansion or re-consenting of aquaculture in the region, particularly sea-based aquaculture. The consenting processes can be expensive, require complex scientific and legal advice and there is no guarantee that the application will be approved. These uncertainties can dampen interest in the development of new aquaculture areas or expansion of existing areas.

The Regional Council has also approved a plan change which identifies areas where aquaculture areas could be proposed. Plan Change 4 is currently under appeal to the Environment Court and the outcome of the appeal is difficult to predict because the 2011 Aquaculture Reforms removed the requirement for some of the management approaches on which Plan Change 4 is based. In addition, as noted earlier, a decision by the Supreme Court on King Salmon proposals to establish salmon farms in the Marlborough Sounds has affirmed that there will be a very high threshold for marine farming to meet if it is located in areas with outstanding natural character, outstanding natural features and outstanding natural landscapes. This is relevant for several coastal areas of Northland where there may be applications for new consents or re-consenting of farms.

However, the extent to which specific aquaculture proposals and existing operations will be restricted as a result of the policies discussed in the Supreme Court decision will only be determined on a case by case basis.

The regulatory environment needs to be appropriately addressed for industry to invest and grow. Options may include giving the New Zealand Coastal Policy Statement its intended effect, using RMA intervention powers of the Minister responsible for Aquaculture to unlock new space more quickly, and/or using the forthcoming RMA reforms to streamline the policy making and resource consent processes related to aquaculture development.

Central government is currently considering a range of options such as these to create greater confidence and certainty in the industry.

Relevant central government initiatives

- Investment in NIWA (Crown Research Institute) and the Bream Bay Aquaculture Park.
- Investment in R&D to support the industry, including the Precision Seafood Harvesting Primary Growth Partnership, the SPATnz high value shellfish Primary Growth Partnership, investment in Integrated Aquaculture Solutions to develop freshwater aquaculture activity to exploit dairy farm effluent, and investment in business R&D to explore new aquaculture products and species.
- Government Aquaculture Strategy and Five-year Action plan to grow aquaculture exports to $1 billion by 2025.
- Forthcoming RMA reforms to provide more certainty, timeliness, and cost-effectiveness in resource allocation decisions.
- Māori Commercial Aquaculture Settlement Regional Agreements.

What are the potential benefits?

As noted, there is limited information currently available about the specific benefits that will result from the kingfish farming opportunity. Assuming average prices per kilogram of kingfish of around $13 over the long-term (Young, 2014) would suggest that the venture will generate close to $40 million per annum of revenue for the entities involved once fully established at 3000 tonnes (and more if sea-based farming can be developed as well), which may translate into an additional $14 million of GDP to the regional economy from finfish farming per annum and 150 jobs (direct and indirect).

The opportunity to scale up production of oyster and mussels in the region is consistent with the aspirations in the Northland Aquaculture Development Strategy – that strategy suggests that the value of the oyster industry could double by 2030 to $30 million per annum and that the value of the mussel industry could increase twenty-fold by 2030 to $20 million per annum.

A previous study has suggested that an additional 150 hectare of oyster farming and related processing in the region has the potential to directly contribute $9 million to regional GDP and create 200 jobs, which increases to $14 million of regional GDP and 220 jobs when indirect effects (for example, from supplying and logistics businesses such as construction and transport firms) are taken into account (Enveco, 2010). No estimates were provided on the impact on the economy from increases in mussel production.

Broader benefits may also ensue as other businesses are attracted to the region as a result of an increased concentration of aquaculture related activity (for example, new tourism businesses, seafood retailers) and through the further development of NIWA Bream Bay as the New Zealand centre of excellence for kingfish R&D.

Assessment

The aquaculture opportunity rates moderately on most of our criteria, although it could be regionally significant for Northland. There are still several unanswered questions about the validity, practicality and impact of the opportunities.

Table 14. Assessment of the kingfish project and expansion of shellfish production

Validity	Medium
Potential Impact	Low-medium
Practicality	Medium
Regionally significant	High
International orientation	Medium
Builds off existing work and investment	Medium
Consistency with national priorities	Medium
Overall rating	**Medium**

Other considerations

- **Skills demand**. An expansion of aquaculture in Northland will increase the demand for labourers, marine farm managers, other managers, and research, marketing and sales workers. A recent study has estimated that employment in seafood industries in Northland could increase by almost 900 employees by 2025 (Infometrics & Nimmo-Bell, 2014). This is based on the projection assumptions coming to pass (i.e., new space being available for mussel farming and commercialisation of finfish species) and the estimates also include boat repair jobs related to the industry as well as fish and seafood wholesaling activities. Northland will struggle to meet that demand given the current skills base. The proposed skill-based investment programmes for key industries discussed later in this report provide an opportunity to map forecast demands against known supply and to identify ways to address any skill gaps.
- **Other aquaculture opportunities**. Beyond the major opportunities, whitebait, pāua, geoduck and freshwater (e.g., carp and eels) can also be explored and/or expanded in the region. MPI is working with the Cawthron Institute and Northland Regional Council on setting up trials to grow geoduck (clams) under existing oyster farms in three locations. Opportunities to develop freshwater aquaculture as part of closed-loop farming systems are also being trialled in the region. This is discussed further in the section on dairy industry opportunities.

What are the implications for stakeholders?

For industry:

- Ongoing investment in on-the-job training and productivity improving techniques.
- Co-investment in R&D to support the development of added-value products, new techniques and new species.
- Investment in branding and market research.
- Development of the business case for land and sea-based kingfish production in the region.
- Assess the feasibility of potential sites for oyster and mussel development.
- Establish a process of community engagement to enable a better understanding and ongoing approval of the aquaculture industry and relevant projects.
- Commitment to and participation in the Aquaculture Development Group.

For communities:	• Ensure that views about the merits of the industry and planned projects are based on clear evidence rather than supposition. • Participate in the 'social licence' process with industry to better understand aquaculture in the region.
For Māori/iwi/ hapū:	• Commitment to and participation in the Aquaculture Development Group. • Northland iwi aquaculture organisations negotiate and sign a regional agreement with the Crown by 30 June 2015. • Potential co-investment in finfish farming post-settlement. • Participate in the 'social licence' process with industry to better understand aquaculture in the region.
For local government:	• Work with central government to resolve uncertainties about consenting aquaculture space caused by the interaction of the RMA, New Zealand Coastal Policy Statement and the Regional Coastal Plan. • Work with industry to assess the feasibility of potential sites for oyster and mussel development. • Support the process of community engagement and improved information exchange. • Continue support for the work of the Northland Aquaculture Development Group. • Support the development of an economic impact assessment of the industry. • Develop a full business case for the establishment and development of kingfish production in the region.
For central government:	• Identify and resolve investment uncertainties caused by the regulatory framework. • Support the development of a full business case for the establishment and development of kingfish production in the region. • Continue co-investment with industry in new species, production techniques and added-value products. • Settle the Crown's aquaculture obligations with Māori.

MARINE MANUFACTURING

Summary

Northland has the second largest boat building and refit industry in New Zealand behind Auckland. The industry is part of the strong manufacturing base in the region underpinned by Refining NZ and other resource-based industries.

The marine manufacturing industry declined after the global financial crisis due to the drop in global demand, and more recently due to the higher New Zealand dollar and increasing offshore competition. But the region can take advantage of the global recovery and significant investment that is being undertaken in the expansion and upgrade of marinas in the region, and the steady workboat and re-fit work that has held the sector in good stead.

For many years the industry and local government has considered the establishment of a large scale mobile lift facility in Whangārei. Such a facility would enable the sector to expand through the construction and servicing of a greater number and a wider range of vessels, including super yachts. It is now time to undertake the work required to make a clear business case for this facility, including an assessment of market demand. This will require that businesses in the marine industry collaborate in the development of the case and identify an investment and use model that benefits individual firms as well as the broader industry.

Specialised manufacturing and marine

The marine industry is part of the broader specialised manufacturing value chain in the region. It is difficult to disentangle the 'marine' industry from this wider industry, because marine manufacturing involves a wide range of activities beyond boat building and repair, including interiors, rigging, sailmaking, electrical and electronic systems, design and engineering, and the manufacturing of a range of materials, including metals and polymers. Companies engaged in marine work often apply their skills to other industries, such as the development of agricultural equipment. As such, it is likely that companies in most sub-sectors of the specialised manufacturing industry also have capabilities applicable to, if not existing work in, marine.

Specialised manufacturing is a moderately large industry in Northland, contributing $291 million to regional GDP and employing nearly 2,240 FTEs (Table 15).

The GDP contribution of the specialised manufacturing industry declined by 1.35 percent per annum over the last decade. Employment only grew slightly over the same period.

This was largely due to a decline in boat building and repair activity and metal product manufacturing and fabrication:

Table 15. Northland industry overview: Specialised manufacturing[13]

	Specialised Manufacturing	Total
GDP ($2010 m)	$291	$5,623
Real GDP growth (2003-13, % pa)	-1.4%	1.6%
Employment 2013	2,237	64,032
Employment growth (2003-13, % pa)	0.5%	0.90%
Employment location quotient	0.84	
Estimated Productivity (GDP/FTE) ($2010)	$130,008	$87,819
Estimated exports 2013 ($2010 m)	$151	$1,789
Export growth (2008-2013, % pa)	-4.6%	-2.4%

[13] Infometrics database and MartinJenkins calculations

- Boat building and repair services contributes around $41.8 million in GDP and 244 employees but value add in this sub-sector declined by 4.7 percent over 2003-2013. This sector has declined nationally and globally as a result of the global financial crisis, compounded in New Zealand by a high exchange rate.
- Fabricated metal product manufacturing ($20.12 million GDP, 171 employees), structural steel fabricating ($25.6 million GDP, 161 employees), aluminium product manufacturing ($16.5 million GDP, 137 employees), other structural metal product manufacturing ($3.7 million GDP, 32 employees) all experienced strong declines in value add over the same period.

However, feedback from stakeholders suggests that the specialised manufacturing industry in Northland may well have been partly shielded from further negative effects due to the servicing requirements of Refining NZ.

Employment is spread across a number of segments, including machinery and equipment manufacturing, engineering design and consulting services, metal fabrication and manufacturing, boatbuilding and repair services, and container and metal product manufacturing.

Some of the largest sub-sectors have experienced good GDP and employment growth over the last 10 years:

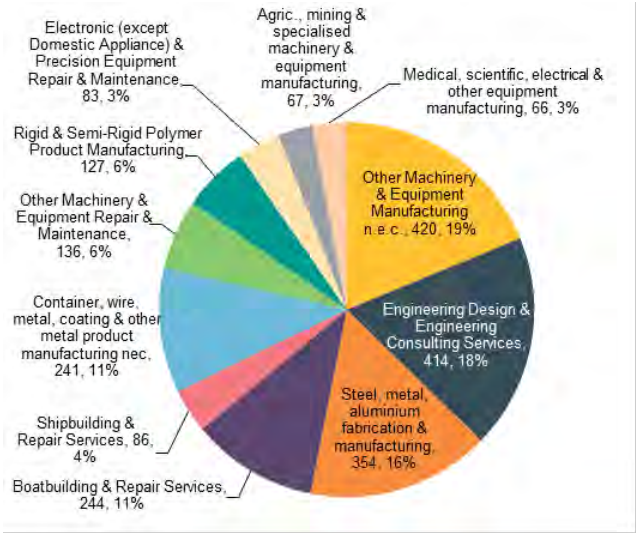
- Other machinery and equipment manufacturing: $65.8 million GDP, 2.4 percent per annum growth; 420 employees, 0.7 percent per annum growth
- Engineering design and engineering consulting services: $33.9 million GDP, 4.2 percent per annum growth, 414 employees, 3.7 percent per annum growth.
- Rigid and semi-rigid polymer product manufacturing: $22.9 million GDP, 22.8 percent growth per annum; 127 employees; 18.8 percent growth per annum).

Most specialised manufacturing and related services employment is in Whangārei (76 percent) followed by the Far North (18 percent) and then Kaipara (6 percent).

Marine firms are clustered around Whangārei and Opua Harbours (although predominantly Whangārei) as these are entry points into the region for yachts and other boats. Whangārei provides significant related support industries.

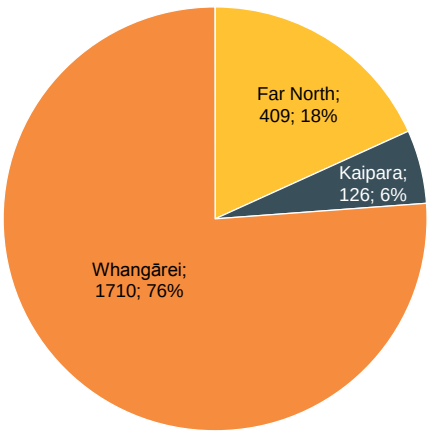
The region has strong revealed comparative advantages in marine manufacturing with a very high concentration of employment relative to New Zealand as a whole in shipbuilding and repair and boat-building and repair services.

Figure 39. Specialised manufacturing and marine, Employment by segment, 2013



Source: Infometrics database and MartinJenkins calculations

Figure 40. Specialised manufacturing and marine employment by district, 2013



Source: Infometrics database and MartinJenkins calculations

These advantages are based on:

- Well-developed capability, track record and a reputation for innovation and quality in engineering, building, repair, refit, particularly in custom builds, repair and refit of small white boats visiting New Zealand, and repair and maintenance of ferries, sightseeing and work boats.
- Cost (salary and land/property) advantages and land availability over the main competing domestic marine location of Auckland.
- Natural and visitor attractions for visiting boat and yacht owners.
- Deep water and convenient harbour access, including being the closest marine engineering precinct to southern cruising routes.
- Existing and expanding marinas and marine facilities in the region. Several marinas in the region offer a choice of berths, including Marsden Cover Marina (has a Port of Entry Customs clearance facility), Whangārei Town Basin Marina, Opua Marina and Riverside Marina. Two major developments are also underway, which will increase the availability of marine facilities:

  - The Opua Marina has a 50-tonne, 5.2 metre travel lift, a 17 tonne trailer for catamarans and 100 tonne 9.7 metre slipway for vessels up to 35 metres.

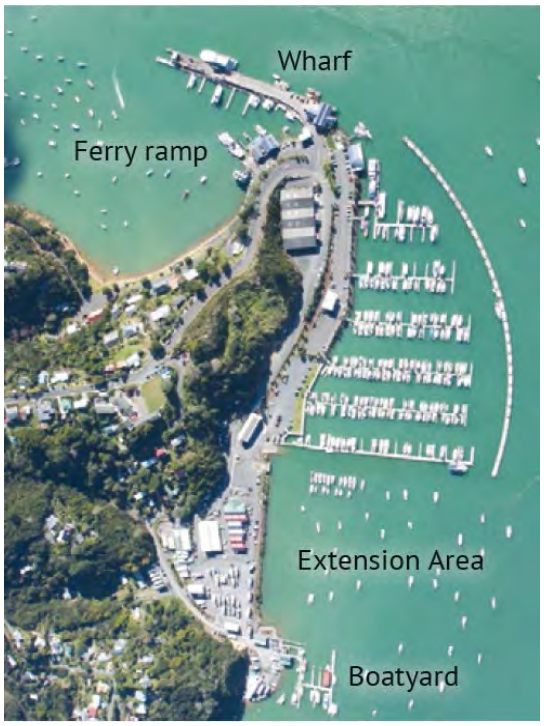
    Boats up to 50 metres can be berthed on a floating marina. Vessels up to 100 metres are catered for on the outside of the wharf.

    There are currently 245 privately owned berths, but there is a limited pool currently available on a casual basis and also high levels of demand from tourists over the summer period.

    To expand capacity, Far North Holdings is increasing the marina by 173 berths to cater for short-to-medium term demand.

    Consents were granted in October for the new berths, dredging the seabed within the marina footprint, a one-hectare reclamation to support new facilities, and for the main pier to be extended.

Figure 41. Opua marina proposed expansion



Source: Far North Holdings, 2014

  - Port Nikau is a development over 101 ha on the former Port Whangārei facilities, has deep water access and includes land, industrial buildings and large commercial wharves.

    It has 670 metres of commercial berthage available, with berthage suitable for fishing boats, commercial ships, yachts and launches, superyachts, work boats and charter vessels.

Figure 42. Port Nikau

Source: Port Nīkau, 2014. http://www.portnikau.co.nz/

In addition, Oceania Marine is developing a Port Whangārei Marine Service Centre at its South Shipyard, offering haulout, hardstand, storage and refit service to smaller vessels in the 10 to 18 metre range. Its North Shipyard has a slipway for 800 tonne jobs and a floating dock.

The industry in Northland also benefits from the reputation and promotion of the industry nationally, such as yacht racing events. For example, The New Zealand Millennium Cup is held annually, attracting some of the world's best super yachts and helping to showcase New Zealand's boat building and refit capability. The 2015 event was held in conjunction with the Bay of Islands Sailing Week.

Issues and challenges

Several issues and barriers for Northland's marine manufacturing industry have emerged through our research and interviews with industry stakeholders. Some of these impact on the industry nationally, for example, the boom-bust nature of boat and ship building and repair work in response to global economic conditions, distance from buyers and decision-makers, and strong competition from offshore marine build and refit locations. There is still significant capacity available worldwide, following the drop-off in boat orders and deferral of repair and maintenance work post the financial crisis. Locations in Europe, China, Taiwan and Australia are investing in new facilities to attract clients (Moore & Davies, 2010; Waterfront Auckland, 2014); and Northland needs to offer a compelling value proposition to compete. In addition to these issues, Whangārei faces specific challenges:

- **Strong competition from Auckland**, which is New Zealand's largest boat building and repair location, and where investment is being made to increase capacity and the quality of facilities (e.g., Wynyard Quarter, Westhaven).
- **Limited hospitality and entertainment options** relative to other build and refit locations. Skippers and crew influence where refit and repair takes place, and often prefer locations with more vibrant nightlife and higher end accommodation options than are available in Whangārei.
- **Lack of haul-out facilities in Whangārei.** The industry reports that work has been lost because these facilities are not in place and therefore are constraining industry growth. They are critical to refit and repair work and they need to be secure and prevent damage to vessels.
- **Limited industry collaboration.** Although the industry in the region collaborates on boat servicing projects (e.g., through the Whangārei Marine Promotions Group), there is limited collaboration on marketing and facility development even when there are benefits of doing so. Previous attempts to bring the industry together to jointly bid for projects or co-invest in equipment have had limited success.

The opportunities

The global marine industry is recovering and industry experts are forecasting increasing demand from China, North America, Europe and Russia. Marine NZ is expecting national average annual growth in sales of four percent per annum, with exports growing from around $650 million to $1.5 billion and the value of the industry growing from $1.65 billion in turnover (2011) to $3.6 billion by 2021 (NZ Marine, 2013).

Based on what is known about orders and refit requirements, it is projected that the number of superyacht builds in New Zealand could increase to more than 5 per annum by 2020 and 10 by 2030, and that refit work will vary between around 40 to 70 vessels per annum over the next 15 years (Waterfront Auckland, 2014).

Demand for blue boat build and repair grows on the fortunes of the tourism industry. There appear to be positive long-term prospects for businesses servicing this part of the market, given forecast growth in visitor numbers and because of the number of scenic, diving and cruise ship operators operating in Northland.

The ability of Northland to capture a growing slice of this forecast growth in demand will depend, in part, on having sufficient facilities to cater for build, repair and refit. The expansions planned for the marina in Opua and Port Nikau in Whangārei are positive steps. But the industry believes that further investment is required.

1) Investment in lift and retrieval facilities in Whangārei

With better facilities, the industry in the region could increase the number of workboat, whiteboat and superyachts that can be serviced and built.

Although there are various slipways in the region that enable vessels to come out of the water, slipways can only hold one vessel at a time and are constrained by size. All slipways are also controlled by individual operators, and access can be difficult. There are a small number of travel lifts in the region but the largest capacity is for 70 tonne vessels and these also tend to be controlled by individual operators and are not available for the broader industry.

A mobile retrieval/lift facility (e.g., a syncrolift and powered wheel transporter capable of lifting and transporting vessels of several thousand tonnes) able to be accessed by industry would allow for more flexible boat/ship building and maintenance operations. This would alter the 'closed shop' nature of the existing facilities and allow work to be undertaken in independent locations on adjacent land other than a dry dock or slipway. If it had sufficient capacity, it would allow the building of new large vessels and provide for ship repair and refit of larger vessels in Whangārei (e.g., up to 100 metres). Multiple large vessels would be able to be refitted by multiple parties at the same time. Depending on the size of the facilities, the investment required may be $10 million to $20 million.

Proposals for investment in such a facility in Whangārei have been considered at various times over several years, including with central and local government co-funding. Proposals have generally failed due to an inability of industry to agree on co-investment or the location of such facilities (self-interest and the usual 'free-riding' problem), and we note there has never been a full cost-benefit assessment of options, including an assessment of where the benefits will accrue and hence how costs should be apportioned.

There may be a case for public co-funding (e.g., local government) to overcome risk aversion and information and coordination problems amongst the marine industry. An individual private investor is unlikely to generate the revenue required to justify the risk and capital in such a large-scale facility. Difficulties in coordinating private investors are also likely to hinder the pooling of resources that might be another way of privately funding the facility.

