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KAIPARA DISTRICT
Kaipara te Oranganui • Two Oceans Two Harbours

KAIPARA KAI GROWING LARGER

New Opportunities to Increase Food Production in the Kaipara District

FINAL REPORT; April 2020; v1.01

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PROVINCIAL GROWTH FUND TUAWHENUA

KAIPARA DISTRICT

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New Opportunities to Increase Food Production in the Kaipara District

KAI FEASIBILITY STUDY (KKSK003); FINAL REPORT

April 2020

V1.01

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EXECUTIVE SUMMARY

THINGS CHANGE

For millions of years the area that is now the Kaipara District was just trees, birds, rivers and beaches. Then, in the blink of an eye in geological terms, wave after wave of settlers arrived. The first wave came from Polynesia, with following waves coming from England, Ireland, Scotland, Croatia, Holland and elsewhere. Each brought their own foods and food systems. These systems - primarily kumara and sheep, cattle and dairy cows grazing on grass - now cover much of the land. And, as a result, the Kaipara District is now a major food producing area of New Zealand.

But the foods currently produced in the Kaipara District are not set in stone. What is produced today is much more an accident of history than destiny. If we imagine winding the clock backwards - like in some Hollywood science fiction movie - and had New Zealand instead been colonised by China or Japan, Kaipara would still be a major food producer, but it would instead produce very different foods. In that future, much of the Kaipara would be covered in rice paddies filled with carp aquaculture; fields of soybeans, peanuts, sorghum, millet, and cotton; and high productivity pork and poultry systems.

When we look at new opportunities to increase food production in the Kaipara District, we must imagine a new, different future. This is the hard part. The biggest barrier to changing land use in the Kaipara District is not the capacity of the land or the quality of the soils or the changing climate. The biggest barrier to changing land use in the Kaipara District is in people's heads.

This report seeks to assist the people of the Kaipara District in imagining that new future.

THERE IS A CLEAR OPPORTUNITY

Kaipara currently accounts for 1.2% of New Zealand area, 0.5% of population and an estimated 1.1% of kai (food) production.

The population of the Kaipara District has grown strongly in the last decade, though growth is projected to slow going forward. Kai - the food industry - is the major employer in the region. The wider food industry accounts for almost half of all employment in Kaipara. The challenge for the region is that – over the past two decades – Kaipara has not created employment across the total food and beverage value chain.

Kaipara has clear potential to grow kai (food) industry revenue. Kaipara is underperforming against all of its neighbours in creating agricultural output from its land. If Kaipara could match the performance of neighbours - Thames-Coromandel, Waikato, Hauraki and others - it could add ~$20m to ~$230m directly to regional GDP.

The Kaipara Kickstart project supports this change by creating a step change enabling sustainable, long term growth in the region.

A STRONG BASE ON WHICH TO BUILD

Kaipara kai has a strong base on which to build and Kaipara can produce more kai (food).

Kaipara has a unique position in the New Zealand food landscape. Kaipara has a subtropical climate that provides attractive growing conditions. Kaipara has a range of food production systems that are working well and all have opportunities to build value. Kaipara is fully integrated into the wider New Zealand food and beverage production landscape. However, the vast majority of existing value created in agriculture in Kaipara comes from globally competitive sectors at scale (primarily pasture-based dairy and meat systems).

EXECUTIVE SUMMARY

PART OF A WIDER PROGRAMME OF WORK

With a kind climate, great soils and the largest harbour in the Southern Hemisphere, Kaipara has rolling farmlands fringed with spectacular bays and beaches. As the perfect gateway between Auckland and the rest of the North, this part of Northland region is largely unknown and its potential untapped. Kaipara is waiting for catalytic investment to unlock growth and development which will benefit the whole of Northland.

There is a huge opportunity to "kickstart" Kaipara by focusing on renewing what was done well in the past, building future-proofed infrastructure and opening up its land and resources which lie alongside Auckland.