However, a critical first step will be for industry to come together to determine the scope and options for such a facility, potentially facilitated by Northland Inc, including preferred site options. If the industry is still not prepared to do this, then we suggest that the proposal not be progressed any further. If industry can agree on scope and options, the next step would be for a full cost-benefit assessment and business case to be developed on those options, supported by Northland Inc and NZTE. This would need to include a clear assessment of market demand and the potential use of such a facility.

Relevant Central Government initiatives in this area

- Destination New Zealand Superyacht Attraction Initiative (partnership between Tourism NZ, ATEED, NZTE and NZ Marine to attract superyachts to New Zealand and create awareness about the benefits of coming to New Zealand through a presence at international boat shows and interaction with industry media and key influencers).
- Previous investment in and promotion of the America's Cup.
- Research funding for materials technologies and business R&D grants.
- Capability development services, such as NZTE Lean Production.

What are the potential benefits?

An economic impact assessment was commissioned on an earlier proposal for a boat hauling facility. That facility was based on a $5 million investment, a smaller investment than is required now. The estimated direct impact on the region's economic activity as a result of the investment had a net present value of $267 million, and it was estimated the facility would contribute 0.7 percent to the region's average economic growth over eight years (over $400 million and 1.1 percent contribution to annual growth once indirect and induced economic effects were taken into account) (Infometrics, 2010). The assumptions about the additional vessel build, repair and refit work that would result appeared to be optimistic in this assessment, but we also note that adjusting for these still resulted in a significant positive impact to the regional economy. The indirect effects of attracting additional build and refit work are also likely to be significant. For example, during the 2013/14 season, 37 visiting superyachts to New Zealand spent an estimated $8.5 million on tourism related expenditure (SuperyachtIntelligence.com, 2014).

In addition to the direct and indirect benefits from the additional activity generated by these new facilities, there will also be broader economic benefits. For example, the facilities should result in closer cooperation between marine businesses, allowing them to learn from each other and innovate. The facility is also likely to add to the reputation of the region as a place to do boat and ship build and repair work.

The benefits of such a facility are also in addition to the impacts that the current expansion of marinas and berthage facilities will have on the region. For example, it is estimated that the expanded Opua Harbour precinct will result in a $23 million per annum impact on value-added in the region once established and that employment will be boosted by 455 jobs after five years as a result of expenditure on berthage, repairs and maintenance and increased visitor expenditure (Market Economics, 2014).

Assessment

The marine infrastructure opportunity rates moderately on most of our criteria, and the benefits are likely to accrue largely to Whangārei than the wider region. As noted above, in the absence of a business case and estimates of costs and benefits, the validity, practicality and potential impact of the opportunity remain unclear.

Table 16. Haul-out and transport facility for the marine industry

Validity	Medium-low
Potential impact	Medium-high
Practicality	Medium-low
Regionally significant	Low-medium
International orientation	Medium
Builds off existing work and investment	Low
Consistency with national priorities	Low
Overall rating	**Medium-Low**

Other considerations

- **Coordination with Auckland.** As Auckland is the key player in the boat build and refit industry in New Zealand, in close proximity to Northland, it is also important for the industry in the region to consider how a larger slice of the offshore market could be obtained by combined efforts. This could include joint promotion of capability and capacity through domestic and international events, but also sharing of work across locations where there is complementary expertise and facilities. We note that Oceania Marine has established such an agreement with Hall Spars & Rigging in Auckland to jointly service large sailing rigs.

- **Availability of skills.** The anticipated growth in the marine industry will require a sufficient supply of suitably skilled workers. These skills are already in short supply in New Zealand. For example, a Competenz (2012) study indicated that 35% of engineering and metal manufacturing companies in New Zealand reported having a skills shortage in the areas of fabricators, tradespeople, welders and engineering. Marine industry representatives have indicated that it can be difficult to get highly skilled people to relocate to Northland.

  Marine businesses also need to upgrade their own management skills in order to attract and retain staff. A regional survey found that several did not operate with signed employment agreements and around a third did not provide regular staff performance reviews (Enterprise Northland, 2008). The proposed development of skill-based investment programmes for key industries in the region (discussed later in this report) would be helpful for the marine industry.

- **Interaction with the visitor economy.** As noted, hospitality options and entertainment amenities are important in influencing owner, skipper and crew decisions about where to land for repairs and refits. The sector should engage with those involved in undertaking the Twin Coast Discovery project to communicate how town centre upgrades and amenity developments being considered as part of that project may be geared towards visiting crews.

- **Potential for the relocation of the naval base?** A proposal to relocate the naval base from Devonport to Whangārei by a group of private investors and property developers was developed over 1999-2000. The proposal involved the development of new facilities in Whangārei that would be rented to the Navy, including the construction of a dry dock ship-hoist system. The proposal was declined after a review of defence force real estate and concerns about disruption to the Navy and personnel family life.

  Industry stakeholders have raised the question about whether the proposal should be re-examined. In relation to the marine industry, it would result in significant growth in equipment supply, repair and maintenance of grey (naval) boats in Northland (and possible relocation of businesses servicing the Navy to the region). More fundamentally, the relocation of the naval base would be a major game changer for the region, given it would involve the relocation of around 1,300 personnel plus their families (and the resulting expenditure that would entail). From a national perspective, the impacts on Auckland would clearly need to be considered, although we note this would free up scarce prime land in Auckland for other developments. If there is interest in reviewing this opportunity, then a detailed cost-benefit analysis would need to be undertaken.

What are the implications for stakeholders?

For industry:	• Be prepared to work together to determine the scope and options for major lift/retrieval facilities at Whangārei. • Co-fund the development of a full business case for the establishment of the facilities if industry can agree on scope and options. • Work with the industry in Auckland to undertake joint promotion and marketing work and collaboration on large-scale projects where there are complementary strengths. • Communicate desired amenity improvements for visiting owners and crews to Northland Inc and others involved in the Twin Coast Discovery project.
For local government:	• Bring the marine industry together to determine the scope and options for major lift/retrieval facilities at Whangārei. • Co-fund the development of a full business case for the establishment of the facilities if industry can agree on scope and options.
For central government:	• Provide support for the identification of investment models and assessment of market demand as part of the business case for the establishment of major lift/retrieval facilities at Whangārei. • Consider the merits of reviewing the costs and benefits of relocating the naval base to Whangārei. • Continue national promotion of the industry through NZTE and Tourism NZ.

HORTICULTURE & RELATED PROCESSING

Summary

Northland has a unique horticulture industry with some advantages over and differences to the rest of New Zealand. Almost all of the nation's kumara crop, a third of the avocado crop and a quarter of citrus produced in New Zealand are grown in Northland.

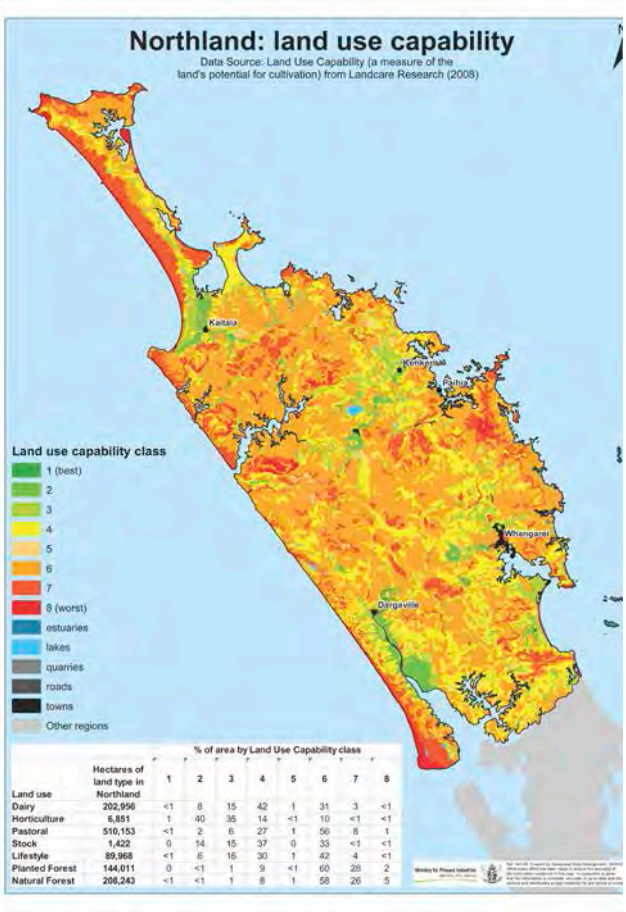
The horticulture sector is well placed to be a major supplier to Auckland and to take advantage of growing demands for produce in Asia.

The industry needs to create scale and stability in production through coordination or consolidation, continue to invest in R&D in new varieties and disease and pest management (with the broader industry nationally), and address water management and capability issues. There is not a clear pathway forward at this point for the industry in the region, in contrast to other sectors.

As such, the proposal is for the industry, supported by local and central government agencies, to identify appropriate interventions as part of a strategic action plan for the industry in Northland. The action plan should identify options for key sub-sectors to achieve scale, increase value-add through R&D, and to develop a future pool of leaders and workers.

The benefits will depend on the growth in horticulture that results. Previous research estimated that an additional 2,500 planted in horticulture crops could increase GDP by $80 million.

Figure 43. Land use capability (a measure of the land's potential for cultivation)



e: Ministry for Primary Industries

A longer-term opportunity exists to grow the apiculture sector within the industry, and specifically mānuka honey production, beyond its current niche or boutique status. This could include the establishment of a collective vertically integrated honey company and/or brand for the region. Iwi involved are to develop a full business case for this proposal.

Northland's horticulture industry

The horticulture value chain is currently of moderate scale in the region, contributing $147 million in GDP and employing close to 1,890 people in 2013, which was 2.6 percent and 2.9 percent of total GDP and employment respectively.

Both GDP and employment in the horticulture sector have declined over the last ten years, by about two percent per annum, partly as a result of diseases (e.g., Psa-V) and adverse weather events.

There was limited growth or a decline in plantings and harvesting of most of the key crops over the previous five years, such as kiwifruit, kumara and mandarins.

While the industry as a whole has declined, some segments have grown. Nursery and floriculture production (under cover) and beekeeping have experienced high growth in GDP and employment, albeit from a small base.

Table 17. Northland industry overview: Horticulture & related processing[14]

	Horticulture	Total
GDP 2013 ($m 2010)	$147	$5,623
Real GDP growth (2003-13, % pa)	-2.0%	1.6%
Employment 2013	1,887	64,034
Employment location quotient 2013	0.94	
Employment growth (2003-13, % pa)	-2.0%	0.9%
Estimated Productivity 2013 (GDP/FTE, $)	$77,712	$87,819
Estimated exports 2013 ($m 2010)	$179	$1,789
Export growth (2008-2013, % pa)	2.9%	-2.4%

The industry as a whole is not concentrated in the region, and the region's resources are not favourable for all horticultural segments (for example, apples and pears). However, some niche segments are highly concentrated, such as nursery production, floriculture production, vegetable growing, citrus fruit growing, kiwifruit growing, olive growing, other fruit and nut growing (avocado) and beekeeping, which highlights that the region has natural advantages in growing crops.

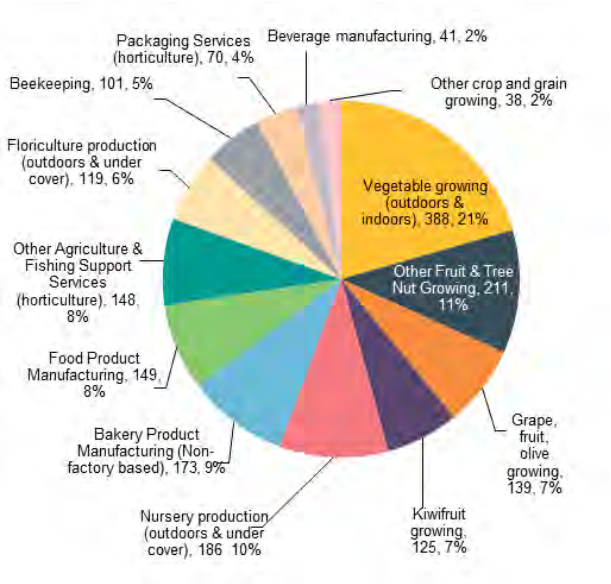
Several of these sectors represent the dominant crops in Northland.

Nationally the region is responsible for:

- 98 percent of kumara production (1,260 hectares in Northland in 2013).
- 37 percent of avocados (1,550 hectares).
- 31 percent of mandarins (210 hectares).
- 12 percent of olives (201 hectares).
- 9 percent of tomatoes (109 hectares).
- 4.5 percent of kiwifruit (575 hectares).

Five sectors within the horticulture industry account for more than half of all employees – vegetable growing, other fruit and tree nut growing, grape fruit and olive growing, kiwifruit growing, and nursery production.

Figure 44. Horticulture, arable and related processing employment by sub-sector, 2013



Source: Infometrics database and MartinJenkins calculations

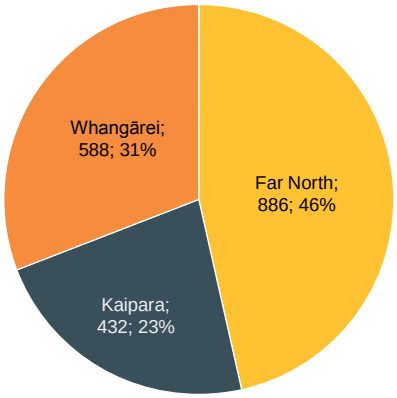
[14] Infometrics database and MartinJenkins calculations

The majority of employment in the horticulture industry is in the Far North District (46 percent), followed by Whangārei (31 percent) and Kaipara District (23 percent) (Figure 45).

Fruit and vegetable consumption in New Zealand and internationally has been fairly flat over recent years (Ministry for Primary Industries, 2014d).

Future growth will be driven by Asia as the demand for safe, fresh, healthy foods grows as their economies and incomes grow. Demand for fruit and vegetable produce is expected to particularly grow in China for counter-seasonal supply (Coriolis, 2013; 2014d).

Figure 45. Horticulture, arable and related processing employment by district, 2013



Source: Infometrics database and MartinJenkins calculations

Apiculture has been one of the more positive exceptions in the broader horticultural industry nationally. Honey exports from New Zealand have grown very strongly over several years – there have been world shortages of high quality honeys due to diseases and poor weather conditions in competing countries, and increasing consumption of honey in Asian markets (Coriolis Limited, 2012b). Strong demand is forecast to continue, particularly for honey with 'active' ingredients for antibacterial activity, such as mānuka honey. However, the beekeeping sub-sector in Northland is currently very small, employing an estimated 100 people and responsible for just under $5 million of regional GDP.

Issues and barriers

The industry faces a range of existing and potential constraints to growth:

- **Lack of scale** is a major challenge for meeting market demands and achieving cost competitiveness through productivity gains. A lack of scale constrains further investment (for example, in equipment and technology and shared infrastructure such as irrigation or cool storage). Many people have entered the industry in Northland as part of a lifestyle choice and are not motivated to grow. Northland needs larger orchards and farms to be competitive internationally. However, industry representatives noted that it is difficult to source capital to expand operations in horticulture and there can be long lead times for generating revenue (for example 5-10 years to build up an orchard).
- **Vulnerability to disease and biosecurity risks.** The industry is at risk of pests (Queensland fruit flies found in Whangārei in January and April 2014, previous finding in 1995) and diseases (e.g., Phytophthora kernoviae fungus or Psa-V).

  Psa-V was discovered in Northland in October 2012. The region was particularly impacted as the main kiwfruit gold variety is widely grown and is susceptible to the bacterium.

  Apiculture is suceptible to risk of exotic bee pests (e.g., Varroa).

Figure 46. PSA biosecurity check

Source: Northland Regional Council, 2013. http://www.nrc.govt.nz/Resource-Library-Summary/Environmental-Monitoring/State-of-the-Environment-Monitoring/Our-land-our-air/Land-use-and-soil-quality/

- **Soil quality and availability.** Horticulture needs high quality, free-draining soils (Class 1-3). Although 10 percent of Northland's land is considered suitable for horticulture, only one percent of Northland's land is in horticulture. Classes 1 or 2 have the greatest value for horticulture and make up less than three percent of the total land area in Northland. Some areas of land with prime soils suitable for agricultural and horticultural production continue to be subdivided for lifestyle blocks and urban development (Northland Regional Council, 2013).
- **Flooding and water management**. As noted elsewhere in this report, Northland has experienced droughts and floods in recent years and more extreme weather events are likely in future due to climate change. Most of the younger and more free-draining alluvial soils suited to kiwifruit, citrus and vegetable production are subject to flooding. A large user of groundwater in Northland is for horticultural irrigation, accounting for 19 percent of the allocated groundwater (Northland Regional Council, 2013).

  At times of drought, the Regional Council prioritises horticultural irrigation fourth for water allocation and there is a need for more water storage in the region to provide greater resilience (Northland Regional Council, 2013). However, the sector in Northland does not have a clear picture of how much water it needs to expand.

- **Seasonal workforce and skills.** Employment in horticulture tends to be seasonal, which has created problems finding and housing workers in Northland. Demand for seasonal workers is highest in Northland in January, April, May, June and July. Feedback suggests that seasonal labour shortages in horticulture usually result from either a lack of coordination between seasonal labour markets, such as kiwifruit and kūmara, or through a lack of worker expertise. There is also a lack of clear pathways for young people to progress along (for example, no equivalent of sharemilking).
- **Market access**. Although almost 90 percent of horticulture production is exported, the sector faces tariffs on fruit and vegetables in many markets (for example, the EU, Japan, Taiwan and South Korea, although an FTA has recently been signed with the latter and will result in phasing out of the 45 percent tariff over five years). Exporters face a range of non-tariff barriers including compliance with standards, fumigation requirements, product testing, packaging and labelling rules.

The opportunities

The horticulture sector nationally has strong growth aspirations. Horticulture New Zealand is looking to more than double the value of the industry nationally to $10 billion by 2020 (Horticulture New Zealand, 2009). Avocado has been identified as one of the horticultural crops where there is real potential for growth. Northland clearly has the potential to play its part to contribute to these aspirations. To participate meaningfully, we believe that the sector in Northland needs to work on the combination of strategic actions that have been identified as critical at a national level and this will require a strategic action plan for the industry in Northland.

1) Horticulture strategic action plan

Our observation is that although the sub-sectors within horticulture in the region face several consistent issues and opportunities for growth, the industry as a whole struggles to address them because it is fragmented and is made up of a large number of very small players in Northland.

The region's Horticultural Forum does represent the industry in the region and provides a vehicle for industry players to join forces to develop a strategic action plan. The plan could identify how Northland's horticulture industry will position itself to double in value, e.g., could it become the food bowl for Auckland as has been suggested by some stakeholders? It should also articulate how the priorities in the national strategy will be implemented within the regional context, i.e., developing future leaders, increased investment in and commercialisation of science and technology, focusing export marketing activities, differentiating products and exceeding sustainability thresholds.

The strategic action plan should be coordinated by Northland Inc. and the Horticulture Forum. The plan development process could also involve participation by the Ministry for Primary Industries and national bodies such as Horticulture New Zealand and the Avocado Industry Council. The plan should:

- Provide a clear understanding of the sector in the Northland region, its current activity and performance and how it fits into the national and global context.
- Present the opportunities for the industry in the region to achieve the outcomes in the national strategy, including addressing regional issues related to leadership, scale, R&D and pest and disease control, water management, sustainability and marketing. Specific areas we think the action plan should cover include identifying options for:
    - Achieving scale that make sense for the region, such as managing several orchards under umbrella arrangements to enable better governance and management and coordination of the collection and marketing of products.
    - Co-investment in collaborative ventures or to support consolidation.
    - The application of national R&D that is being undertaken on new kiwifruit varieties, new avocado root stock, preservation of product during transport etc.
- Identify clear and tangible actions to deliver those outcomes.
- Clearly identify resourcing and participation that is needed for those actions, from industry, education and research organisations, iwi, local and central government. This action plan needs 'teeth' and that requires commitments of funding and time from those involved.

The process will need to take account of the work identified in other areas of this report related to water management and skills investment.

Assessment

This opportunity rated lower than many on our criteria, mainly because the impact and significance will depend on the outcomes of the action plan process and the subsequent commitment of resources and expansion of horticulture.

If the industry and key organisations do not take the opportunity to collectively address the issues and commit to a course of action, then the industry is likely to continue along its current low growth path.

Table 18. Assessment of horticulture strategic action plan

Validity	Medium
Potential Impact	Medium-high
Practicality	Medium-low
Regionally significant	Medium-low
International orientation	Medium
Builds off existing work and investment	Low
Consistency with national priorities	Medium
Overall rating	**Medium-low**

2) Development of the Mānuka honey industry

Honey exports from New Zealand have grown by around 30 percent per annum over the last decade and strong growth is forecast to continue, with growing demand from markets in Europe and Asia based on the antibacterial properties of active honey (although there are risks associated with a lack of clear standards in the industry and market reaction against exaggerated claims of the benefits of honey) (Coriolis, 2012b).

The industry is currently very small in value terms in Northland but has the foundations to be more significant. It is estimated that there are around 45,000 hives in Northland (producing about 25kg per hive per annum).

Northland mānuka honey can have high levels of methyl glyoxolate, which is the basis for medical grade honey and is valued much higher than honey with lower or no levels (Ministry for Primary Industries, 2013a). Mānuka is suitable for planting on low value steep land prone to erosion (classes 6-7, which is 61 percent of Northland land) so there is potential to increase the land area of planting and the number of hives in Northland.

All of the major honey companies (Comvita, Mānuka Health, Watson & Son) are operating in Northland with most of them having supply contracts in place directly with landowners and independent beekeepers.

There are also a handful of independent producers such as Haines, Kai Ora, Tahi and Honeylands, so there is underlying capability in the region.

Moreover, the region has one of the few apiculture qualifications offered in Australasia in Kaitaia. This is delivered by Telford in partnership with the Te Runanga o Te Rarawa School of Honey Gatherers.

Given that a significant amount of supply is derived from Māori land blocks, there is also growing interest from iwi to understand the potential of the industry and potentially to establish either a collective (iwi and Māori landowners) owned honey company and/or brand.

The Miere Coalition is a consortium of iwi across the North Island, including representatives from Northland, that have come together to investigate this potential supported by the Poutama Trust. They have recently undertaken an in-market assessment of potential demand in China and Japan. The next steps will be to develop a business case and model for the proposal, which could be supported by central government (i.e., the Māori Innovation Fund).

Figure 47. Beekeeping

Source: Image used with the permission of Careers NZ – accessed from careers.govt.nz

A key opportunity within apiculture and for the proposed coalition is the production of medical grade honey. Medical grade can attract up to $50 per kg compared to $8-$15 per kg for non-medical grade honey. It is estimated around 700 tonnes of honey currently produced in the region is medical grade, although this is only produced 2 out of 5 years.

It has been suggested that the region could potentially produce about 2,000 tonnes of medical/cosmetic grade mānuka honey, which would require about 60,000 hives, and that this could be produced four out of every five years with skilled beekeepers.

Assessment

This opportunity currently rates moderately across our criteria, given the relatively formative state of the proposal and the likely low to moderate impact on the regional economy.

Table 19. Development of mānuka honey industry

Validity	Medium
Potential Impact	Low-medium
Practicality	Medium
Regionally significant	Medium
International orientation	High
Builds off existing work and investment	Medium
Consistency with national priorities	Medium
Overall rating	**Medium**

Relevant central government initiatives

- Go Global – a five year programme supported by the PGP to increase the productivity and capability within the avocado industry.
- Research programme to develop new avocado root stock, which will allow avocados to be grown in areas of lesser soil quality, which could significantly increase production and output.
- MBIE research funding for preservation of avocados during transport which, if successful, will expand the number of markets possible.
- Mānuka Research Project – a seven year programme supported by the PGP to increase mānuka honey exports to more than $1 billion.
- Sustainable Farming Fund support to a project to lift productivity and profitability of collectively owned Māori kiwifruit orchards
- R&D programme involving New Zealand and international researchers to develop strategies to combat PSA.

What are the potential benefits?

Scenarios have been developed on the potential to expand horticulture production in Northland, based on assumptions about soil, land and water quality and availability. The scenarios ranged from identifying an additional 2,500 hectares that could be planted (increasing planted areas in the Kerikeri and Maungatapere irrigation schemes to full capacity), to 14,800 hectares that could be planted (assuming conversion of land in pasture to orchards or field crops). Estimates suggested that this could raise horticulture GDP by between $50 million and $290 million, with broader impacts on the economy ranging from around $80 million to $490 million (Jones, 2012).

More specifically, it has been estimated that expansion of kiwifruit (currently around $60 million GDP) could result in a direct increase of GDP of between $20 million and $130 million per annum and an expansion of avocado (currently around $18 million GDP) could result in a direct increase of GDP of between $10 million and $45 million per annum (based on work undertaken for the Northland Horticultural Forum) (Jones, 2012).

In relation to apiculture, increasing production of medical grade honey to 2000 tonnes would have direct revenue impacts in the order of $50 million per year produced. Revenue impacts would be significantly higher if the region could capture further processing, converting the medical grade honey into medical products or cosmetics, which would increase the value per kg to around $150.

What are the implications for stakeholders?

For industry:	• Work together and with the Horticultural Forum and other stakeholders to develop a strategic action plan to double the value of the industry in the region
For Māori/iwi/ hapū:	• Continue to support the development of a business case and model for the development of the mānuka honey industry in Northland.
For local government:	• Provide co-funding support for the development of a regional strategic action plan for the industry. • Provide information on land use and potential land use options. • Work with the industry to assess water management and storage options (as part of the water management study noted later in this report).
For central government:	• Provide support for the development of a regional strategic action plan for the horticulture industry. • Continue to provide support through NZTE for branding and marketing efforts where appropriate, and through MPI and Callaghan Innovation for R&D programmes for the industry. • Continue to focus on reducing barriers to market entry in offshore markets. • Continue to invest in biosecurity and pest risk management.

OTHER INDUSTRY OPPORTUNITIES

The following industries are significant in the region and will continue to make an important contribution to incomes and jobs. Current opportunities are either already well underway, much longer-term in nature, or similar to the other opportunities canvassed in this report and hence are only noted here.

Petroleum and related processing

The petroleum industry in Northland is largely based on Refining NZ, which is New Zealand's only oil refinery.

Refining NZ is a strategic asset for New Zealand, providing about 40 percent of New Zealand's total energy needs, including: all jet fuel; nearly 80 percent of diesel; around half of all petrol; between 75-85 percent of bitumen for roading; all fuel oil for ships; and sulphur for farm fertiliser. Crude oil is shipped in to the facility at Marsden Point and refined into high quality transport fuels, supplying nationally. All of Auckland's petroleum needs are supplied through the Marsden to Wiri pipeline.

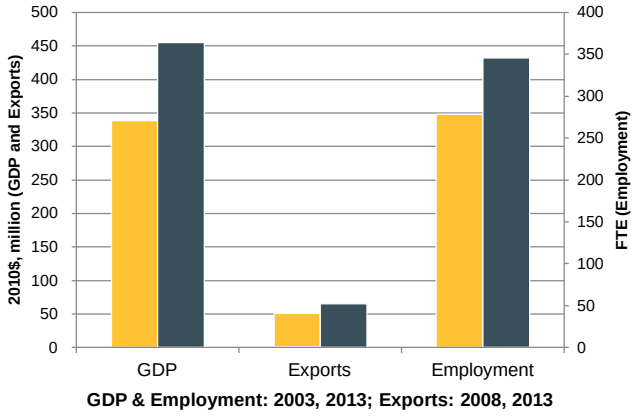
Refining NZ employs over 300 staff and, for every job at the refinery, it is estimated that another two are created in Northland and a further six across New Zealand.

In 2013, there were around 350 people employed in the petroleum, gas and related processing sector in Northland. All were located in Whangārei and are part of the refinery and fuel manufacturing industry.

Employment over the last 10 years has increased by 2.2 percent per annum.

The industry's contribution to GDP was estimated at $455 million in 2013 (2010 prices), and has been increasing by 3.0 percent per annum over the last ten years.

Figure 48. Petroleum industry growth



GDP & Employment: 2003, 2013; Exports: 2008, 2013

Source: Infometrics database and MartinJenkins calculations

Estimated exports in 2013 were $65.6 million (2010 prices) and increased over the last five years by 5.1 percent per annum.

Opportunities

Refining NZ

New Zealand's relatively small scale market offers limited opportunities for Refining NZ to diversify customers and products, although it part owns the Independent Petroleum Laboratory which provides testing services laboratory internationally.

The company is improving its cost base with a programme to improve production efficiency. This includes the new Te Mahi Hou gasoline production facility which will be commissioned in 2015 to reduce energy use and CO_2 emissions.

Refining NZ has invested in major improvement projects in the recent past, such as the $190 million Point Forward expansion, which increased refinery capacity by 15 percent to around 135,000 barrels per day.

It is to invest $365 million to replace and expand its existing petrol making facilities with a Continuous Catalyst Regeneration Platformer as part of the Te Mahi Hou Project. The Project will enable more and a wider range of crude oil to be processed, with improved energy efficiency and reduced fuel losses.

Figure 49. Marsden Point oil refinery

Source: John Doe / Wikimedia Commons / Public Domain
http://en.wikipedia.org/wiki/Marsden_Point

Projects such as this have significant flow-on impacts to other industries that are involved in servicing Refining NZ. It is estimated that 40 percent of the expenditure of Te Mahi Hou Project will be spent in Northland, seven percent in the rest of New Zealand and 52 percent overseas. It will generate additional revenue for the company and additional employment in Northland – around 300 staff for two years (Bruce, Hughes and van Es, 2012). Feedback from marine manufacturing representatives indicated that the activity of Refining New Zealand provides a good foundation of work which enables them to better withstand the ebbs and flows of boat building demand.

The company has experienced difficulties in the past in recruiting skilled staff for both managerial and engineering roles. This is despite being one of only a few sites in New Zealand that offers a career in complex engineering. This may be a potential constraint on how the expansion unfolds and there could be a role for Northland Inc in working with the company to find the required skills.

Refining NZ is also working with the local authorities and hapū to investigate the possibility of larger tankers berthing at Marsden Point. These larger vessels can take up to one million barrels of oil, compared to the current 600,000 barrel load, and would provide scale efficiencies, allowing it to compete with Korean and Singaporean refineries. Seabed dredging would be required for tankers of this size to berth.

Petroleum exploration

The Rēinga-Northland Basin is a large, little-explored basin off the west coast of Northland, covering 54,000 square kilometres of sea-bed. Analysis has indicated that the Basin contains potentially oil-bearing sedimentary rocks and has the elements needed for a working petroleum system.

There are two active petroleum exploration permits in the Basin, both awarded to Statoil New Zealand B.V. via the 2013 and 2014 Block Offers. Statoil has completed a seismic survey of more than 10,000 square kilometres of the sea-bed in the Basin. It will analyse the data and decide by 2017 whether it will continue with a second exploration phase. The Government also granted prospecting permits (for basic investigation of the Basin) to Energy Holdings Offshore Ltd and TGS Nopec last year.

Petroleum exploration itself provides jobs and economic value. However, until - and if - exploratory wells are drilled, it is difficult to anticipate the longer-term economic development opportunity that petroleum exploration may provide Northland. It is typically several years before the commercial potential is known. As such this is a long-term and unproven opportunity at this stage.

If there is a discovery, there may be an opportunity for some servicing to occur in Northland, potentially in partnership with Taranaki, given Taranaki's relative proximity to the Basin and that it already has required infrastructure and capability. Decisions on processing and servicing will depend on the scale of any find.

Iwi and Māori in Northland have expressed concerns about exploration in the Basin and there has also been public opposition based on environmental concerns. Statoil is currently undertaking discussions with iwi about the potential for monitoring of exploration. The Tai Tokerau Iwi Chairs Forum has established a working group to liaise with industry stakeholders and to undertake an assessment of issues of concern for Māori.

We consider it will be important for central and local government agencies to continue to work with Northland's communities, including Māori/iwi/hapū, to share information about the potential benefits, costs and implications of exploration and mining on the region as a part of a 'social licence' process.

Minerals and related processing

Introduction

Minerals production in Northland is currently dominated by (Explore Northland Minerals Group, 2012):

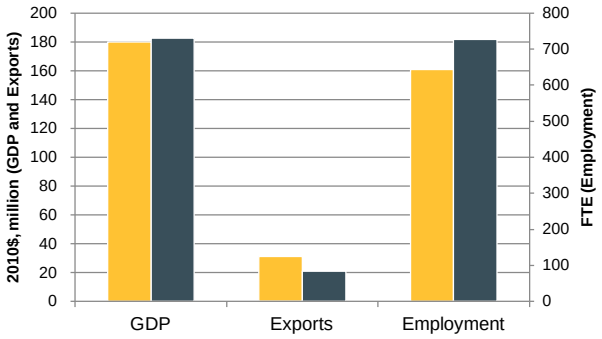
- Limestone for the Golden Bay Cement plant at Portland.
- High quality china clay, produced at Matauri Bay, for export.
- Aggregate produced at several quarries throughout Northland.
- Agricultural limestone, used mainly as fertiliser in farming.
- Sand, both from onshore and offshore resources, for building and industrial use.

The minerals and related processing sector employed 730 people in 2013 (1.2 percent per annum growth over the previous decade).

It contributed $183 million to regional GDP (0.2 percent per annum growth over 10 years).

The sector had estimated exports in 2013 of $21 million. Estimated exports have declined over the last five years by 7.7 percent per annum.

Figure 50. Minerals industry growth



GDP & Employment: 2003, 2013; Exports: 2008, 2013

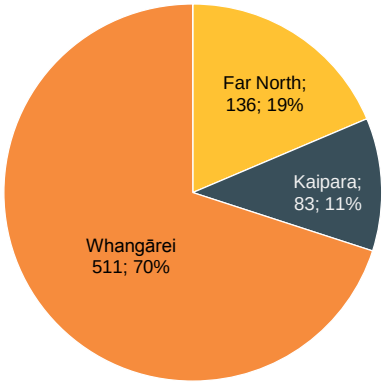
Source: Infometrics database and MartinJenkins calculations

The largest sub-sectors by value are fertiliser, cement and lime, and concrete product manufacturing. Some of these sectors - fertiliser and cement and lime manufacturing - are also the fastest growing.

New Zealand's largest cement manufacturer and supplier, Golden Bay Cement, has its only bulk manufacturing plant located in the region and supplies to silos at five ports around the country and Auckland. Cement growth has been driven by large infrastructure projects, particularly in Auckland and Christchurch.

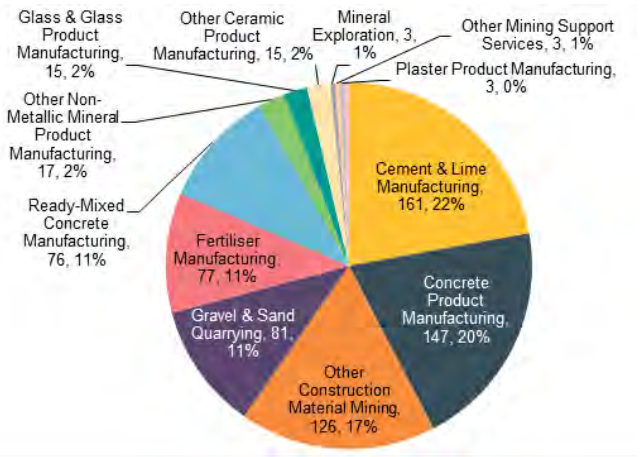
The majority of employment in the industry is concentrated in Whangārei.

Figure 51. Minerals and related processing employment by district, 2013



Source: Infometrics database and MartinJenkins calculations

Figure 52. Minerals and related processing, Employment by segment, 2013



Source: Infometrics database and MartinJenkins calculations

Opportunity

Exploration

Five permits for new mineral exploration in Northland were awarded in June 2013 to three companies (New Zealand Petroleum and Minerals, 2013a;b):

- Tai Tokerau Minerals Ltd (gold and silver)
- Waimatenui Exploration Ltd (copper, gold, nickel, silver, zinc)
- De Grey Mining Ltd (copper, gold, lead, silver, zinc, mercury.

We understand that only Tai Tokerau Minerals is actively looking to explore at the moment. De Grey Mining recently surrendered one of its permits on a block in the Russell State Forest.

Figure 53. Matauri Bay clay pit

Source: Te Ara – the Encyclopaedia of New Zealand, 2014. http://www.teara.govt.nz/en/photograph/5251/matauri-bay-clay-pit

The companies need to obtain environmental consents under the RMA, make access arrangements with landowners, and meet health and safety and environmental requirements before exploration can begin. They would need to apply for a mining permit if exploration activity is successful. The exploration phase may last for 5-10 years and with no guarantee that it will automatically lead to mining. A resource could take many years to produce (New Zealand Petroleum and Minerals, 2013a).

It is difficult to determine what impact this activity will have on Northland. An NZIER report considered the potential economic impacts of increased mineral development in Northland based on a very high production scenario. NZIER estimated that mining could lift Northland's GDP by nearly $280 million, or 6 percent higher than under business as usual, and create an additional 1,125 jobs in the minerals industry (NZIER, 2007). The additional income for the local economy would have flow-on effects to supporting industries, retail and hospitality and could contribute to infrastructure development. This estimate was based on production increasing ten-fold over a 15 year period. Most of the gains would occur in the Far North.

Despite the fact that there is already considerable minerals activity in Northland, there have been concerns raised about additional exploration. Groups such as the Tuanuku Collective have raised concerns about toxic waste and the potential for run-offs to nearby water catchments. An industry representative indicated that it would be helpful for central government agencies to facilitate land access and related consultation in areas where government has a current interest (e.g., DOC land, land involved with Treaty settlements).

Livestock (sheep, beef and deer) farming and related processing

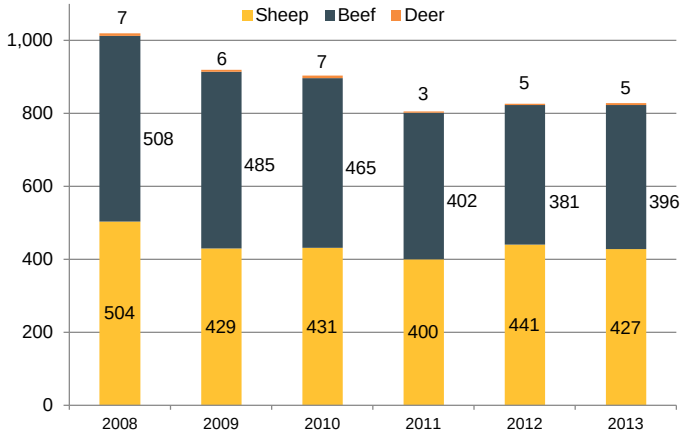
Introduction

Northland contributes around 1.4 percent of New Zealand's sheep numbers, 10.7 percent of beef cattle and 0.5 percent of deer.

Livestock numbers have declined since 2008 from around 1 million animals to around 830,000 animals in 2013.

This is consistent with national trends and reflects dairy conversions.

Figure 54. Selected livestock numbers (000) in Northland 2008-2013



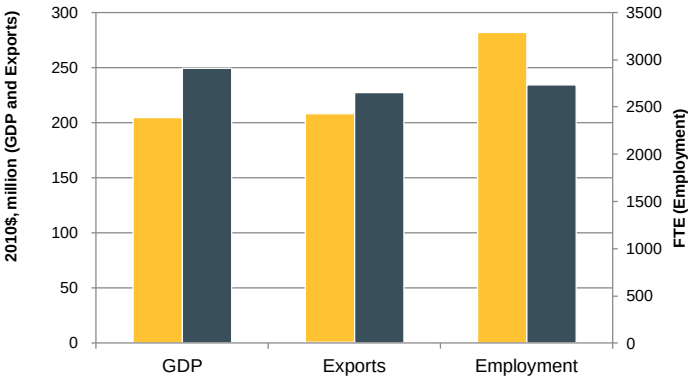
Source: Statistics New Zealand Agricultural Production Statistics 2013

Northland's livestock farming and related processing sector contributes $249 million to regional GDP and employs 2,733 FTEs.

GDP has increased by 2.0 percent per annum, while employment has contracted by 1.8 percent per annum over the past decade.

The estimated value of livestock farming exports has also grown over the last five years (1.7 percent per annum) to $227 million.

Figure 55. Livestock farming industry growth

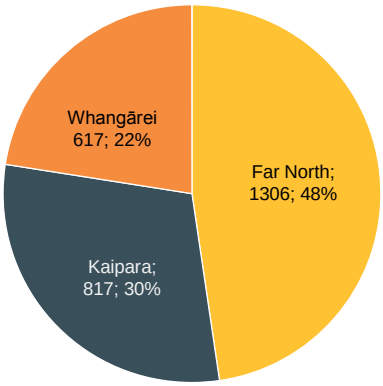


GDP & Employment: 2003, 2013; Exports: 2008, 2013

Source: Infometrics database and MartinJenkins calculations

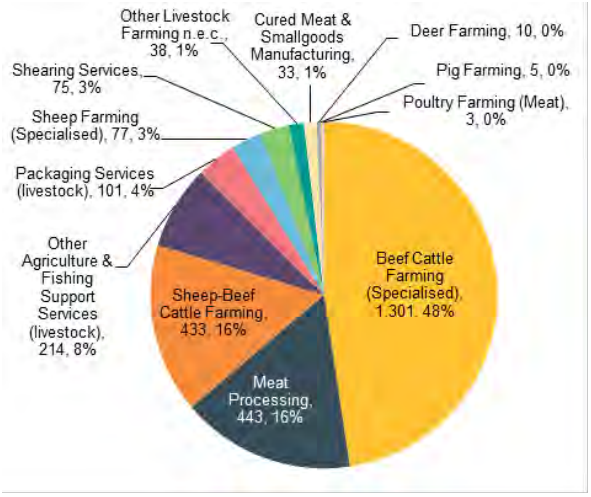
The largest proportion of livestock farming is in beef cattle. Most farming activity occurs in the Far North district. Both of the major meat companies have factories in Northland: AFFCO in Moerewa and Silver Fern Farms in Dargaville.

Figure 56. Livestock farming and related processing employment by district, 2013



Source: Infometrics database and MartinJenkins calculations

Figure 57. Livestock farming and related processing employment by segment, 2013



Source: Infometrics database and MartinJenkins calculations

Opportunity

Livestock farming is a relatively mature sector in the region (and nationally). Future development will generally be driven by on-farm and supply chain productivity gains, and higher-value processing for export markets such as China. Forecasts developed for MPI suggest that Northland is one of only three regions where sector-related employment will increase over the next decade (Infometrics & Nimmo-Bell, 2014).