There are three interlocked projects – Kai (Growing the Kai in Kaipara), Wharves (Kaipara Moana Activation Plan) and Roads; like the three legs of a stool. The step-change effect of the combination of these three projects is greater than the sum of its parts. This package will see roads and bridges improved, wharves built, a transformation hub opened, and analysis conducted to support future development.

The Kai Feasibility Study (this project) is part of a larger programme of work – the Kaipara KickStart Programme (KKS). The KKS programme is funded through central governments Provincial Growth Fund that invest in regional economic development and seeks to ensure that people living all over New Zealand can reach their full potential by helping build a regional economy that is sustainable, inclusive and productive.

The three projects work together to achieve a common set of economic outcomes to the Kaipara District. The collective investment fund is $28.24 million dollars. These three initiatives will benefit not only the communities within Kaipara but the wider Northland region.

The wider Kai Project has three workstreams, these include:

1. Kai Feasibility Study & Activation Plan (this project)
2. Water Options Report (awarded to Williamson Water & Land Advisory). Work complete.
3. Topo-Climate Study (awarded to NIWA who is working with Landcare and Plant & Food Research) Work started, due for completion June 2020).

The work which is out of scope for this project is that of a technical nature which will complement the work of the Kai Feasibility Study by providing insights into Climate, Land, Water and Crop opportunity for Kaipara.

The feasibility study (this report) is supported by an activation plan (available elsewhere).

BUILDING ON TOPO-CLIMATE BODY OF WORK

This project worked in parallel with the Topo-Climate Study being conducted by NIWA, Landcare and Plant & Food Research. Drafts and the final research findings of their workstreams strongly informed all stages of this project. The soils and soil data (Landcare), the current and future climate (NIWA) and the horticultural suitability work (Plant & Food Research) were all strongly influential on the process, methodology and outcomes of this research. This project builds upon the Topo-Climate workstreams and has strong linkages into the results of that work.

ADAPTING TO CLIMATE CHANGE

The regular and growing incidence of drought in the district highlights that Kaipara, like all of New Zealand, faces a changing climate going forward. Climate change is also amplifying the seasonal nature of rainfall in the district. However, climate change is not a doomsday scenario. Human civilization exists and flourishes in regions with much harsher and dryer climates than Kaipara is projected to experience. What is required is adaptation to the climate of the future with climate suitable agricultural systems, rather than holding on to the products of the past.

EXECUTIVE SUMMARY

Projected climate change in the district was a key factor in this research. All of the agricultural systems identified in this research are conducted in countries and regions of the world with climatic conditions similar to where the Kaipara is heading in the future. As an example, sorghum is highlighted in the research and it is the most drought tolerant major arable grain crop and it is grown across large parts of the Sahel region of Africa. Sorghum will grow in the Kaipara under all possible climate scenarios over the next 100 years.

SEVEN HIGH LEVEL AVENUES FOR GROWTH

The research identifies that Kaipara has seven clear high level avenues for growth in this changing environment.

First, there are three avenues for growth for Kaipara kai in existing medium and large sectors:

1. Adding more value in the region to existing export focused ingredients, specifically dairy and meat
2. Transitioning kumara from domestic to export competitiveness
3. Scaling up volumes of existing export fruits (avocados & kiwifruit)

Second, there are four new avenues for growth for Kaipara kai in small, emerging and new sectors:

4. High productivity, vertically integrated animal systems (poultry & pigs)
5. Scale up of existing and new aquaculture opportunities (mussels & oysters)
6. Scale up of existing & emerging secondary & emerging crops (olives)
7. Development of new crops not yet produced in region at any scale

In aggregate, these new avenues for growth for Kaipara kai can deliver significant growth to the region. Conceptual modelling suggests that were all seven opportunities realised, Kaipara could grow regional GDP from agriculture by 3-4 times. No matter how you look at it, Kaipara's kai has strong potential to transition to a larger, more diversified, more value added future.