There is no major 'game changer' for the Northland livestock farming sector. Further development of free trade agreements and gaining access to markets, the ability to extend shelf-life of products, and increased demand for protein globally will help to increase demand for meat.

Informants we spoke to considered that the industry's greatest opportunity in Northland is to grow productivity through:

- Better farm management: through the development of managerial skills and adoption of farm management systems such as Farm IQ.
- Increasing farm size and achieving scale economies: for example through land aggregation or cooperative models, including Māori/iwi/hapū land aggregation.
- Improving the efficiency of land and water use, for example through smarter on-farm irrigation and investing in appropriate schemes for clay based soils.
- Leveraging R&D and Primary Growth Partnership investment programmes to develop innovations in the red meat sector. These include:
    - High value marbled beef, which aims to produce marbled wagyu beef off New Zealand grass using high-marbling cattle genetics.
    - FoodPlus, which aims to generate more value from the red meat carcass by developing new and innovative uses for parts of the animal.
    - The Red Meat Profit Partnership, which focuses on supporting farmers to adopt best practice behind the farm gate and between the farm and processor.

Challenges identified include:

- Competing land uses, particularly the conversion of beef and sheep land to dairy.
- Structural issues in the industry, particularly related to processing and marketing. Excess meat processing capacity in New Zealand makes it very unlikely that more capacity will be created in Northland.
- Weather and climate and susceptibility to flooding and drought. Any increase in the frequency of droughts and hence poor feed growing conditions will tend to reduce stock numbers and weights in the region.
- Labour availability – there can be problems in finding seasonal labour for meat processing and young people willing to go into livestock farming.

The opportunities are very similar to those identified for the dairy industry in Northland, and the potential solutions are likely to be similar.

CROSS-CUTTING OPPORTUNITIES

EDUCATION & SKILLS

Summary

Lifting education and skill levels and labour market engagement will be critical for Northland in order to unlock its development opportunities. Northland's underperformance on measures of educational attainment and skills are well known and this represents significant unrealised potential.

As noted throughout this report, there is the potential for significant employment growth across industries, particularly primary industries, in the region. The difficulty for industries will be finding sufficient workers to meet this growth. This is because the working age population is shrinking in the region, there are perceptions that there are few attractive jobs and career paths in these industries, and many young people in Northland are disengaged from education and employment. Furthermore, employers and young people can find it difficult to access information about skill requirements for and likely occupational demands of growth industries, which can make it difficult to plan for the training and development of the future workforce.

Many initiatives are being delivered in the region to lift skill levels at all levels – foundation, school, tertiary and on-the-job – and to meet industry demands for workers, which is positive. However, the impact and outcomes of these initiatives is often unclear. Monitoring and evaluating models that work and identifying those that can be scaled up will be important.

The major opportunity is to develop skills investment programmes for key industries in the region. These would entail more intensive and longer-term efforts to deliver a range of mutually reinforcing interventions to improve the demand for and supply of skills for those industries. Interventions could be at all levels of the education system, and include pastoral care and whānau support, and welfare and immigration initiatives. The development of these programmes will require the involvement of, and commitment by, a combination of major businesses in those industries, iwi, education providers and central government representatives. Tourism, dairy and the forestry and wood processing industry would be good candidates for such programmes.

Another opportunity is to grow the scale and value of international education in Northland to meet central government's goal of doubling the value of international education by 2025. In Northland this would mean growing the value of international education from an estimated $10 million to $20 million per annum. A clear plan for promoting the region to and attracting students from key markets such as China and India is required, which should also be aligned with Education NZ's national efforts.

Education and skill levels

While rising, education and skills levels in Northland remain below national levels, notably amongst Māori learners.[15] Northland sits below the national average on all key indicators of educational attainment, including the proportions of the population with:

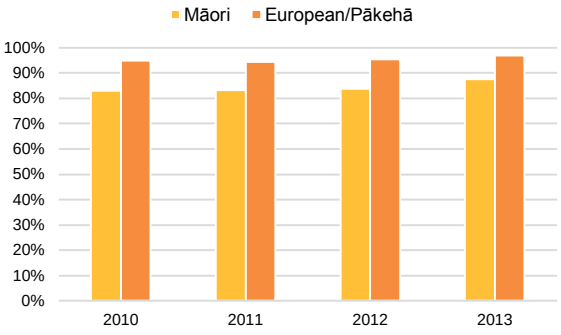
- Higher qualifications: 12.4 percent compared to the national average of 20 percent.
- No qualifications: 27.4 percent compared to 20.4 percent nationally.

[15] The New Zealand education system is characterised by relatively high levels of disparity and is less successful for Māori students. See http://www.minedu.govt.nz/theMinistry/PublicationsAndResources/~/media/MinEdu/Files/TheMinistry/PolicyAndStrategy/BIMs2014/AspirationAndAchievementEducationSystem.pdf

Northland's labour market opportunity sits with its young people/rangātahi. The most effective route to meeting skills needs and lifting employment is to ensure that the region's young people are equipped and motivated to successfully participate in education.

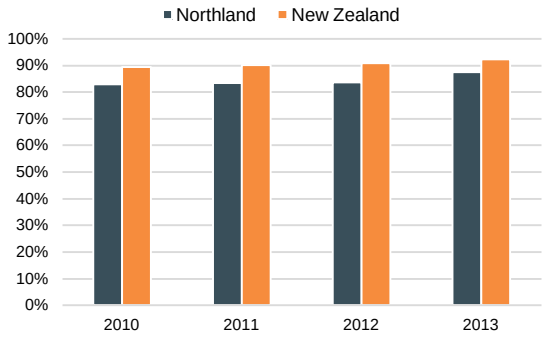
Engagement in early childhood education (ECE) provides a strong foundation for later learning, and positively impacts literacy, numeracy and problem-solving skills. The proportion of Northland's children who participate in ECE has increased over 2010-2013 by 3.4 percent, but at 92.1 percent still remains below the New Zealand average of 95.6 percent. However, participation has been increasing at the fastest rate across New Zealand, i.e., the region is catching up. Following a national trend, the rate for Māori children (87.5 percent) is below European/Pākehā children (96.9 percent) and increased by 4.5 percent over 2010-2013.

Figure 58. Māori and European/Pākehā participation in early childhood education in Northland



Source: Education Counts

Figure 59. Early childhood education participation, Northland and New Zealand



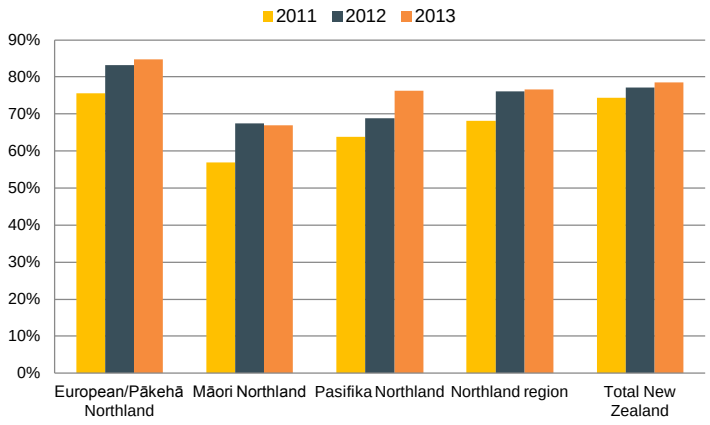
Source: Education Counts

The proportion of Northland's school students that are achieving 'at' or 'above' the standard in reading, maths and writing is also below the New Zealand average.

Higher levels of secondary qualifications are linked to improved labour force status and incomes. This is why the Government's Better Public Service target is that 85 percent of 18 year olds will hold an NCEA Level 2 qualification or equivalent by 2017.

The proportion of 18 year olds in Northland *without* at least NCEA Level 2 was close to but higher than the national average at 23.3 percent compared to 21.4 percent in 2013. However, a third of Northland's Māori 18 year olds did not hold at least an NCEA Level 2 qualification or equivalent in 2013 (Figure 60).

Figure 60. Percentage of 18-year-olds with a minimum of NCEA level 2 or equivalent, by Northland ethnic group (2011 - 2013)



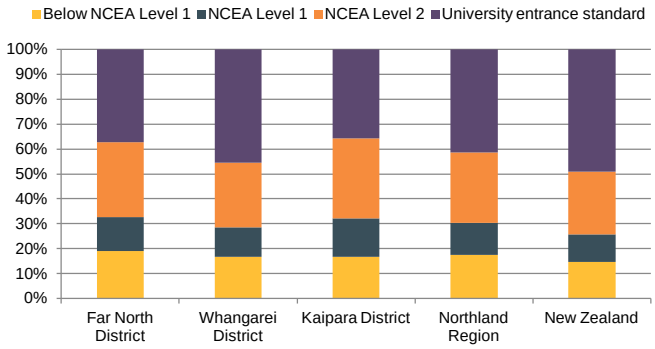
Source: Education Counts

Northland school leavers as a whole remain less likely to leave school with an NCEA Level 2 or equivalent qualification than school leavers nationally (30.4 percent compared to 25.8 percent).

Kaipara and the Far North have higher proportions of school leavers with NCEA level 2 or below than Whangārei (Figure 61).

In 2013, 25.6 percent of Northland students left education before their seventeenth birthday, compared to 17.3 percent nationally.

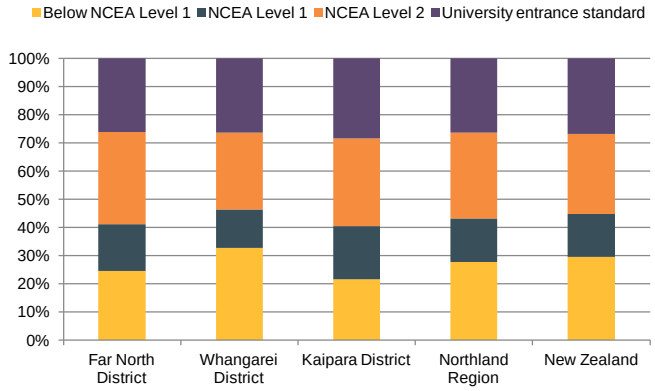
Figure 61. Achievement levels among all school leavers, 2013 (percentage of all students)



Source: Education Counts

Although Māori educational achievement levels are improving faster than that of other students, a significant proportion of rangātahi are leaving school with no qualifications or NCEA level 1 (Figure 62). The levels of educational attainment of Māori in Northland are on a par with Māori nationally. However, lower levels of educational attainment for Māori relative to non-Māori is more of a constraint on the productive potential of Northland than many other regions, given Māori comprise a larger proportion of the population. Moreover, young Māori will comprise a larger share of Northland's future workforce.

Figure 62. Achievement levels of Māori school leavers, 2013 (percentage of all Māori school leavers)



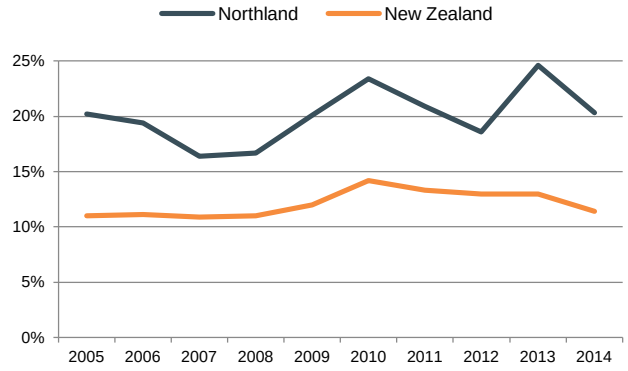
Source: Education Counts

Young people with low or no qualifications face significant barriers to workforce entry and labour market engagement. In 2011, New Zealanders with no qualifications had an unemployment rate 48% higher than those whose highest qualification was a school qualification (OECD, 2013).

In 2014, Northland's rate of youth not in employment, education or training (NEET) was 20.3 percent, much higher than the national rate (11.4 percent). The region's youth NEET rate has fluctuated over time, reaching a peak in 2012/13, but falling over 2013/14.

Northland's NEET rate has remained well above New Zealand's rate over the last decade. Indeed, Northland's NEET rate is the highest of all New Zealand regions, and well above the next highest of Gisborne-Hawke's Bay and Manawatu-Whanganui.

Figure 63. Northland's youth NEET rate compared to New Zealand, 2005-2014



Source: Statistics New Zealand, Household Labour Force Survey and customised dataset (September year)

NEET youth are more likely to come from households where there are NEET adults. NEET spells of six months or more are associated with poor labour market outcomes and higher social costs over the long term.

These statistics reflect fundamental issues of a lack of engagement of youth, particularly Māori youth, with education, training and employment opportunities in the region.

Skill demands and constraints

Participants at the 2013 Northland Economic Summit noted on-going skills and labour market challenges in the region in terms of quality, education, and simply accessing a critical mass of skilled people. These challenges are the same as those reported at similar forum a decade earlier.

There is evidence of poor labour market matching. As highlighted earlier in this report, Northland has the highest unemployment rate and lowest employment rate of all New Zealand regions. The region has been losing working age people to Auckland, other New Zealand regions and offshore. 4.5 percent of Northland's workforce moved to another New Zealand region during 2012-2013 (March year).

The working age population in Northland is expected to decline even further. A demographic study of Northland suggests that there will be 2,570 fewer people of working age in the region over the ten years to 2024 (Jackson, 2014).

Businesses interviewed for this study noted difficulties in attracting sufficient numbers of suitably qualified staff. For example, problems were noted in:

- Forestry and wood processing – where work is perceived to be hard and, in some fields, dangerous and where drugs/alcohol can be a problem.
- Dairy – where young people may be reluctant to enter the industry because of the long hours, hard work, isolation of farming and perceived lack of career opportunities.
- Horticulture – where employment tends to be seasonal, which creates problems for finding and housing workers.
- Marine manufacturing – which require engineering and trade skills that are in high demand and facing shortages nationally.
- The visitor economy – where the industry is perceived to have low wages and job security, and is also affected by strong seasonality in Northland.

Furthermore, research estimates that 62 percent of Northland's primary sector workers will need a post-school qualification in ten years, significantly higher than current levels (44 percent) (Infometrics & Nimmo-Bell, 2014).

This study has identified real potential in these industries and others to grow value-added and jobs. Other research (Infometrics & Nimmo-Bell, 2014) has forecast that primary sectors in Northland will require around 10,000 more employees by 2025, including more:

- On-farm workers on horticulture, sheep & beef, and dairy farms
- Forestry and wood processing workers
- Drivers and plant operators
- Managers.

Considering that the working age population in Northland is currently expected to decline, there will be a general labour shortage. This shortfall will have to be filled through the unemployed or underemployed, people not in the workforce, or through attracting people from outside the region. Alternatively, industry will have to look at approaches or technology that reduces labour intensity. Of course, the expectation of additional opportunities may also assist in reducing population decline.

If existing constraints and perceptions are not dealt with, these industries will continue to face difficulties in attracting workers with sufficient skills and hence fulfilling their growth potential.

Migrants into the region complement the domestic labour pool and are likely to be an increasingly important part of Northland's labour market given the small domestic talent pool and ageing population. International migrants also play an important role in filling seasonal work.

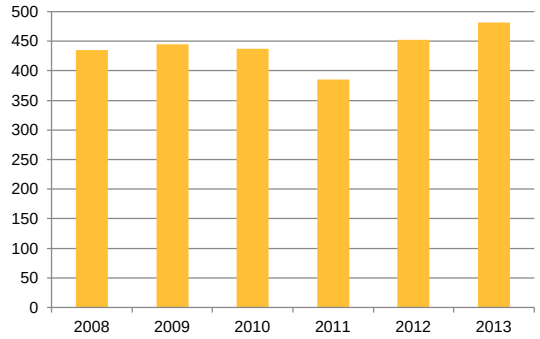
However, Northland has a smaller proportion of international migrants than New Zealand as a whole (15.6 percent compared to 25.2 percent) and only received 1.5 percent of New Zealand's recent migrants in 2013. It attracts the lowest proportion of Essential Skills workers (relative to its population) of any region nationally.

International education

A potential future source of skills is international students. Trends in international student numbers also provide an indication of the value proposition of the region as a place to learn and live.

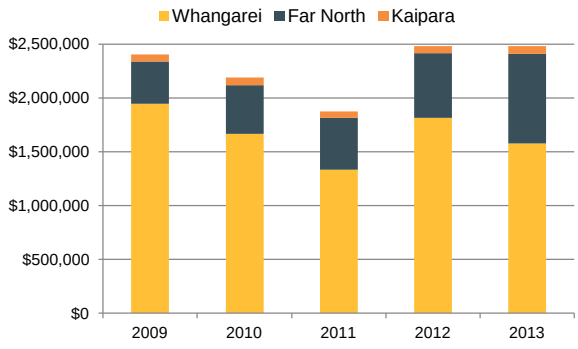
In 2013, Northland captured only 0.53 percent of New Zealand's fee-paying international student enrolments. Over 2008-2013, international student numbers have fluctuated between 385 and 481, with a steady increase in numbers since 2011 (Figure 64).

Figure 64. International student enrolments in Northland, 2007-2013



Source: Ministry of Education Export education levy statistics

Figure 65. International student tuition fees in Northland, 2009-2013



Source: Ministry of Education Export education levy statistics

On average, international student numbers in Northland increased by just over 2 percent per annum over the period, a higher rate than the national average (-0.28 percent), and at the upper end of all regions. All of the growth has been due to increases in international student enrolments in schools – there has been a slight decline in international student tertiary enrolments over the period (although these have fluctuated from year to year).

International students also provide direct financial benefits to the region through fees and consumption and accommodation spending (as well as indirect benefits, such as tourism spending during holidays and through international connections). The value of international student tuition fees has fluctuated over the last five years, reaching a low in 2011 of $1.88 million, but rising to just under $2.5 million in 2012 and 2013 (Figure 65). This represents compound growth of only 0.7 percent over the period, significantly lower than growth in income from international tuition fees nationally over the same period (3 percent per annum).

NorthTec has been implementing a range of actions to increase international students, including increasing the number of agents in China and India, strengthening partnerships with schools, and developing its central Auckland campus. It reports that revenue from international students increased from $1 million in 2013 to $3 million in 2014, and that this will more than double in 2015.

Not surprisingly, most tuition fee revenue is generated at the compulsory level in Whangārei, but the Far North is providing an increasing share of international student tuition fees.

Overall, however, Northland needs to not only improve the local skill-base but lift its game in attracting workers and students from beyond the region.

Current initiatives

Northland's labour and skills challenges are well understood. Organisations and communities in Northland, in partnership with central government agencies, are investing in a large range of initiatives to make in-roads into addressing them. Several initiatives are focused on raising youth educational outcomes, particularly Māori youth, while others are geared towards meeting industry needs. A small selection of current initiatives is shown in Table 20 (we note that there is limited information available about the outcomes achieved in most cases).

Table 20. Examples of youth and industry training initiatives in Northland

Youth focused education and training initiatives	Industry focused education and training initiatives
The Engaging Taitamakari in Learning Strategy – was developed though the Northland Intersectoral Forum and aimed at lifting the educational achievement of young Māori males, using a variety of approaches. A formative evaluation of the strategy showed positive progress on achievement levels.	The Tai Tokerau Trades Academy programmes allow students to study at several Secondary Schools and NorthTec at the same time (and are free for a year) towards nationally transferable qualifications in areas such as automotive and engineering, electronics, horticulture, hospitality and arts.
Work being undertaken under the auspices of the Te Hiku Social Accord aims to increase the rate of Māori enrolment in early childhood education, accelerate an increase in Māori enrolment rates in secondary schools, and to increase the rate of achievement for NCEA Level 2: Te Reo Māori. There is a strong focus on increasing support for whānau and parenting.	The provision of apprenticeships in fields such as engineering, food processing, retail, road transport and joinery. There were 655 modern apprenticeships in the region in 2013 (noting that Modern Apprenticeships are transitioning to New Zealand Apprenticeships as a result of enhancements to industry training) and around 5,500 industry apprenticeships.
MSD operates Youth Transition Services in Whangārei, the Mid-North and Far North to help young people make the transition from school into further education, training or employment.	The Ministry of Social Development's (MSD) industry partnerships with employers in the region to identify skill shortages and develop training that meets local demand. Partnerships have been established with employers in hospitality, forest harvesting, silviculture and horticulture. MSD has also worked with the Far North Adult Literacy Trust to help people who want to enter work in specific industries, such as forestry or bee-keeping, to improve literacy and numeracy levels.
Northland College's agricultural farm involves a partnership with Lincoln University (and its subsidiary Telford Farm) to train students in farming and develop and use the farm. There were 37 students enrolled in agricultural courses over 2013/14 (a large increase on the previous year, where only six students trained on the college farm).	
NorthTec offers a STEM (Science, Technology, Engineering and Mathematics) programme with Tikipunga High School, which allows the students to link up with tutors and scientists at NorthTec.	Taratahi agricultural training centre – Taratahi, in partnership with NorthTec, provides a number of agricultural programmes on farms and venues throughout Northland. Training includes animal husbandry, soil and crop management, fencing, chainsaws and land management.
NorthTec has developed an 'Enhancing the Youth Guarantee' Programme (which provides 16-19 year olds who are new to tertiary education with free education for a year) by providing a dedicated support team for students who will also engage with families and communities. 300 young people completed the Youth Guarantee at NorthTec in 2012.	NorthTec has partnered with Te Matarau Education Trust to deliver Māori and Pasifika Trades Training in Northland. The Trust is a new Tai Tokerau Hapū-Iwi collective made up of Te Uri o Hau, Ngātiwai, Ngāti Hau, Ngāti Hine, Ngāti Rangi and Te Aupōuri. From July 2014, 18-34 year olds are able to undertake fees-free trades training in courses such as forestry, hospitality, construction and painting.

Relevant central government initiatives

- The Tertiary Education Strategy 2014-2019 seeks improvements in the delivery of skills for industry, getting at-risk young people into a career, boosting the achievement of Māori and Pasifika, improving adult literacy and numeracy, strengthening research-led institutions and growing international linkages.
- Youth Guarantee, Vocational Pathways, Trades Academies.
- The Science and Society Project to lift science, technology, engineering and mathematics (STEM) literacy in society.
- Partnership Schools.
- Potential expansion of UFB to more towns in regions.
- MBIE's labour market information.
- Careers information, such as the Occupational Outlook report.
- MSD Industry Partnerships, Youth Transition Service.
- STAR and Gateway programmes.
- Māori and Pasifka Trades Training.
- New Zealand Apprenticeships / Apprenticeships Reboot.
- Te Hiku Social Accord.
- The Māori Education Strategy: Ka Hikitea 2013-2017.
- Strategic roadmaps for international education, the Regional Partnership Programme and International Education Growth Fund.

The opportunities

As noted earlier in this report, the region's future internal labour supply will not meet the forecast growth in employment required for key industries. There are four potential sources of labour to meet these shortages:

(i) **The under-employed in the region**, i.e., getting a higher proportion of unemployed into work and those with part-time work but who want to work longer hours into full-time work. This will provide benefits at a national level in terms of reduced benefits payments, and at the regional level, where higher incomes and sense of worth will have flow on effects beyond the value of the job. However, this group may be the most difficult to get into sustained employment, particularly the long-term unemployed, where there is long-term dependence on welfare and may be a range of issues preventing employment, such as a lack of basic life skills, drug/alcohol problems and other health problems, lack of transport etc.

(ii) **Youth**. The region's high proportion of youth in the population is an advantage and efforts should focus on preparing them for the workforce and retaining them in the region. Again, this will be challenging, particularly where young people come from families without employment role models and/or that lack supervision and encouragement.

(iii) **Those not in the labour force or about to exit the labour force**, particularly those that have previously been in the labour force and can return and those that are at retirement age who can remain working.

(iv) Migrants and encouraging people from outside the region to move into the region. While some of this will be achieved through businesses advertising nationally for their own staff or attracting people through expos or trade fairs, there is also potential to encourage people to move into the region because of the opportunities and lifestyle Northland provides rather than for a specific job.

A comprehensive approach to meeting the forecast gap in labour requirements will be needed to cover these four bases.

1) Skill-based investment programmes to support key industries

Northland has a low-skills base and currently attracts a limited number of workers to the region from elsewhere. However, there are industries with genuine growth potential that will require more and higher skilled workers to achieve that potential. The level of education and skills is improving, but the rate of improvement is not faster than improvement nationally, so the gap between Northland and the rest of New Zealand continues. As noted in other sections of this report, key industries in the region are often not seen as offering particularly attractive jobs or career paths and often businesses within them do not invest in practices that would support the attraction and retention of staff.

Stakeholders noted that although there is a vast array of education and training initiatives in place or that have been piloted in the region, this has been somewhat 'scatter-gun' and a much more focused, substantive and longer-term approach is needed.

One approach would be for a combination of the key businesses in selected industries, education providers, Māori/iwi entities and relevant central government agencies to map out the businesses' skills and likely occupational demands based on their investment and growth intentions, identify the potential supply of those skills and where there are likely gaps, and identify the combination of supply and demand interventions that would address these. This is similar to the approach to Māori and Pacific trades training, but would be a broader model addressing a wider range of industries and pathways.

This isn't about creating another broad 'labour market strategy' for the region – it would be more in the form of skill-based investment programmes for specific industries. To be most effective each programme would need to focus on a major industry and:

- Be based on real opportunities and hence real jobs amongst selected businesses in the industries. In our view, working with a small number of businesses rather than an industry body is more likely to result in buy-in from businesses and other stakeholders and result in real change.
- Consider both how to boost the level and quality of skills available for these businesses and how business practices can be improved to increase demand and attract and retain those skills over the long-term.
- Consider both specific skill requirements for specific jobs and how to build broader capabilities in youth and potential employees to enable them to do multiple roles (for example, STEM competence, digital competence).
- Consider existing interventions that are working well, but which could be expanded or enhanced.
- Take a systemic approach when identifying potential interventions, including:
    - Early childhood, school, vocational, tertiary education, work experience/internship options.
    - Labour pooling and sharing, particularly to address seasonality issues.
    - Pastoral care and whānau support.
    - E-learning approaches.
    - Any mechanisms that are required to address drug, alcohol and health related problems.

    - Consideration of infrastructure issues that may need to be addressed, such as available accommodation for workers or students and transport between the location of available workers and the location of jobs.
    - Consideration of welfare and immigration settings that support labour matching.
- Involve genuine collaboration between businesses/employers, training and education providers, iwi/iwi entities, central government agencies (including MBIE, MPI, the Ministry of Education, Tertiary Education Commission, Ministry of Social Development, Immigration New Zealand) and potential employees.
- Involve a commitment of resources, including funding, from all involved over the long-term (at least five years, and preferably ten years).
- Be monitored and adjusted over time, based on lessons learned, and as circumstances change and new opportunities arise.

An example of a similar approach is the Christchurch Construction Sector Workforce Plan that was developed in 2013 for and by firms in response to current and anticipated workforce challenges in rebuilding Christchurch. The Auckland Construction and Infrastructure roadmap may also provide guidance.

It may make sense to start with the tourism industry, given the specific opportunities that are being developed in Northland (e.g., Peppers Carrington Resort, Manea – Footprints of Kupe Centre, Twin Coast Cycle Trail, etc.). Developing skill-based investment programmes with key businesses in the dairy industry and the forestry and wood processing industry would also be good options.

Assessment

The education and training opportunity rated high on our criteria due to its validity, potential impact, and regional significance. It rates lower on its international orientation, although would include the attraction of international migrants and will indirectly impact on the export performance of key industries. Implementation may be difficult, given the variety of organisations that need to be involved (Table 21).

Table 21. Assessment of industry relevant education and training initiatives

Validity	High
Potential Impact	High
Practicality	Medium-low
Regionally significant	High
International orientation	Low
Builds off existing work and investment	Medium
Consistency with national priorities	Medium
Overall rating	**High**

2) Grow the scale and value of international education

The region would benefit from an international education plan that specifies how the region is going to meet the government's targets of doubling the economic value of international education by 2025. Based on estimates of expenditure on living costs per student and average student fees, estimated value-add of the international education sector in Northland was around $10 million in 2013. To double this to $20 million per annum by 2025 would require that the region increase student numbers to around 750 (3.5 to 4 percent annual compound growth).

The plan should:

- Identify and articulate the unique value proposition of Northland for international students relative to other regions, reflecting its cultural and natural assets, key industries and the more personalised and community based offering possible.
- Be aligned with the Education New Zealand's Institutes of Technology and Polytechnic (ITP) and school sector roadmaps.

- Have a significant focus on growing international student numbers and value at the tertiary level, building on NorthTec's plans for market development, existing investment in the Auckland campus and plans to expand accommodation options.
- Identify and support the development of pathways for international students from the compulsory education sector into tertiary education in the region.
- Identify ways of growing student numbers and value from China and India – this is consistent with national objectives but, in addition, the region already has relationships with provinces and cities in China on which to build.
- Identify constraints that impact on the attraction of international students to Northland and how they can be removed.
- Consider how to leverage international education marketing and promotion with other regions and institutional relationships across regions.

We suggest that Northland Inc and NorthTec manage the process of developing the plan, in consultation with Education NZ, and involve other key education providers in the region and potentially beyond. Funding support for the development of the plan may be available from Education NZ's regional partnership programme, subject to the process meeting their criteria and resource availability.

Assessment

The international education opportunity rated medium-low on our criteria. It is based on a clearly identified issue, is possibly achievable, is clearly internationally oriented and consistent with national priorities.

However, its impact will be relatively small in value terms and the impact may be concentrated in Whangārei (Table 22).

Table 22. Assessment of international education opportunity

Validity	Medium
Potential Impact	Low-medium
Practicality	Medium-high
Regionally significant	Medium-low
International orientation	High
Builds off existing work and investment	Medium
Consistency with national priorities	High
Overall rating	**Medium-low**

What are the potential benefits?

It is difficult to determine the impact that the development of skills investment programmes for key industries will have on employment and value add in the region. They will of course help to ensure the various opportunities that have been identified for those industries, as outlined in the rest of this report, are realised. More generally, in the short-term (1-2 years) the programmes should improve:

- The quality of information that youth and potential employees have about:
  - Training and employment opportunities in the region.
  - The opportunities and benefits associated with different careers in the region.
  - Pathways from school to work and further study.
  - Changing skill requirements.
- The quality of information that education and training providers have about demands for skills and future employment opportunities in the region.
- The quality of information that businesses in the relevant industries have about the benefits associated with investing in better business practices, such as on-the-job training.

In the medium-term (e.g., 3-6 years), the programmes should result in:

- Increased investment in education and training offerings for key industries in the region.
- Increased participation by youth and adults in education and training.
- Improved transitions of youth from school to work.
- Increased investment by businesses in the training and performance management of employees.
- Improved knowledge transfer between industry and education and training providers.
- Improvements in the quality and relevance of education and training in Northland.

All of this should contribute in the long-term to improved education and labour market outcomes, such as:

- A higher proportion of the population with foundation skills, NCEA level 2 and higher skills.
- A smaller proportion of youth (aged 15-24 years) who are not in employment, education or training.
- An increasing proportion of skilled migrants attracted to Northland.

Improved education and skills will also help individuals to achieve higher incomes and quality of life, and ultimately support growth in productivity and value-add in the regional economy.

As noted, the objective of the proposed international education plan would be to at least double the value of international education in the region from around $10 million per annum currently to $20 million per annum by 2025. There will also be broader benefits to the region from increasing numbers of international students. This includes bringing in new perspectives to local communities, helping local students to improve their understanding of the world, providing international connections and being ambassadors for Northland overseas.

What are the implications for stakeholders?

For industry:	• Partner with education providers, iwi and government to develop and implement skill based investment programmes. • Continue to assess skills needs and invest in on-the-job training and improved business practices. • Build engagement with education providers to increase the relevance of provision to industry needs.
For communities:	• Support young people/rangātahi with pastoral care to achieve their education and employment aspirations.
For Māori/iwi/ hapū:	• Partner with industry, education providers and government to develop and implement skill based investment programmes. • Continue to support initiatives to lift the educational achievement of young Māori, including whānau support, for example through the Te Hiku Social Accord, and engender a passion for education and work consistent with Māori values.

For local government:	• Engage with and support skill based investment programmes for key industries. • Facilitate youth development and employment opportunities within Councils (e.g., cadetships). • Facilitate the establishment of an international education cluster to grow the industry.
For central government:	• Partner with industry, education providers and iwi to develop and implement skill based investment programmes in the region; be opening to innovative and long-term approaches to investment and potentially changes to policy settings. • Continue to support national education and skills initiatives delivered regionally (e.g., Youth Guarantee, Gateway, Youth Transitions services, Trades Academies, New Zealand Apprenticeships, etc.) and monitor and evaluate progress; scale up delivery where interventions are effective. • Continue to support initiatives to build the skill levels of Māori youth in the region, such as through the Te Hiku Accord. • Provide support for the development of a regional international education plan/strategy.

ROAD AND RAIL TRANSPORT

Summary

Northland's long, narrow geography and position at the top of New Zealand makes the transport network a critical foundation of the economy. Northland's transport constraints are well known. There are areas of low resilience along SH1 and other key tourism and freight routes, and diversion routes do not always have sufficient capacity to take heavy vehicles. The region has a relatively poor road safety record. The rail line has only limited freight flows and the standard of the line restricts rail freight growth.

Through ongoing investment and collaboration between councils, NZTA and transport operators, several of the constraints are being addressed. Additional investment, if available, would accelerate road enhancements and improve the region's connectivity. Investment could include upgrades to the low resilient areas of SH1 and the possible development of alternative freight routes. The finalisation of the Regional Land Transport Plan 2015-21 is the appropriate process for prioritising and securing any additional investment.

Road transport

The key interregional traffic and freight routes for the region comprise:

- SH1 linking Whangārei to Kaitaia and south to Auckland. SH1 is the key route carrying 10,000 to 20,000 vehicles per day in some areas of the highway near Whangārei.
- SH12 on the west linking Kaikohe and Dargaville and down to SH1 between Whangārei and Wellsford.

These routes are supported by SH14 between Dargaville and Whangārei and SH10 between Pakaraka and Kaitaia.

Northland has close to 750 km of state highways, which are sealed, and around 5,880 km of local roads, of which only 40 percent are sealed.

Figure 66. State Highways in the Northland Region

Source: Adapted from KiwiRAP (2012)

Traffic flows on the state highways in the area are generally small to moderate, in the order of 10,000 vehicles per day or less on SH1 away from Whangārei and less than 6,000 vehicles per day on SH12. Traffic through Whangārei is more significant at over 20,000 vehicles per day (New Zealand Transport Agency, 2013d). Between 2009 and 2013 overall traffic flows have generally declined across the network, with the exception of strong growth at the Kamo Bypass.

Road resilience

Northland's sub-tropical/temperate climate results in regular extreme weather events which, in combination with areas of steep slopes and poor soils, can cause landslips and flooding that cuts off communities and impacts on the region's productivity.

Resilience issues are well recognised in the region, and investments in road improvements have been or are being made across the network.

The draft Regional Land Transport Plan 2015-21 shows that the three Northland districts spend considerably more per kilometre of sealed local road than the national median in order to maintain a fit for purpose level of service (Northland Regional Council, 2014d). Central government is also investing heavily in the road network, with $255 million allocated for maintenance, operations and renewals of the network over 2012-15, again to maintain an appropriate level of service. Other significant investments by central government include:

- Development of the Puhoi-Wellsford Road of National Significance, at a cost of around $1.75 billion, which will provide a high-standard connection and significantly enhance the efficiency, safety and resilience of the route to and from Auckland. Resource consents and a designation for the Puhoi to Warkworth section were granted in September 2014.
- Additional investment for key road improvements announced last year. This included $10 million-$13.5 million for realigning SH1 north of Whangārei, including a new southbound passing lane and extension of the northbound passing lane, and $15 million-$20 million for improvements on the loop road north to Smeatons Hill (section of SH1 south of Whangārei).

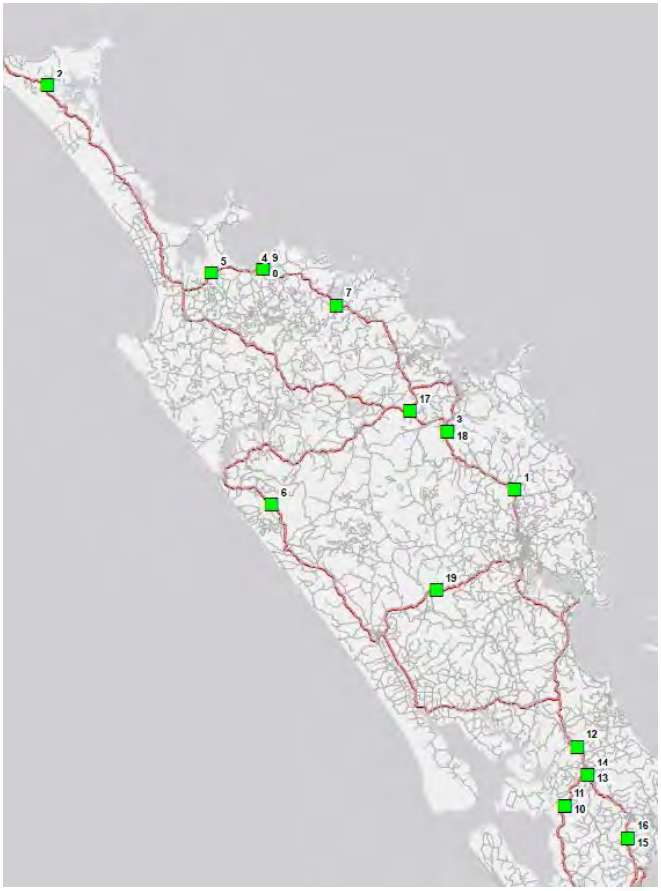
There remain several areas of low resilience in the region (Figure 67).

Particularly low resilient areas on SH1 are Brynderwyn Hills, where landslides occur in heavy rain, and Te Hana, where there is a single bridge which can be impacted by flooding or structural problems.

There are several other areas of resilience risk on SH1, including Kamo Bypass, Otiria Stream (Moerewa) and Kawakawa; on SH10 at Bulls Gorge and Kaingaroa Bridge; and on SH12 through Dargaville and at Mangatoa.

Apart from delays, when the roads are closed at key points, the diversion routes do not have sufficient capacity to take heavy vehicles. This was amply demonstrated in 2014 when SH1 and SH12 were closed, preventing access to the Far North for heavy vehicles. Local roads also experience closures from flooding and road crashes.

Figure 67. Areas of low road resilience (green areas)



Source: New Zealand Transport Agency

NZTA has developed a national approach to the assessment and mitigation of resilience issues, largely based on the likelihood of an event occurring and the potential disruption which would result. The criteria used to assess each route place a greater emphasis on the economic impacts of network disruption (compared to possible social impacts), which to a large extent relate to the volumes of freight traffic on the route.

SH1 from Whangārei to the Brynderwyns and from Brynderwyns to the Puhoi Tunnels (Te Hana Bridge) achieves a high rating. Other areas of low resilience currently only achieve a low rating on these criteria. NZTA is working with the Northland Regional Council and local councils on the Flood Mitigation Group to identify and initiate flood mitigation work.

Low resilience and quality of roads has real effects on the efficiency of freight movements in the region. For example, Fonterra has noted that the standard of roads has impacts on the costs of maintaining their tankers – up to three times the cost experienced in other regions (Winder, 2014). Resilience also impacts on road safety.

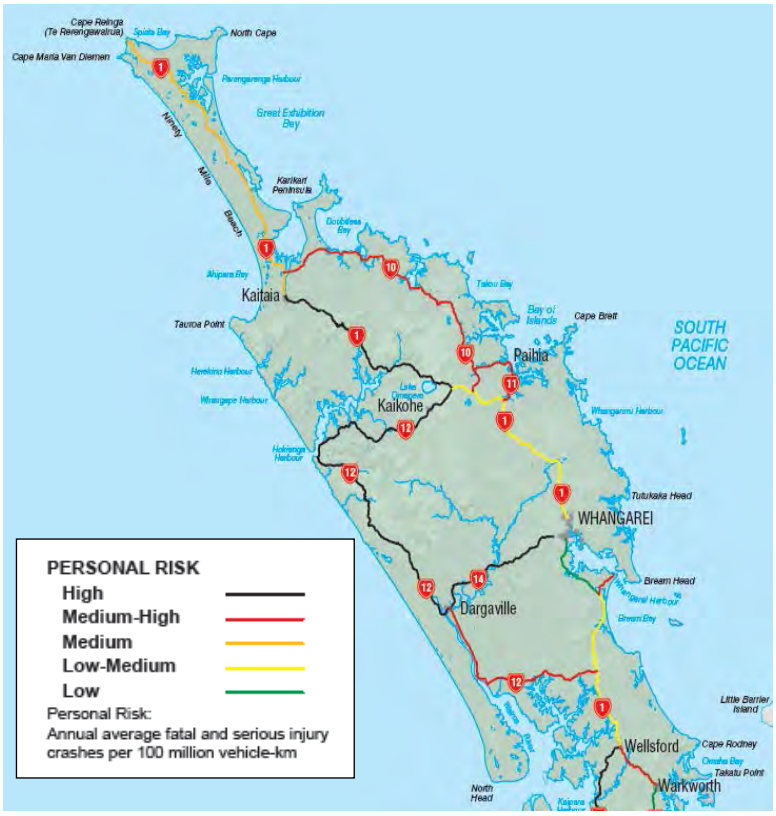
Road safety

Several Northland roads rate as relatively high on personal risk ratings (where there is average annual risk of 7 or more fatal and serious injury crashes per 100 million vehicle kilometres). These include SH1 from Kaitaia to Oheawai, SH10 from Awanui to SH1 South, SH11 from Kawakawa to Puketona, SH14 from Whangārei to Dargaville and SH 15A to Marsden Point. Some of these roads are on the main tourist routes.

Road safety is hence a key issue for the region and the area has a relatively poor road safety record. The number of serious and fatal road injuries has generally been between 120 and 140 per annum over the last five years (with the exception of a dip in 2011).

A similar proportion of these accidents occur on both local roads and state highways.