SCREENING PROCESS

To identify and prioritise regional opportunities that suit Kaipara, the project used a robust, three-stage screening process. This type of screening process has been used before on a wide range of other similar projects to deliver real results.

STAGE I: PRODUCTS WERE IDENTIFIED AND SCREENED

Stage I received input from a wide ranging group of regional stakeholders on their ideas for new opportunities for Kaipara Kai. Plant & Food Research also identified five new opportunities for inclusion as part of their ongoing process. Identified products were screened for any known issues or challenges in Kaipara.

STAGE II: PRODUCTS WERE PROFILED AND EVALUATED

From this process, twenty seven crops, animal & aquaculture systems emerged from Stage I and were evaluated in Stage II.

The crops identified were globe artichoke, Jerusalem artichoke, avocados, bananas, beetroot, blueberries, capsicums, carrots, cucumber, industrial hemp, hops, olives, peanuts, pineapples, potatoes, rice, sorghum, soybeans, sweet corn and tomatoes. The animal systems were meat chickens, egg chickens, ducks, dairy goats, pigs, mussels and oysters.

EXECUTIVE SUMMARY

STAGE III: THE IDENTIFIED SHORT LIST WERE DEVELOPED IN MORE DETAIL

While Kaipara has a wide range of plant-based diversification options, a number of products stood out qualitatively in Stage II. The Stage II product varied in their estimated potential "size-of-the- prize" over the next five to ten years. Bringing together the qualitative and quantitative results highlights a range of high potential opportunities for Kaipara with real potential to create transformative change.

As a result, five products - peanuts, avocados, hops, dairy goats and meat chickens - emerged into Stage III of the process. In addition, sorghum was added by the advisory group, bringing the total to six highlighted opportunities. While the process highlights these six opportunities, all twenty-seven products have real potential in the Kaipara District.

It is important to recognise that the agricultural systems identified in this research are not the only opportunities. Other good ideas exist and have real potential in the Kaipara District. The fundamental driver for success is passionate individuals driving change. The warm, temperate climate of the Kaipara District – even under climate change – is ideally suited for food production and experimentation should be encouraged by all.

COMMERCIAL & FINANCIAL OPPORTUNITIES

Changing land use and developing new agricultural production systems in the Kaipara District will require significant investment. Investment will be required by all key stakeholders, including government, manufacturers and processors and agribusiness operators. Past Coriolis research has highlighted that every dollar of agri-food exports requires around $2-3 of investment before the border. This research is designed to facilitate this investment occurring in the Kaipara District.

This research highlights the commercial and financial opportunity for the Kaipara District as a whole (e.g. soils well suited to high value agriculture in close proximity to Auckland). It also highlights the commercial and financial opportunity for each of the identified high potential agricultural systems that emerge in Stage II and Stage III of the research.

This project is designed to give business investors confidence and answer they 'why' they would invest in Kaipara. This base level of information from this project combined with technical information about land, water and climate available elsewhere will from the basis for decision making.

With this investment, Kaipara has clear potential to grow regional agri-food revenue. Benchmarking shows that Kaipara is currently underperforming against all of its neighbouring areas in creating agricultural output from its land. By encouraging, facilitating and attracting additional investment Kaipara can match the performance of neighbours and add ~$20m to ~$230m directly to regional GDP.

IN SUMMARY

This project delivers on three key requirements:

First, it extends both the previous and recent Topo-Climate study of the Kaipara District.

Second, it explores new crop types, animals and aquaculture opportunities, particularly those that are suitable for a changing climate.