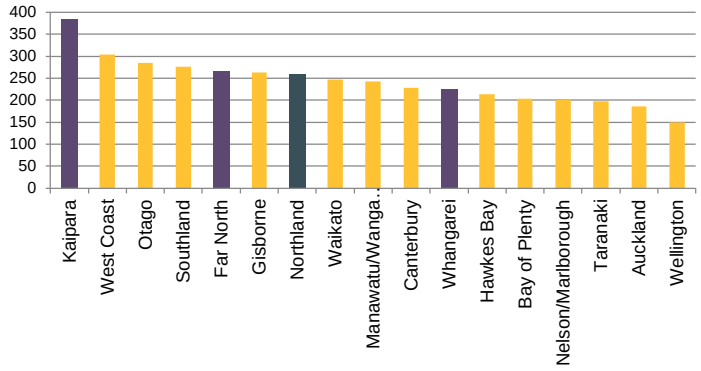
Figure 68. Personal risk rating of Northland's roads, 2012



Source: Adapted from KiwiRAP (2012)

Northland's per capita level of accidents (across all types of travel) is relatively high at 259 per 100,000 persons. Kaipara's rate is one of the highest of all territorial authorities at 359 per 100,000 persons. The number of serious road crashes (involving death or injury) per capita in Northland has also tended to be at the high end relative to other regions over the last ten years (generally Northland has been one of the three highest regions for serious road crashes) (Figure 69).

Figure 69. Accidents per 100,000 population, by region 2013



Source: New Zealand Transport Agency

Accidents and injuries have obvious social costs on the region, but also can have significant economic costs in terms of disruption to traffic and freight. Although progress is being made to reduce the overall cost of crashes to the community, a 'step change' in thinking will be required to ensure a downward trend.

Road freight

Northland is responsible for about 7 per cent of national road freight, much of which is generated by its primary industries. Most of the freight movements are within the region but limited quantities of freight are also transported to and from Auckland and to the Waikato and Bay of Plenty.

Table 23. Northland Road Freight Flows by Origin or Destination in 2012 (m tonnes)

Within Northland	From Northland	To Northland	Total
11.85	1.61	1.31	14.77

Source: Deloitte, Richard Paling Consulting, Murray King & Francis Small Consulting, & Cooper Associates (2014).

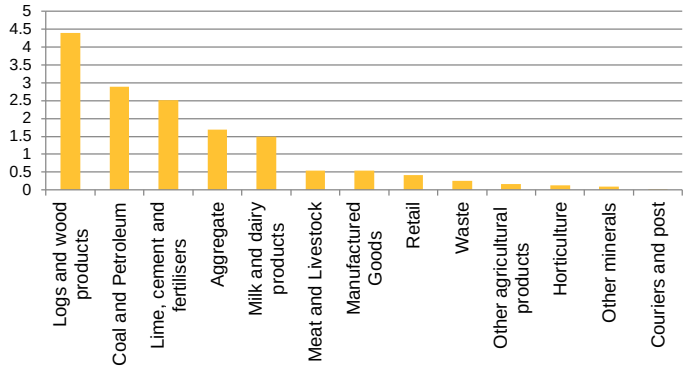
In 2012, around 14.8 million tonnes of freight was transported within, to and from Northland by road. Assuming an average payload of around 12 tonnes, this freight volume represents around 1.2 million of heavy commercial vehicle (HCV) movements in the region per annum. This is consistent with figures on average daily HCV movements on parts of the network.

Most of the freight flows in the region comprise logs and wood products, petroleum (reflecting Refining NZ), lime, cement and fertiliser, aggregates and dairy products (Figure 70).

Estimated total freight within, to and from Northland has increased by almost 5 million tonnes between 2007 and 2012. This represents strong growth of around 6.6 percent per annum.

This is largely due to the significant increase in log and wood product freight over the five year period.

Figure 70. Freight volumes to, from and within Northland, 2012 (million tonnes)



Source: Deloitte et al, 2014 and MartinJenkins calculation

HCVs account for a relatively high proportion of traffic in some areas of the region and typically represent about 7-15 per cent of total traffic on SH1 and SH12 (New Zealand Transport Agency, 2013d). In contrast to the total traffic volumes, HCV flows have generally being growing on SH 1, particularly around the Port Marsden Highway (26 percent growth per annum between 2009 and 2013) and at the Kamo Bypass (11 percent growth per annum). HCV flows on SH12 have declined towards the south but grown north of Dargaville (for example, 15 percent growth per annum growth near Kaihu). This reflects the expansion of forest harvesting in the area. In some areas of SH1 there is an average of 50-100 HCVs an hour using the road, particularly around Whangārei and the Port.

According to the 2014 National Freight Demand Study (Deloitte et al, 2014), freight in the region is forecast to increase by almost 40 per cent in the region over the 30 years between 2012 and 2042, or by a more moderate rate of around 1.1 percent per annum. This also suggests the extent of growth in HCV movements in the region, in the absence of any significant changes in freight mode.

Table 24. Northland Total Freight Flows, 2007, 2012 and 2042 Forecast (m tonnes)

	Internal	From Northland	To Northland	Total
2007	7.28	5.08	0.8	**13.16**
2012	11.99	4.89	1.33	**18.11**
Forecast 2042	16.34	6.89	2.00	**25.23**

Source: Deloitte, Richard Paling Consulting, Murray King & Francis Small Consulting, & Cooper Associates (2014).

With a significant proportion of freight being logs, there is an increasing demand for the use of high productivity motor vehicles (HPMVs) and 50MAX vehicles, which are road vehicles capable of carrying higher payloads than the standard gross vehicle weight of 44 tonnes.

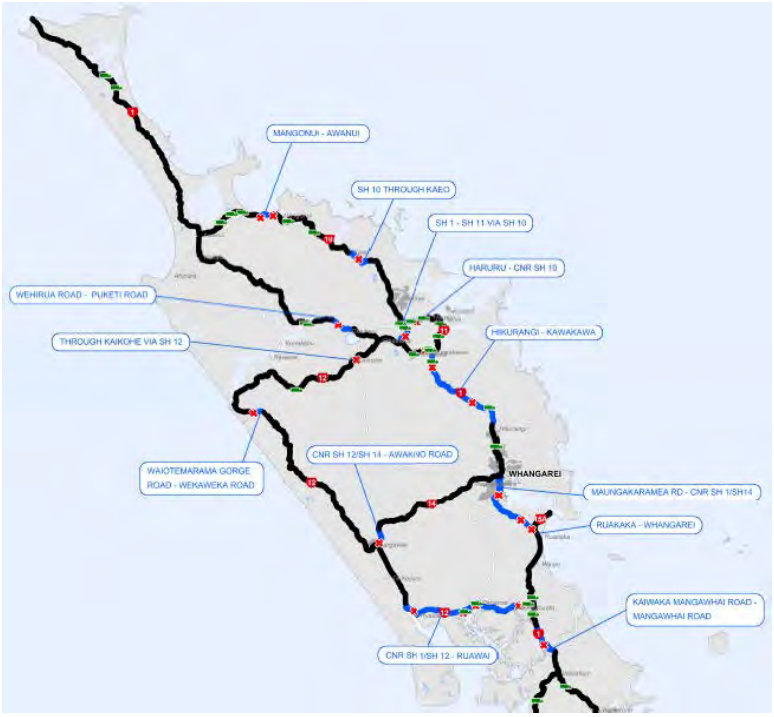
The use of HPMVs is limited to specific routes reflecting constrained weight limits. Figure 71 shows HPMV capacity in Northland as at 2012.

Investment has been made since then and SH1 is now fully open to 50MAX vehicles, the State Highway network in the region contains a number of structures that do not currently allow full HPMV operation and so do not allow the full benefits to be achieved.

In response to the growing needs for heavy freight transport in the area, the NZTA developed proposals to invest in the upgrading of required structures.

The plan for 2012-2015 is set out in Figure 72, which shows that investment was targeted to SH1 south of Whangārei. These improvements have been completed.

Figure 71. HPMV network capability in Northland, 2012



Source: Adapted from New Zealand Transport Agency (2012b). Notes: Black routes have limited HPMV capability but possibly up to full HPMV; blue routes have up to limited HPMV capability; bridges marked with a red cross have less than limited HPMV. Routes on SH1 south of Whangārei have been upgraded since 2012.

In addition, the NZTA has been working closely with Councils to identify and implement a fit for purpose network of roads for HMPV and 50MAX vehicles. This includes a report identifying the additional maintenance and operational costs that will be required over the next few years due to additional forestry loadings.

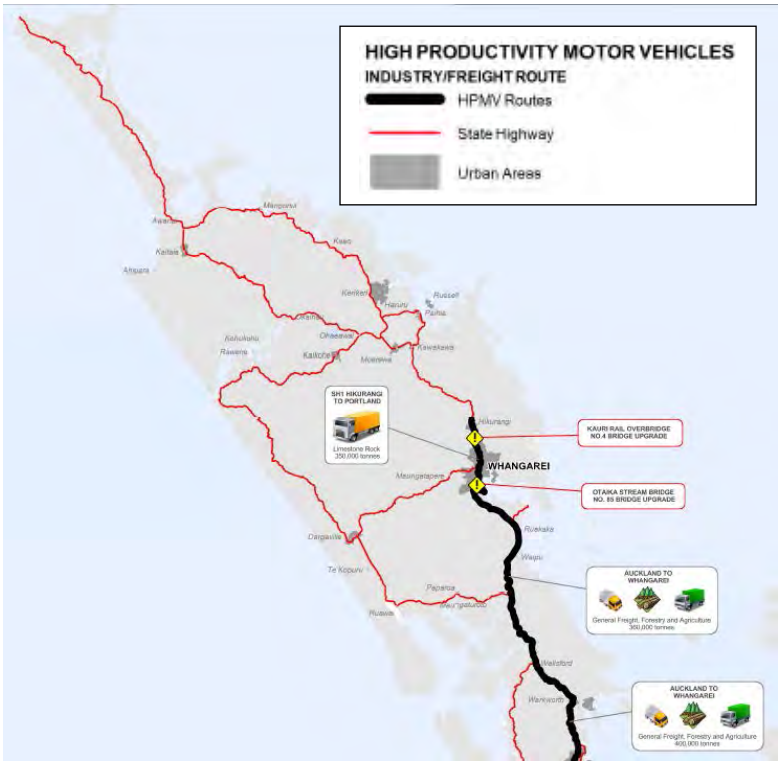
The use of heavy vehicles with larger loads may reduce the overall trend of the growth in heavy vehicle movements.

However, it may also result in increased requirements for maintenance and servicing of the roads. In addition, the increasing use of heavy vehicles causes dust problems on unsealed roads, impacting on households, crops and water quality.

Northland Regional Council has found that, at times, dust breached national environmental standards on some roads.

Communities in Northland have been quite vocal about the problem and are looking for remedies, although dust suppressants are costly.

Figure 72. HPMV route investment 2012-2015



Source: Adapted from New Zealand Transport Agency (2011)

Another issue is the interaction of heavy freight vehicles and visitor traffic. As noted earlier in this report, Northland has a main tourist route – the Twin Coast Discovery Route – which goes up and down both coastlines. Some of this route is also on the main freight route and much of it is on secondary freight routes. Although flows on some roads are relatively low, freight vehicles can result in a reduced travel experience and lead to concerns about safety, which may be a factor influencing tourist traffic. This issue has been recognised with the construction of a number of passing opportunities facilitating overtaking and so helping to reduce driver frustration and improve the level of service on key routes. However, the combination of the forecast growth in visitor numbers (noted in an earlier section of this report) and forecast growth in heavy vehicles will exacerbate perceptions and driver experience.

Rail transport

The North Auckland rail line is 281 kilometres in length (152 kilometres in Northland), originating in West Auckland and terminating west of Kawakawa at Otira. The Dargaville branch line was suspended in October 2014 due to track conditions and low freight.

The track is single lane with passing loops and runs through hilly terrain for a large part of its length and has numerous curves. There are 13 tunnels and 106 bridges in total along the full track.

The National Freight Demand Study estimates that in 2012 the main line carried 140,000 tonnes of freight within Northland, 70,000 tonnes of freight from Northland to Auckland and beyond and 20,000 tonnes of freight from Auckland to Northland (Deloitte et al, 2014).

These flows are very small when compared with the road freight volumes of close to 18 million tonnes, representing 1.3 percent of freight volume. A reduction in rail freight has occurred over the last decade with the closure of Port Whangārei and the opening of Northport, which has no rail link (there was around 1 million tonnes of rail freight in 2000).

Freight figures from KiwiRail suggest a higher level of freight flows, 330,000 tonnes, on the line in 2013. Most of the freight (63 percent) is logs and wood chip (some of which goes to Tokoroa), dairy product such as milk powder and butter (23 percent), and refined china clay and general freight (14 percent).

Movement of freight on the rail line is constrained by the low standard of the line. The tunnel profile restricts the size of wagons and loads that can be carried, particularly hi-cube shipping containers. Five of the tunnels between Auckland and Whangārei are too low for these containers. Low floor wagons could be used to transport hi-cubed containers in the interim but the increased weight capacity of containers also means that several bridges would need upgrading to cope with extra weight.

There are speed restrictions in several places (40-50 km/h and down to 10-15 km/h at certain tunnels and bridges). It can take around 5 hours to move freight between Auckland and Whangārei using the rail line in conjunction with road transport, compared to around 2 hours using road transport only.

A branch line to link Marsden Point with the rail network has been proposed and considered several times in the past. In 2009, a preferred Oakleigh (south of Whangārei) to Marsden Point link route over 19 kilometres was designated for rail, through a joint venture arrangement between Northland Regional Council and KiwiRail. This designation protects the rail line route from development that would compromise the route in future. This is regarded as a very long-term option, and its viability is subject to greatly increased freight demands and the potential role of Northport in container freight (see below).

The Port

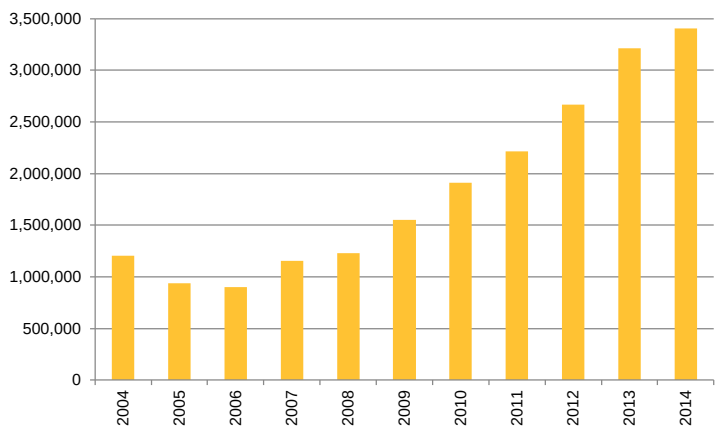
The key port in Northland is the Marsden Point deep water port at the entrance of the Whangārei Harbour. The Port serves as the major export and import hub for forestry, fuels, dairy and fertiliser. It has three berths totalling 570 metres (Northport) and two oil jetties servicing Refining NZ. Much of the cargo comes into and out of the Port by road.

Port export traffic has grown rapidly in recent years due mainly to the increase in forestry exports (Figure 73).

Export volumes have increased from around 1.2 million tonnes in 2004 to 3.4 million tonnes in 2014, a compound average increase of 11 percent per annum.

Growth in export volumes has been particularly rapid over 2009-2014 with the volumes handled more than doubling (17 percent annual compound growth).

Figure 73. Growth of export traffic through Marsden Point Port (tonnes)



Source: Statistics New Zealand, June years

Similarly, the value of exports from the Port has increased rapidly over the same period, from around $330 million in 2004 to $970 million in 2014, a compound rate of 11.4 percent per annum.

Port import traffic has been more variable, growing over 2009 to 2012, but falling again since 2012. Close to 5.4 million tonnes of freight was imported through the Port in 2014.

Logs and wood products accounted for almost 57 per cent of exports by value in 2013 (and over 85 percent by volume), followed by mineral fuels at 32 percent. Imports are significantly dominated by mineral fuel and oil for Refining NZ, accounting for 99.5 percent of imports through the port by value in 2013 (around 98 percent by volume).

Northport has invested in upgrading its facilities over several years to cater for growth, including the construction of the three berths, additional storage, an eight bay log scaling facility and a dedicated queuing facility for log trucks. It has consent for another berth in anticipation of future growth. The Upper North Island port study (PriceWaterhouseCoopers, 2012) indicated that this additional berth will be required to account for forecast increase in freight through the port (a 33 percent increase between 2012 and 2041) and that additional storage would also be required. Northport has an advantage over several others in New Zealand in having secured considerable land for future expansion and storage facilities.

Over the very long-term, it is also possible that Northport could develop as a container port and support container freight to and from Auckland as the Port of Auckland grows to capacity. However, for this to succeed, road and rail links to Auckland would need upgrading and the Marsden Point rail link will be required.

Relevant central government initiatives in this area

- Government Policy Statement on Land Transport Funding (2015).
- Funding support through the National Land Transport Programme.
- Funding Assistance Rate (FAR) review.
- Puhoi to Wellsford Road of National Significance.
- Emergency works funding through the National Land Transport Fund for managing the effects of flooding.
- Safer Journey 2020 Strategy.

The opportunity

As noted in several sections of this report, representatives we talked to across most industries highlighted problems and costs associated with road transport in the region.

Future proof key road freight routes

Given the existing and forecast freight flows, and the resilience issues earlier noted, the major freight route needs to be as high quality as possible and there needs to be provision for an alternative freight route in the region.

The major freight route is SH1 between Puhoi and Whangārei. The section between Puhoi and Wellsford has been identified as a Road of National Significance for national transport investment priorities. However, as noted above, for the entire route to work, improvements further north are needed, in particular, in areas of low resilience such as at Brynderwyn and Te Hana.

Further north, Mangakahia Road has been identified as a strategic alternative for SH1, which is a route already used by heavy vehicles. As a central route, it can provide a feasible alternative between Whangārei and Kaikohe if SH1 is closed (adding only up to one hour to the journey) as occurred last year when SH1 south of Kawakawa was closed due to a major slip caused by the storms. Other than SH1, the only option is SH12 through Waipoua Forest, which adds two hours or more to the journey.

Higher traffic volumes on the Mangakahia road can result in the accelerated deterioration of surface conditions (as occurred last year). It is currently designated a local road, funded by a combination of the Far North and Whangārei District Councils, who have limited funding available to support the required upgrades and maintenance if it was utilised for more freight traffic (although NZTA will pay 100 percent for wear and tear on alternative freight routes used by State Highway traffic in emergencies).

In the RLTP 2015-21, the region has identified the potential to designate Mangakahia as a State Highway[16] and for improvements and maintenance to become the responsibility of Central Government. It does not appear that there has been any detailed work on the estimated costs or benefits of this option relative to the status quo or other options that might be considered (such as upgrading the Mangakahia Road to accommodate HPMVs). Designating the road as a State Highway might be an appropriate option, but it would be better to identify the full range of options for alternative freight routes and the costs and benefits associated with each.

Figure 74. Key freight routes in Northland

Source: Northland Regional Council (2010c)

In addition, upgrades need to be made to bridges and routes to cope with the required increase in HPMVs. This includes areas where there is limited capability on SH1 between Whangārei and Kawakawa and potentially on the Mangakahia Road corridor.

The finalisation of the RLTP 2015-2021 is the appropriate process for prioritising and securing additional investment for these proposals. The draft RLTP going out for consultation has signalled these as areas of priority. Final decisions on prioritisation will be subject to the public consultation process and negotiation with NZTA. The RLTP is to be finalised by April 2015.

[16] We note that, in order to be designated as a State Highway, the road needs to meet NZTA criteria related to HCV use, vehicle use, tourism use, the population base in the vicinity, and/or accessibility to infrastructure such as ports or airports. It is unlikely in our view that the road will currently meet many of the criteria, although we note that 'other strategically important issues' are part of the criteria and we assume the importance of the road as a strategic alternative when SH1 closures occur could be considered.

Assessment

Investing in key freight routes in the region rates very highly on our assessment criteria due to the potential impact, regional significance and practicality (Table 25). Such investments will facilitate improvements in the export performance of key industries and builds on a range of existing analysis and work already being undertaken in the region, such as through the RLTP.

Table 25. Assessment of investment in future proofing key freight routes

Validity	Medium-high
Potential Impact	High
Practicality	High
Regionally significant	High
International orientation	Medium
Builds off existing work and investment	High
Consistency with national priorities	Medium
Overall rating	**High**

Other considerations

- **Maintaining rail as an option.** Although rail freight flows are currently very small, there is the potential for more dairy, log and wood chip freight to be moved by rail in future, particularly given the expected growth in those industries. Feedback from KiwiRail suggests that providing for low floor wagons and strengthening bridges to cope with increased weight would cost significantly less than upgrading the tunnel profile to allow for high-cube shipping containers. This would facilitate increased freight but the decision to do so will depend on freight demand and the estimated costs and benefits. We note that, over the long-term (20 years), it is also possible that the Marsden Point port will expand its capability as a container port to support what is likely to be more limited freight capacity in Auckland in future. Maintaining the line (even if mothballed at a future date) and the Marsden Point link route designation will keep this option open.
- **Integrated transport assessment.** A number of separate studies have been undertaken on different parts of the transport network in recent years (including a social impact assessment of the northern rail line; a review of how to turn rail into a self-sustaining business; a transport and advocacy strategy for the Far North; the upper North Island freight study; the upper North Island port study). But in our view what is missing is a full assessment of likely future freight and passenger (including tourism) flows on different routes and modes in Northland, based on likely scenarios. We note that such a study was undertaken in 2002 and updated in 2007, and both reports made several recommendations for a regional integrated transport network. Considerable changes in the network have occurred since the last study.