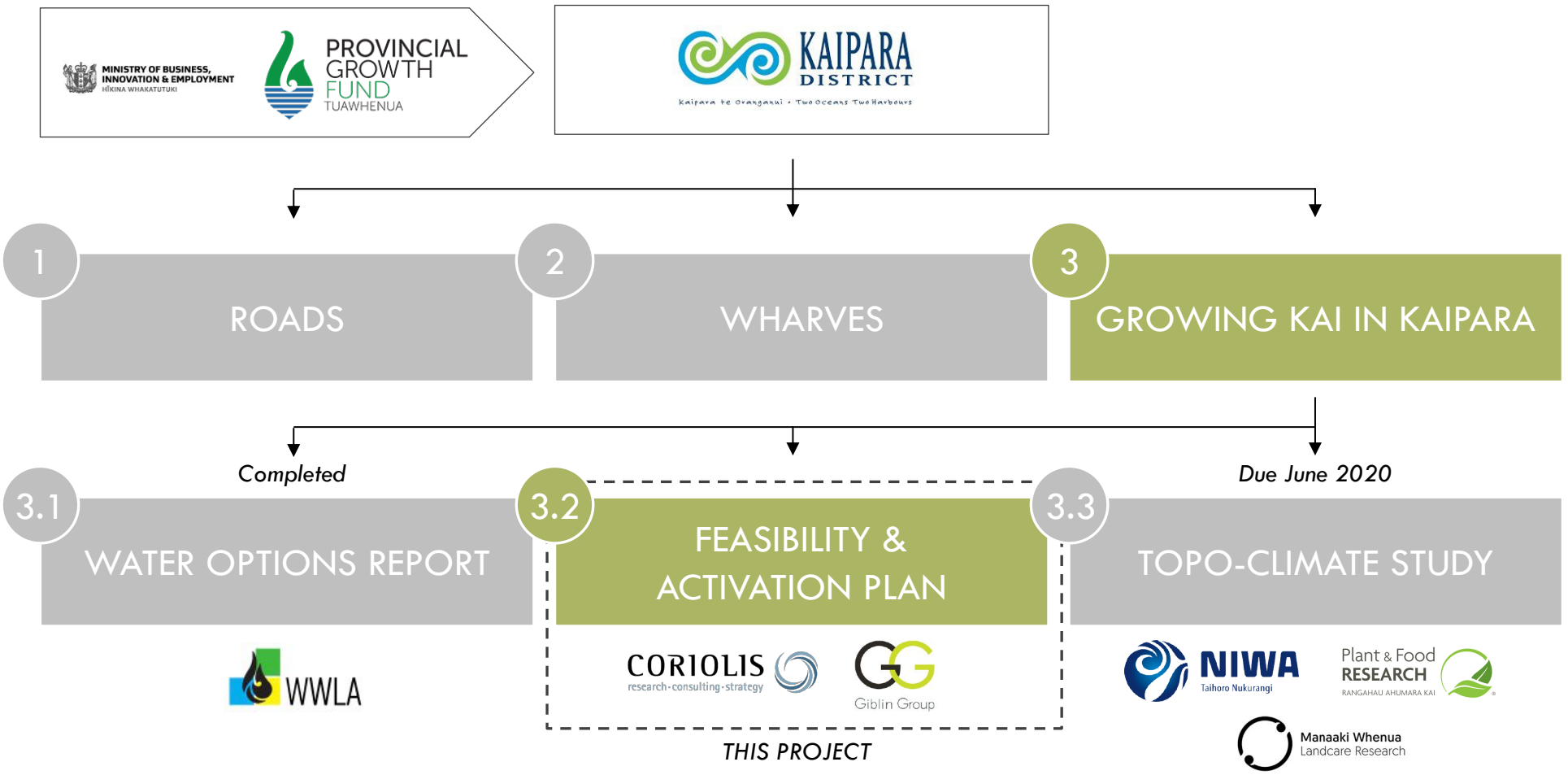
Third, it provides commercial and financial analysis to encourage private investment.

WHAT WILL HAPPEN NOW?