What are the potential benefits?

As noted above, we have not been provided with specific estimates on the value of benefits that would result from future proofing the key freight routes identified. In broad terms, road improvements would result in:

- Savings in accident costs (e.g., reduction in vehicle repairs, reduction in health care, reduction in loss of life).
- Savings in travel time – reducing costs associated with tourism and business travel and freight (e.g., permitting tighter scheduling), and increasing productivity.
- Savings in vehicle operating costs – reduced fuel usage and vehicle maintenance costs.
- Potential to improve job matching and labour supply where travel time and cost is an issue in seeking work.
- Improvements to the visitor travel experience.
- Direct job benefits associated with construction and upgrades.

What are the implications for stakeholders?

For industry:	• Continue to invest in port storage and facilities (Northport). • Co-invest in local road upgrades for specific access routes where required.
For local government:	• In conjunction with NZTA, identify a system of alternative freight routes. • Prioritise investment in future proofing road freight routes as part of the RLTP. • Co-invest in required road improvements to freight routes. • Continue to support road safety promotion. • Commission an updated integrated transport study for the region.
For central government (and its agencies)	• In conjunction with Councils, identify a system of alternative freight routes. • Co-invest in required road improvements to freight routes identified as part of the RLTP. • Continue to invest in state highway maintenance, operations and renewals. • Complete the Puhoi to Wellsford Road of National Significance. • Continue to invest in road safety improvements and promotion. • Complete work on the assessment of the benefits of costs of possible measures to improve freight capacity on the North Auckland rail line.

DIGITAL CAPABILITY

Summary

As highlighted in this report, Northland's economic strengths are based on natural resource-related industries. ICT and broadband infrastructure provides a platform to add value to these industries through improved performance measurement, resource management and innovation. Broadband is particularly important for a remote and generally rural region like Northland as it helps residents and businesses maintain connections with other people, customers and suppliers.

Businesses in some industries, such as dairy and tourism, have demonstrated the productivity benefits from better information management and use of ICT. In general, however, Northland is trailing behind other regions of New Zealand in ICT, internet and broadband use.

By adopting a digital development strategy, delivered through a regional digital office, Northland can deliver programmes to youth, communities and businesses to showcase the benefits of adoption and stimulate demand, build levels of digital literacy and competence to enable the use of productivity enhancing applications, and position the region to get access to increased investment for broadband roll-out.

Studies of the impact of broadband in other New Zealand regions estimate that regions benefit by 4-9 percent higher GDP over 15 years. Research also shows that New Zealand firms that make more extensive use of internet services are more productive than average firms.

Internet and broadband access and use

A smaller proportion of households in Northland have internet than in other regions: 68 percent of households in Northland had internet access in 2013, while nationally close to 77 percent of households had internet access (Table 26). This means that over 17,300 households in the region did not have access to the internet at the time of the Census. Access in the Far North was the lowest in the region at 64 percent. Positively, there has been a large increase in the proportion of Northland households with internet access over 2006-2013, although this mirrors national changes.

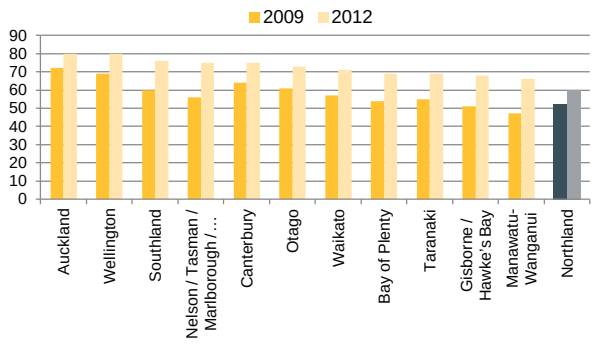
Table 26. Percentage of households who have access to the internet

Year	Northland	New Zealand	Far North	Whangārei	Kaipara
2013	68.0%	76.8%	63.8%	71.5%	66.0%
2006	51.8%	60.5%	49.3%	54.4%	48.9%

Source: Statistics New Zealand, Census

Broadband uptake in Northland has also been low, with 60 percent of households having broadband access in 2012 (Figure 75), compared to the New Zealand average of 75 percent. Like all New Zealand regions, uptake has increased overtime, but Northland has the lowest uptake of all regions. This is of concern given the remoteness of the area. Furthermore, in 2009 Northland was not the lowest performer, but has been subsequently surpassed by the East Coast and Manawatu-Wanganui.

Figure 75. Percentage of households with broadband access, 2009 and 2012



Source: Statistics New Zealand, Household use of ICT survey

These results are somewhat surprising given that Whangārei is reported as having one of the highest rates of UFB take-up in New Zealand (see below).

Northland households were significantly less likely than households in other New Zealand regions to use multiple devices to access the internet (24 percent compared to 40 percent nationally), or to use an internet-enabled mobile phone to access the internet (21 percent compared to 34 percent) in 2012.

Small and Medium Enterprises (SMEs) in the Northland region are currently the least likely nationally to have a website (9 percent compared to 22 percent) and amongst the least likely to use a social media site (3 percent compared to 9 percent) (MYOB, 2014).

Conversely, in 2012, Northland SMEs were more likely than businesses nationally to be using cloud services (19 percent compared to 16 percent) (MYOB, 2013). Northland businesses that do have a website are more likely than businesses in other regions to also have social media sites (29 percent compared to 16 percent). This suggests that there is a small group of more technology-savvy businesses in the Northland region.

Our interviews with Northland businesses and industry representatives also identified that there are primary sector organisations and farmers leading technology uptake. For example, as noted earlier in the discussion on the dairy industry, several Northland farmers use DairyNZ platforms that collect and analyse data to inform improvements to farm management. These platforms also establish the foundations for further technology development, for example, to provide customers with information on food provenance and quality assurance in the future (New Zealand Data Futures Forum, 2014).

Ultrafast Broadband (UFB)

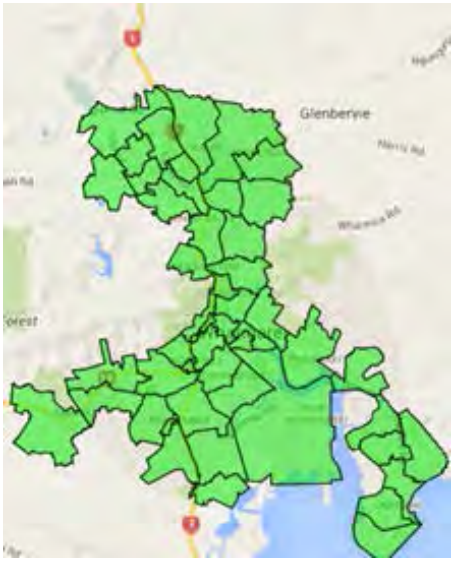
The Whangārei UFB network represents 1.6 percent of New Zealand's total UFB coverage. It was the first UFB rollout to be completed nationally in May 2014.

The Northpower Fibre network provides coverage to over 19,000 Whangārei homes and businesses and Whangārei now has the highest UFB uptake rate nationally (8-10 percent). This suggests that the region's low broadband figures are due to lack of access in the remainder of the region.

96 percent of state and state-integrated schools in Northland had access to fibre by mid-2014.

By the end of 2015 all rural public hospitals and integrated family health centres will also have access to UFB (Ministry of Business, Innovation and Employment, 2014d).

Figure 76. Whangārei UFB coverage



Source:
http://northpowerfibre.co.nz/index.php/coverage

The government has announced additional contestable funding of up to $210 million to extend fibre-optic cable coverage from 75 percent to 80 percent of the country. In the initial announcement, Kaitaia, Kaikohe and Kerikeri were mentioned as towns that could be 'strong contenders'. Central government is still working through the process for extending the roll-out but have signalled that there will be a competitive bid process, based on the cost of deployment, strength of consumer demand and assistance from local authorities.

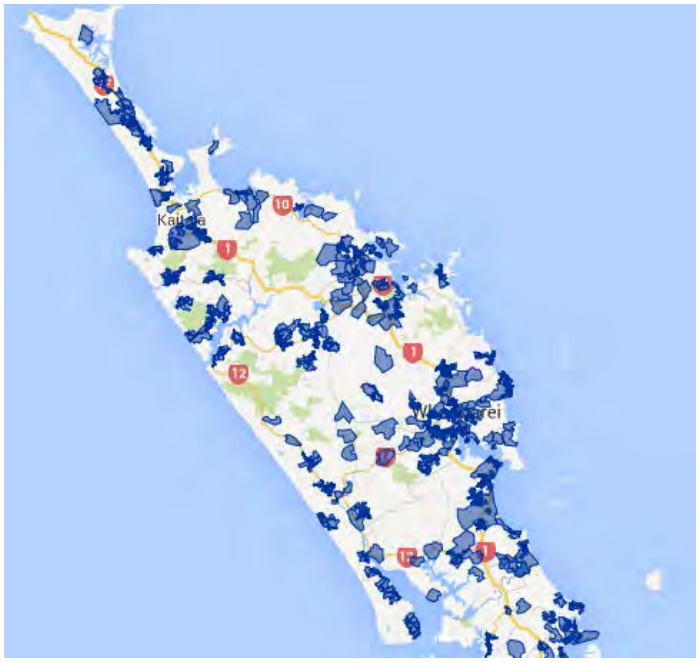
Rural Broadband Initiative

The Rural Broadband Initiative (RBI) is expected to connect 86 percent of rural homes and businesses outside of UFB areas with broadband at peak speeds of at least 5Mbps by 2016.

MBIE reported in mid-2014 that:

- 21,000 Northland households and premises had access to new wireless broadband services through the RBI.
- 12,500 households and premises had access to new or improved fixed line broad band services with three quarters of fixed line upgrades complete (Ministry of Business, Innovation and Employment, 2014d).

Figure 77. Northland RBI coverage over 5 Mbps



Source: Koordinates

The Government has committed an additional $150 million in contestable funding to further improve connectivity in rural communities by 2016.

Initiatives to build digital capability

With support from local and central government, Northland's business and communities are working together to take advantage of the new broadband infrastructure and improve digital competence. Communities are exploring new projects and national initiatives are being delivered in the region. Evaluating the effectiveness of these initiatives to improve outcomes and scale up where they are being effective would benefit both Northland and other regions. Examples include:

- Computers in homes: over 1,100 Tai Tokerau region families benefited from the Computers in Homes programme between 2006 and 2013. The programme provides support for parents of school aged children to develop their computer and internet skills, so that they can confidently help their children use digital technologies and learning. Computers in Homes is funded by government and the communities themselves.
- Wired marae: Te Kotahitanga Marae in Otangarei, Whangārei, opened its community ICT Hub in May 2014. The marae responded to community demand for computer and internet access to support education and employment, and to allow families to connect over the internet. The project was led by Ngā Pu Waea with support from local businesses, Northland Inc and Computers in Homes.
- Digital enablement training: Northland tourism operators have participated in digital enablement training to support them to prepare for and make the most of the innovation and productivity gains that digital technology can support. This programme has been supported by Northland Inc and NZTE.
- School based digital networks/hubs: The 2020 Far North ICT Trust was established in June 2008 to address digital literacy in the Far North. It has secured additional funding for an innovative technological solution for Umawera School to link it to Okaihau School (the nearest school with an RBI fibre connection) to create a community wireless network.

Relevant central government initiatives
• Ultrafast Broadband and Rural Broadband Initiatives. • Government's Five Point Action Plan for faster broadband. • Better Public Service result areas nine (one-stop online shop) and ten (digital transactions). • $30 million Māori ICT Fund. • ICT and digital technologies in New Zealand Vocational Pathways. • Network for Learning (N4L) Ltd managed networks and Pond portal. • Computers in Homes programme funding (Budget 2014 $250m). • Ngā Pu Waea National Māori RBI Working Group. • NZTE Digital Enablement and Management Capability Programmes.

Issues and challenges

Northland has achieved reasonable internet and broadband coverage (although challenges remain for more isolated communities), but the adoption and use of it is lagging behind uptake nationally. This is due to:

- **Perceptions of cost and value.** Of households that did not have internet access in Northland in 2012, the most common reason was that the costs were too high (43 percent compared to 36 percent nationally), followed by not being interested (42 percent). Northland had one of the highest proportions of residents without internet access who identified cost as the key issue. A recent study of the affordability of broadband indicates that there are several areas of Northland where broadband cost comprises a significant proportion of income (Telco2 Limited, 2014), although local providers have disputed the numbers.
- **Digital education, literacy and skills.** Census 2013 showed that there were over 3,500 families in the region with school-aged children without computer and internet access in the home. The evidence shows that material deprivation (including lack of access to computers and the internet) reduces children's learning at home and their competency during the initial years of compulsory education, which affects later educational attainment levels (Boston, 2013). The 2006 Adult Literacy and Life Skills Survey also suggested that a significant proportion of Northland's working age population have relatively low levels of literacy, including digital literacy.
- **Limited business internet penetration and technology adoption.** Available information suggests that internet technology penetration and technology adoption in Northland's industries and businesses is behind national levels. Part of this is explained by the dominant industries in Northland. Nationally, forestry and logging, agriculture support services, and accommodation and food services have the lowest proportion of businesses using the internet (Business Operations Survey, 2012). National research suggests that for small/medium sized firms in particular, the cost of technology investment (including identifying technology), skills requirements, and customer/client technology preferences can to be barriers (Glass, Davies, Hefter and Blick, 2014). Stakeholders also noted that access to wifi and cellphone coverage is becoming increasingly critical for businesses to enable technology adoption in industries such as tourism and dairy but that the region has poor network coverage in several areas.

The opportunity

Internet access and broadband represent significant opportunities for Northland's people and communities, and businesses and industries to reduce the impact of distance and increase capability.

Capturing that opportunity will depend on residents' and businesses' perceptions of the value of broadband and capability to use it.

1) Build digital competence and use of broadband

Northland Inc. is developing a Northland Digital Strategy. This strategy has a vision of Northland in 2025 being digitally connected, using globally competitive digital technologies, with digitally savvy and literate businesses, entrepreneurs and workers.

The draft strategy has identified four priority areas focused on building digital competence and the use of broadband:

- Create training and education platforms for primary industries to transition into digitally enabled enterprises.
- Secure UFB for targeted towns in the region.
- Create an integrated pathway with training and education providers to focus on the vocational skill-sets required for digitally enhanced enterprises.
- Scope the potential for data warehouse opportunities and ancillary businesses.

These are sensible areas of focus, given the preceding discussion and potential data centre opportunities (see below), but we suggest that the strategy also focus on:

- Developing digital competence in youth/rangatahi, as these represent the core of the long-term workforce. The 21st Century Learning Reference Group, for example, has recommended supporting models to leverage the knowledge and expertise of the many practitioners in ECE services, schools and kura who are leading the way in digital learning (21st Century Learning Reference Group, 2014). The development of digital education hubs, with digital educators, could be a particularly important opportunity for Northland's more remote communities.
- Integrating digital literacy with broader training, in order to demonstrate how digital technology can be used and add value to other capabilities (e.g., financial management, marketing, benchmarking).
- Stimulating demand amongst businesses in the region, for example by showcasing the value created by early adopters.
- Assessing the impact of existing digital capability initiatives and whether and how they can be improved and scaled up.

We note that some of the suggested priority areas (e.g., education and training for primary industries) may be addressed through the proposed skill-based investment programmes for key industries discussed earlier in this report.

The strategy could be delivered through a model similar to the Dunedin-based Digital Office, which was established with support and funding from local businesses and the community, including broadband providers, local tertiary education institutions, local government and industry associations. The Office has now expanded to include the wider Otago region. Areas of focus include:

- Community enablement: through projects such as tablet and smartphone training, digital education programmes for schools and preschools, and community days.
- Business growth: providing NZTE digital enablement training, the free Digital Journey online assessment tool (https://assessment.digitaljourney.nz/), and a mentoring and coaching programme.
- Digital planning: The Office provides support to Dunedin and the wider Otago region, as well as contracted services to other regions, to develop strategies and action plans.

A business case for such an implementation office and programmes would need to be developed.

What are the potential benefits?

There has not been any research that we are aware of on the social and economic benefits of broadband rollout specifically in the Northland region. A study on the impact of the adoption of fast broadband and ICT in the Auckland and Bay of Plenty regions estimated that those economies would benefit by 4-9 percent higher GDP over 15 years over business as usual, depending on the timing of roll-out, adoption and uptake (Slack, Sanderson and Dustow, 2011). The study noted that supporting key industries to be early adopters would help to achieve a critical mass for more widespread adoption of broadband.

International research suggests that broadband has a positive impact on labour productivity, although this differs across industries depending on use. Recent analysis shows that New Zealand firms that make more extensive use of internet services are 6 percent more productive than average firms in their industry (Glass et al, 2014).

Businesses in the region would benefit from broadband in a variety of ways, e.g., through the adoption of applications that improve their operations (e.g., tracking of goods and inputs) and having closer connections to customers and understanding their needs. For example, in relation to key industries in Northland, the dairy industry can benefit through improved livestock and pasture monitoring and quality control; horticulture businesses can benefit from delivery schedule monitoring, weather monitoring and online sales; forestry and wood processing businesses can benefit from improved harvesting and selection processes through tree monitoring and tracking shipments; tourism businesses can benefit from online booking, online promotion and improved customer interaction (Slack, Sanderson and Dustow, 2011).

Increasing digital capability of youth and communities will also enable local people to make the most of new employment opportunities. For example, the Ministry of Social Development is establishing a new national back office in Northland, to be completed in 2015. This will employ 70 staff to electronically process information on behalf of Work and Income offices nationally.

Assessment

The opportunity rated moderately against the validation criteria (Table 27). The ratings reflect that this is a capability platform for key industries.

There is certainly a valid case to try something different and the proposal may have a large impact on a range of industries and communities in Northland. Ensuring the strategy is actioned will be the key concern.

Table 27. Assessment of the proposal to build digital competence and the use of Broadband

Validity	High
Potential Impact	Medium-high
Practicality	Medium
Regionally significant	High
International orientation	Medium
Builds off existing work and investment	Low-medium
Consistency with national priorities	Medium-high
Overall rating	**Medium**

Other considerations

- **Land access arrangements to facilitate broadband rollout.** Some regional stakeholders we spoke to noted that in some cases it can be challenging for broadband providers to get access to private land to facilitate the rollout of the UFB and RBI in Northland (and nationally). The Minister of Communications is currently reviewing consenting requirements for private land access and is considering a proposed amendment to the National Environment Standards for Telecommunications applied under the Resource Management Act (Ministry of Business, Innovation and Employment, 2014d).
- **International telecommunications cable and possible spin-offs.** Hawaiki Cable is seeking to build a US$350 million submarine internet cable to connect New Zealand, Australia and the United States and has proposed Whangārei as its New Zealand landing site. If successful, the cable will come ashore at Bream Bay. The government, through the Research and Educational Advanced Network New Zealand Ltd, has entered into a 25 year, $65 million contract, to buy capacity on the cable and to be an anchor tenant.

  Some organisations in the region believe that the cable could provide for digital industry spin-offs at the landing point. For example, a datacentre has been proposed as a greenfield project that could leverage the Hawaiki Cable and New Zealand's reputation as a 'safe haven'. Northland Inc. has also been looking at comparable opportunities internationally, although further work will be required to understand the advantages offered by locating such facilities and businesses near such a cable compared to other locations in New Zealand, particularly if data latency is not an issue. If the Hawaiki cable project goes ahead, further work on a business case and market assessment to understand both the data storage opportunity, and the potential for the data centre to be part of a greenfield cluster development, would need to be undertaken.

What are the implications for stakeholders?

For business and industry:	• Invest in upskilling and digital technology to increase productivity. • Work with education providers to ensure education qualifications and workforce training programmes are aligned to future skill and digital technology requirements. • Participate in the development and implementation of the Northland Digital Strategy.
For communities:	• Support increases in broadband deployment and uptake, including through accessing contestable community funding. • Participate in and support programmes to increase digital inclusion such as Computers in Homes. • Support young people/rangātahi to develop digital skills and capabilities.
For Māori/iwi/ hapū:	• Consider the establishment of more marae ICT hubs (for example replicating Otangarei model) and provide digital education and training (in partnership with education providers). • Increase whānau, tamariki, and rangātahi digital education and literacy. • Consider digital inclusion and skills in sub-regional action plans, e.g., Te Hiku Accord. • Participate in the development and implementation of the Northland Digital Strategy.

For local government:	• Develop the Northland Digital Strategy with clear actions to increase broadband uptake and digital capability in the region, in partnership with industry, iwi and central government. • Investigate the business case for a digital office (or similar) to deliver a regional digital capability programme. • Partner with communities to support the further roll-out of broadband in areas not currently covered by the UFB or RBI initiatives. • Be exemplars through the adoption of e-government services (e.g., adoption of online documentation and payments).
For central government:	• Support the development of regional education networks and hubs to build local digital capability and leveraging education sector expertise (ECE, schools and kura), building on lessons from other models. • Build support for SMEs in the region to develop digital competency and encourage technology adoption, for example through NZTE's programmes. • Monitor progress towards Better Public Service result areas nine and ten at the Northland regional level and take action where it lags national levels. • Address land access barriers to support broadband roll out (in progress).