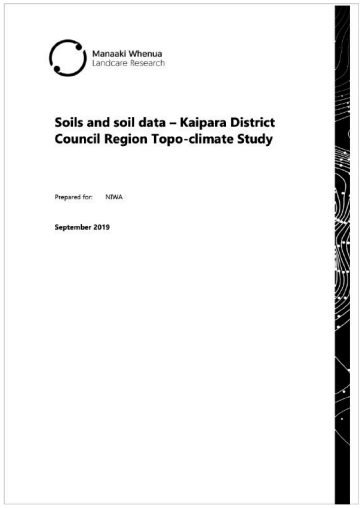
In early March 2020, the Kaipara District and Northland Inc opened a Transformation Hub in partnership with key stakeholders to be a central focus for the Kickstart project.

The focus of the Transformation Hub includes, in particular, helping locals navigate the process of transforming their land to higher-value crops and animal systems.

This project is one part in a wider set of work designed to enable a step change in the Kaipara district



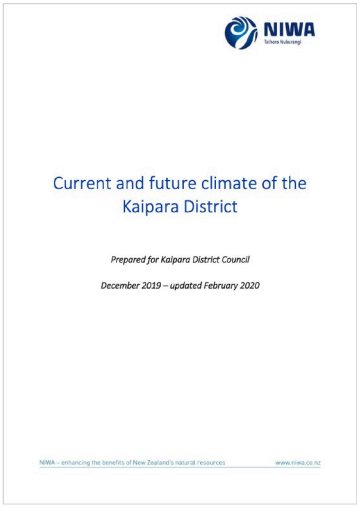
In particular, this project builds upon the Topo-Climate workstreams and has strong linkages into these


Manaaki Whenua
Landcare Research

Soils and soil data – Kaipara District Council Region Topo-climate Study

Prepared for: NIWA

September 2019

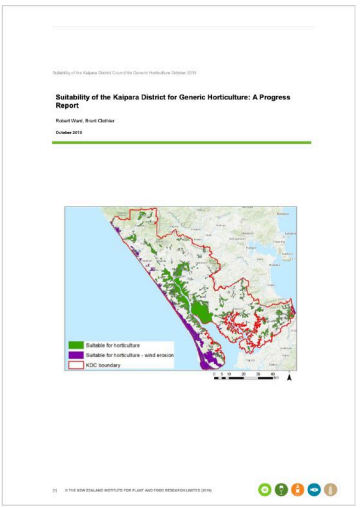

NIWA

Current and future climate of the Kaipara District

Prepared for Kaipara District Council

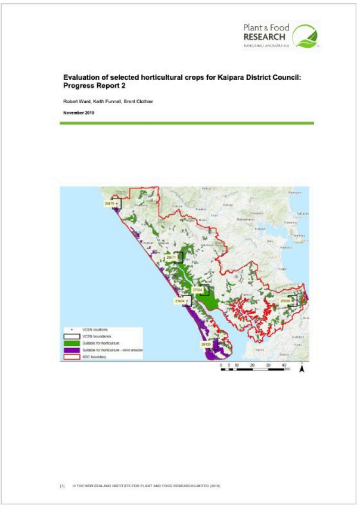
December 2019 – updated February 2020

NIWA – enhancing the benefits of New Zealand's natural resources www.niwa.co.nz


Suitability of the Kaipara District for Generic Horticulture: A Progress Report

Robert Ward, Brent Clothier

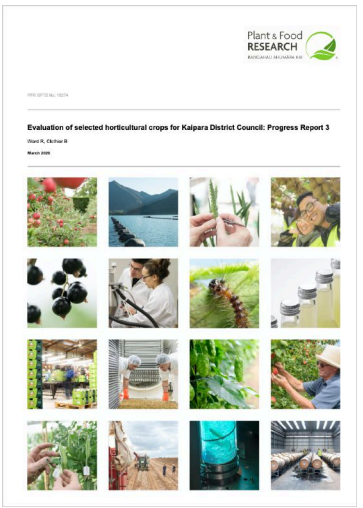
October 2019


Plant & Food RESEARCH

Evaluation of selected horticultural crops for Kaipara District Council: Progress Report 2