WATER QUALITY AND MANAGEMENT

Summary

The region's fresh water resources are essential for economic growth in Northland. Dairy and livestock farming rely on water for pasture and stock drinking water, horticulture relies on water for produce, tourism relies on the quality and quantity of water for recreation activities and activities in the coastal environment rely on the freshwater entering the harbours and estuaries. Water is the foundation of not only the Northland economy but all life, and as such holds particular significance for mana whenua.

There are complex interactions between the different land uses, water management techniques and Northland's environmental features such as topography, groundwater, soil type and climate. Decreased water quality or quantity can limit the potential of a range of downstream industries and activities. Northland is also a region with number of risks associated with water. Droughts are common occurrences and are likely to become more frequent into the future. Flood events also occur regularly. The impacts of these events can be exacerbated by some land use and water management practices.

Northland needs to take the opportunity to develop innovative land and water management practices, which improve resilience to water related risks. The topography of Northland does not allow for large-scale storage or irrigation schemes, so approaches need to be developed on a catchment basis. Further investment needs to be undertaken on collaborative processes to understand each catchment and how each can be managed, as well as detailed research on the demand for and supply of water, and the benefits and costs of different options to improve irrigation and water storage.

The state of water in Northland

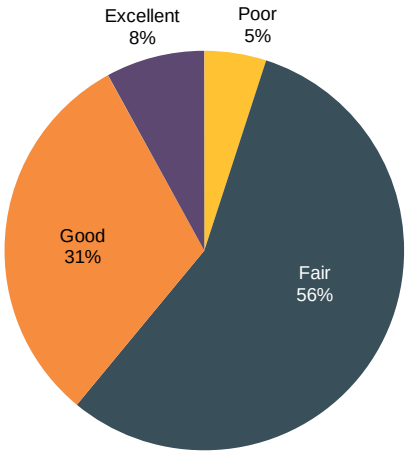
Water quality

Like the rest of New Zealand, Northland's water quality varies greatly. In general terms, water is pristine in native forested headlands and becomes increasingly contaminated as it flows through modified lowland catchments (Northland Regional Council, 2013).

The varying quality of Northland's water is illustrated by Figure 78. Over 60 percent of Northland water is graded as only fair or poor (although only 5 percent is poor).

Water quality is judged by measuring pathogens (such as E coli bacterium), nutrients (like phosphorus and nitrogen), and suspended solids (measured by turbidity).

Figure 78. Percentage breakdown of overall water quality grade at river water quality monitoring sites



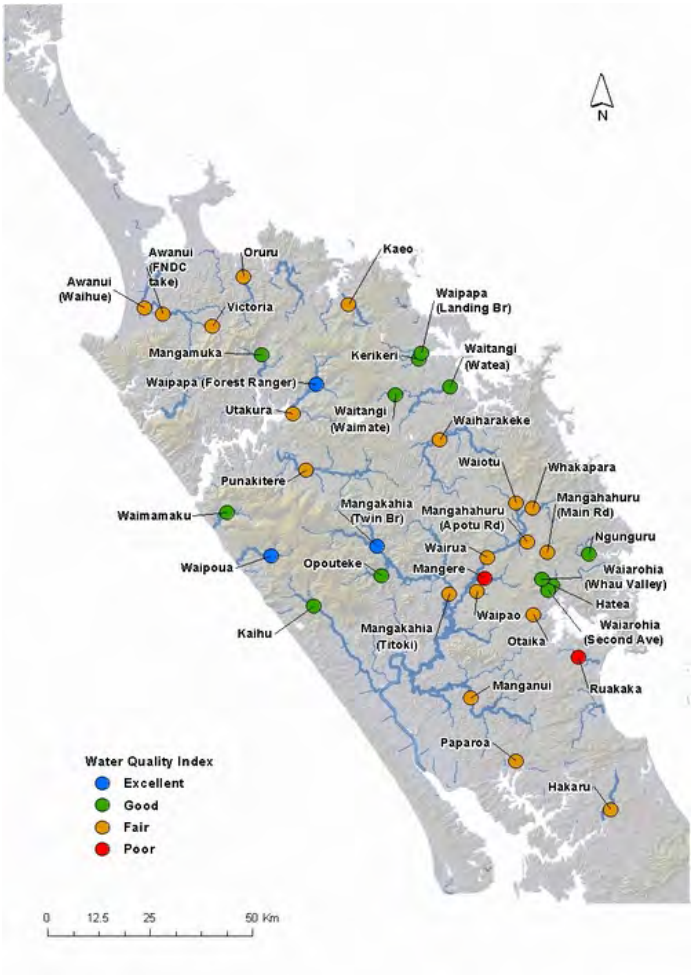
Source: Northland Regional Council (2013)

While pathogens, nutrients and sediments can enter water ways via natural causes, land use activities in the catchments are the biggest contributor to poor water quality (for example, through livestock effluent, wastewater discharge, and the use of fertilisers). This is reflected in Figure 79 which shows that the areas graded with the worst water quality are aligned with those with the greatest intensity of land use activity.

Forestry, harvesting, subdivision, a lack of riparian vegetation and stock access to water ways all increase sediment loads in rivers. Increased sediment in waterways is exacerbated by the underlying soft sedimentary rocks in some parts of Northland which are vulnerable to erosion.

Positively, over the last 10 years, many of Northland's degraded rivers have shown some improvement in water quality and this is generally attributed to improvements in point source discharges and improvements in on-farm practice.

Figure 79. Surface freshwater classifications for the Northland region based on the River Water Quality Monitoring Network



Source: Northland Regional Council (2013)

The Northland Regional Council has established the River Water Quality Monitoring Network that covers 35 representative sites throughout Northland. Each site is sampled monthly on a range of indicators relating to water quality, such as bacteria, water clarity and nutrients. This ensures there is a range of data that can be used to establish trends.

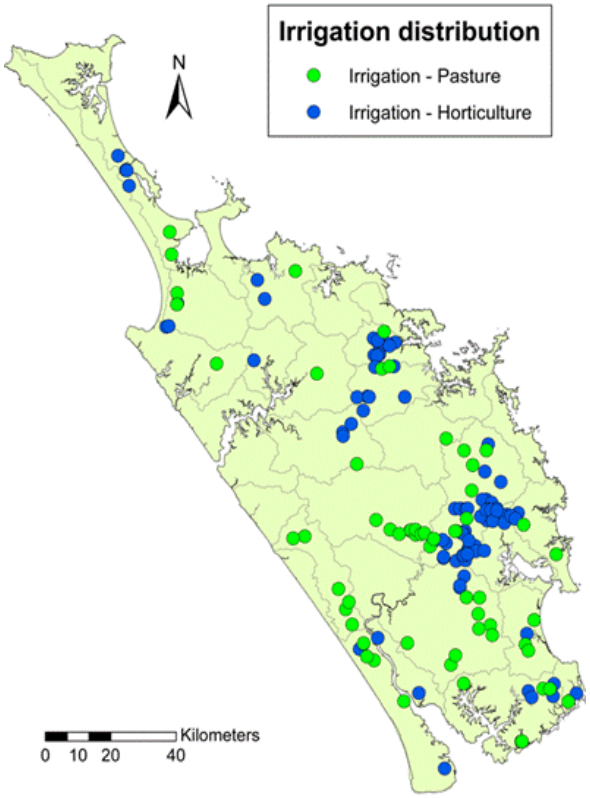
Water quantity

Irrigation for pasture based and horticulture based activity is the main water use in Northland, accounting for 31 percent and 19 percent of total volumes of the water allocated, although the total irrigated area of land is only 7,800 ha.

There are no maximum allocation limits set for catchments in Northland and it is estimated that some catchments are nearing, or are over estimated maximum allocation limits (Figure 81). The Sustainable Water Allocation Project is tasked with updating and implementing a more rigorous water allocation regime and is continuing to investigate this issue.

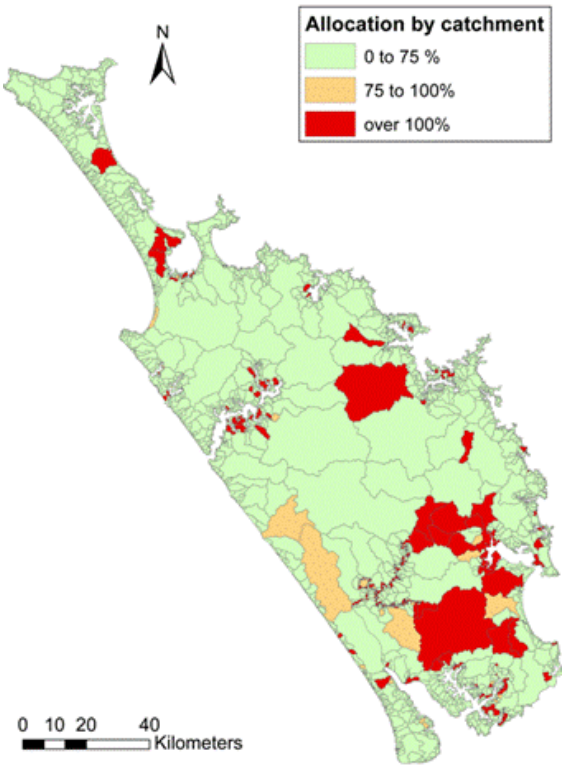
The catchments estimated to be nearing full allocation are also those with a greatest concentration of consents for pastoral and horticulture irrigation (Figure 80). They are also those that have the most productive soils.

Figure 80. Irrigation distribution in Northland



Source: Northland Regional Council (2013)

Figure 81. Likely level of allocation for Northland catchments



Source: Northland Regional Council (2013)

Catchments with high levels of allocation are particularly vulnerable to the need to reduce water takes in times of drought, when the need to irrigate is greatest.

Droughts and floods

The frequency with which drought conditions occur in Northland is cause for concern. In 2014 the third drought in four years was declared in the Northland region with much of Northland's west coast from Cape Rēinga to Pouto Point being classified a localised drought area. The classification covered an estimated 400 Northland dairy farms and 700 sheep and beef units.

The Northland Rural Support Trust estimated that the 2013 drought cost the Northland Region $500 million. This cost represents losses due to the need to buy in feed and water for the stock, selling stock off and drying off dairy herds earlier than expected. In times of drought the assimilation quality of the rivers and stream, which is relied on by those that discharge their waste to streams, is drastically compromised and creates significant water quality effects for downstream users and on the coastal environment.

Water storage and irrigation are ways of mitigating the impact of droughts. In relation to water storage, Northland has a relatively small number of dams and weirs. There are two main irrigation schemes in Northland (as well as individual irrigators), which support the horticultural industry:

- Kerikeri Irrigation Company – fully piped from two storage reservoirs (about 12 million cubic metres total) providing irrigation water to about 2,500 ha – largely horticulture enterprises, kiwifruit, blueberries, nurseries, along with council urban water supply and rural water supply to lifestyle blocks.
- Maungatapere Irrigation Scheme – fully piped from Poroti Springs and Wairau River providing water to around 205 horticultural enterprises over 711 hectares.

This represents relatively minor irrigation given the scale of primary production in the region. However, the topography of Northland is such that is not possible to have large-scale storage or irrigation initiatives as can occur in Canterbury and the Hawke's Bay. Instead, water storage and irrigation need to be managed in different catchments in different ways and water storage is likely to be limited to relatively small volumes due to short, steep catchments.

The frequency with which drought will occur in Northland is likely to increase. NIWA has undertaken specific research on how the frequency of drought might change over the coming century. Under the "low-medium" impact scenario, by the 2080's severe drought is projected to occur at least twice as often as currently and under the "medium-high" scenario severe droughts are projected to occur more than four times as often.

Floods are also occurring frequently in Northland. In 2007, 2008 and 2011, the Northland region experienced above average rainfall that was mainly attributed to a series of significant rainfall events. Floods also occurred in 2014 and the impact on different industries and roads has been discussed in other sections of this report. Flooding and subsequent draining also causes substantial silting, which affects waterways in the Hikurangi Plains and Kaipara Harbour area, requiring costly removal activities (by Councils and farmers).

Flooding in Northland tends to be sudden, violent, and occur after heavy rain. This is partly because small steep catchments, impervious clay soils and tidal influences are typical in the region. However, activities such as reducing the extent of wetlands, disconnecting rivers from flood plains through flood protection works, exotic weed infestations and reduced vegetation cover all increase the impact of flooding. In addition, the land-use and development in Northland tends to be concentrated in flood prone areas, and this does not assist in building resilience to flood risks. There are also large areas of highly productive farmland and associated structures located on floodplains and drained wetlands, such as the Hikurangi "swamp", where more than 5000 ha has been drained since the 1920s and turned into farm land.

Northland's Councils are already undertaking a number of measures to increase the region's resilience to floods. For example, the Priority Rivers Flood Risk Reduction Project involves 26 river catchments identified as priorities for flood risk planning. The Northland Regional Council has been working with affected communities in each catchment to prioritise and develop plans to reduce flood risks.

Issues and challenges

There are on-going issues for implementing land and water management techniques. For example:

- Each catchment has unique characteristics with differing land uses, geology, soil type and ground water influences. This means there is not a one-size-fits-all approach that can be applied.
- Water is a feature of a larger ecosystem. The impact of activities on water quality and quantity can be complex and impact on a range of other parts of the system. While the impact of point source discharges are relatively easy to identify, monitor and control, impacts of diffuse pollution and the cumulative impacts are more difficult to understand and address. The impact of climate change on water quantity and quality issues is also complex.
- Because of the complex interrelated nature of the ecosystem, major modifications to one aspect, to provide for a certain type of land use, can lead to ongoing investment in increasingly complex engineering solutions for that land-use to continue.
- There are many different values and priorities relating to water in a catchment and they sometimes conflict. The varying types of values of water are not always able to be economically quantified, meaning that more sophisticated approaches to assessing cost and benefits of different land and water use techniques need to be used.

- The cost of water augmentation schemes is highly variable in terms of type and time. An Irrigation NZ report estimates that the cost of water supplied by irrigation schemes varies between $130 and $1,350 per hectare per year (Reese and Curtis, 2014).

The opportunity

1) Improving water allocation and water quality through water storage and management

Given the complexity noted above, the key opportunity at this point is to better understand the demand, supply, benefits and costs of different options to improve water allocation and quality through water storage and management, before making major investment decisions. There are two inter-related components to advancing this opportunity:

a) Collaborative processes to understand each catchment

Collaborative processes are needed to understand who obtains value from the water in the catchment, what outcomes are sought for each individual catchment, and how the water can be prioritised and managed to ensure the outcomes are achieved.

Recent amendments to the National Policy Statement for Freshwater Management (NPS-FM) give regional councils specific direction about the collaborative processes that should be used to establish the objectives and set limits.

Northland Regional Council's Waiora Northland Water Project involves a series of collaborative processes designed to facilitate the setting of community objectives for freshwater management by looking at Northland waters at a local 'catchment' level and bringing together local stakeholders to help decide how they will be managed.

On a priority basis, Waiora Northland Water Project has formed local catchment groups from people with an interest in water issues in each catchment. These groups work to provide local input and recommendations on maintaining and improving freshwater in their area. Priority areas are in the Pouto, Waitangi, Doubtless Bay, Whangārei Harbour and Mangere Catchments.

b) Analysis of the supply of and demand for water and the costs and benefits of different irrigation and water management options

The Northland Regional Council, Northland Inc and Ministry for Primary Industries are commissioning a Strategic Water Management Study to understand irrigation potential in Northland (jointly funded through the Regional Investment and Growth Reserve and the Irrigation Acceleration Fund). This work will include an analysis of:

- The current irrigation situation, including how irrigation is being undertaken, sources of water, the types of irrigation and the beneficiaries. This will include an assessment of the Kerikeri and Maungatapere schemes, including identifying opportunities to improve their effectiveness. Previous water storage options will be reconsidered.
- Demand for water, including an assessment of physical factors affecting demand such as soil types and topography as well as sources of demand.
- Supply of water, including existing surface water and ground water takes and water storage and current allocations.
- The costs and benefits of water management options, including on-farm and community based schemes and the impact on the Northland economy, and how water management might result in land-use change.

- Recommendations for actions to improve water management in Northland. Actions will be tested through a stakeholder engagement process of industry representatives, infrastructure companies and Councils.

The study is to be completed by June 2015 and will be an important part of improving knowledge about water allocation trends and causes. The study should also be coordinated with the Wairoa Water Project as well as the review and revision of the Northland Regional Plan. These connections will assist in considering the complex range of costs and benefits associated with potential water allocation and water infrastructure proposals and ensure that the full range of different industries and communities that will be affected by potential irrigation options are considered from the outset.

Relevant central government initiatives

- National Policy Statement for Freshwater Management.
- Irrigation Acceleration Fund.
- Clearview Innovations Primary Growth Partnership.

What are the potential benefits?

In broad terms, the benefits of improved water management through the Wairoa Water project, the review and revision of the Northland Regional Plan and the Strategic Water Management study are likely to include:

- Reduced costs of flood and droughts. As noted earlier, the costs associated with these natural hazards can be significant.
- Improved stock drinking water and resulting productivity benefits. Currently only 11 percent of the sites monitored are meeting the guidelines for stock drinking water. This can result in reduced livestock weight and lower milk production.
- Reduced negative impacts on downstream activities which rely on water quality being of a certain standard. For example, in the past, bacterial contamination has threatened the operating classification of the Whangaroa harbour for commercial growing of oysters. Maintaining high water quality standards in Northland is the key to retaining and increasing the returns on premium shellfish aquaculture product.
- Improved recreational opportunities in the region. For example less incidence of swimming areas not meeting the water safety guidelines. During the 2009-10 sampling season, nine of the freshwater sites sampled had a compliance rate of less than 75 percent.
- Improved brand value for primary or tourism products due to increased perception of a clean environment.
- Improved Māori well-being. Māori consider water an essential ingredient for life, and it is regarded as a taonga or treasure.

Specific benefits associated with improved water management and irrigation will be estimated as part of the Strategic Water Management Study.

Assessment

The water storage and management opportunity rated moderately on our criteria, reflecting the complexity involved (Table 28). It is highly significant for the region and may have a significant impact, but there are still questions about how difficult it might be to implement recommendations that emerge from the work. Some regional stakeholders reported that past irrigation initiatives have not been sufficiently tailored to Northland conditions, which has created some scepticism about irrigation projects which will need to be addressed in the study and collaborative processes.

Table 28. Assessment of flood management, water storage and irrigation

Validity	Medium
Potential Impact	Medium-high
Practicality	Low
Regionally significant	High
International orientation	Low
Builds off existing work and investment	Medium
Consistency with national priorities	Low-medium
Overall rating	Medium

What are the implications for stakeholders?

For industry:	• Co-investment in R&D on innovative water and effluent management techniques. • Investment in water storage and management infrastructure. • Ongoing involvement in community processes to enable a better understanding of the range of values and stresses on the land and water in the catchment. • Reduced use of farm and water management techniques that compromise the quality and quantity of water.
For communities:	• Ongoing involvement in community processes to enable a better understanding of the range of values and stresses on the land and water in the catchment. • Ensure that views about the merits of different practices and planned projects are based on clear evidence rather than supposition.
For Māori/iwi/ hapū:	• Ongoing involvement in community processes to enable a better understanding of the range of values and stresses on the land and water in catchments. • Actively engage in decision making processes regarding the allocation of water, including clarifying iwi views and expectations of water quality levels.
For local government:	• Continue to develop the regulatory framework within the RMA documents that implement the NPS–FM. • Continue to support collaborative processes that identify who obtains value from the water in the catchment, what outcomes are sought for each individual catchment, and how the water can be prioritised and managed to ensure the outcomes are achieved. • Continue to work with industry to assess the feasibility of innovative land and water management techniques.

For central government:	• Support the development of research into the irrigation potential of Northland region and assist in ensuring this research is connected to the local government processes. • Undertake research that focuses on addressing the water management challenge in the Northland region. • Promoting uptake of new primary sector technologies that support resilience and improve the natural environment.

APPENDIX 1: ACKNOWLEDGEMENTS

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- Northland Agriculture Working Group
- Northland Aquaculture Development Group
- AFFCO NZ Ltd (Northland branch)
- Aotea Clear Cloud Ltd
- ASB
- Bank of New Zealand Ltd, Northland
- Beef and Lamb NZ
- Cawthron Institute
- Culham Engineering Ltd
- DairyNZ
- Explore Group
- Far North District Council
- Far North Holdings
- Fonterra
- Forme Consulting Group
- Hancock Forest Management
- Hawaiki Cable
- Hikurangi Plains Water Interest Group
- Imerys New Zealand
- Tai Tokerau Iwi Chief Executives Forum
- Juken New Zealand
- KiwiRail
- Landcorp
- Ministry for Primary Industries
- Ministry of Business, Innovation and Employment
- Ministry of Education
- Mt Pokaka
- McKay
- McRaes Global
- New Zealand Transport Agency
- Ngāpuhi Asset Holding Company

- NIWA
- Northland Forestry Advisory Group
- Northland Inc
- Northland Regional Council
- Northland Tourism Development Group
- Northport
- Northpower
- NorthTec
- Port Nikau
- Refining New Zealand
- ShipCo-Marine
- Silver Fern Farms
- Summit Forest Management
- Te Tai Tokerau Mining
- Top Energy
- TRC Tourism
- Waipapa Pine
- Whangārei District Council
- Wood Engineering Technology

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