Robert Ward, Keith Purvell, Brent Clothier

November 2019


Plant & Food RESEARCH

Evaluation of selected horticultural crops for Kaipara District Council: Progress Report 3

Ward R, Clothier B

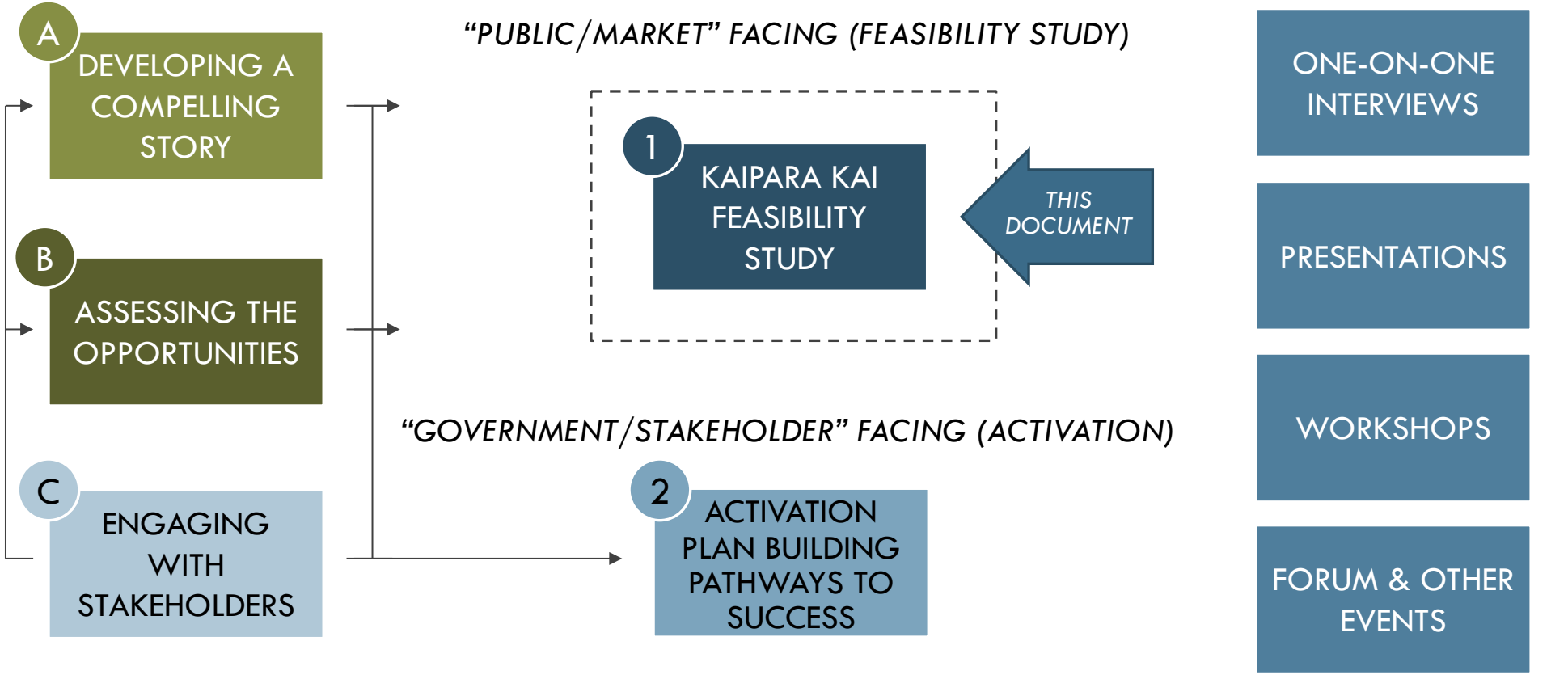
March 2020

Manaaki Whenua
Landcare Research

NIWA
Taihoro Nukurangi

Plant & Food
RESEARCH
RANGAHAU AHUMARA KAI

This project had three workstreams which fed into two outputs, including this report, supported by a range of activities



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The Kaipara District is a kai (food) producing region located North of Auckland

- Kaipara currently accounts for 1.2% of New Zealand area, 0.5% of population and an estimated 1.1% of food production
- The population of the Kaipara DC has grown strongly in the last decade, though growth is projected to slow going forward

Kai is the major employer in the region

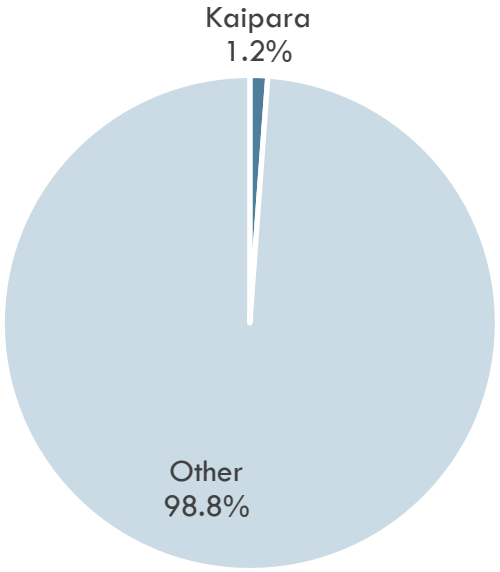
- The wider food industry accounts for almost half of all employment in Kaipara
- The challenge for the region is that – over the past two decades – Kaipara has not created employment across the Food and Beverage (F&B) chain

Kaipara has clear potential to grow kai industry revenue

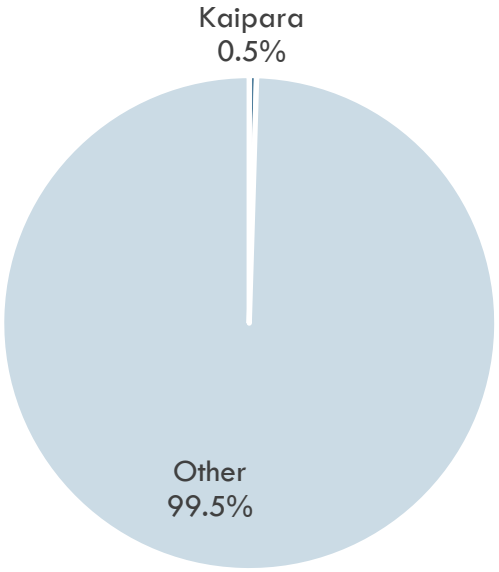
- Kaipara is underperforming against all of its neighbours in creating agricultural output from its land
- If Kaipara could match the performance of neighbours, it could add ~$20m to ~$230m directly to regional GDP
- The Kaipara Kickstart project will change this by creating a step change enabling sustainable, long term growth in the region

Kaipara currently accounts for 1.2% of New Zealand area, 0.5% of population and an estimated 1.1% of food production

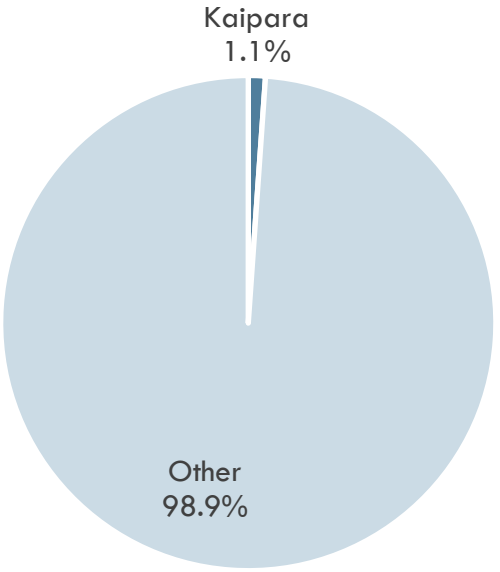
AREA
% of km²; 2019



POPULATION
% of residents; 2019



FOOD PRODUCTION
% of farmgate/dock value; 2018

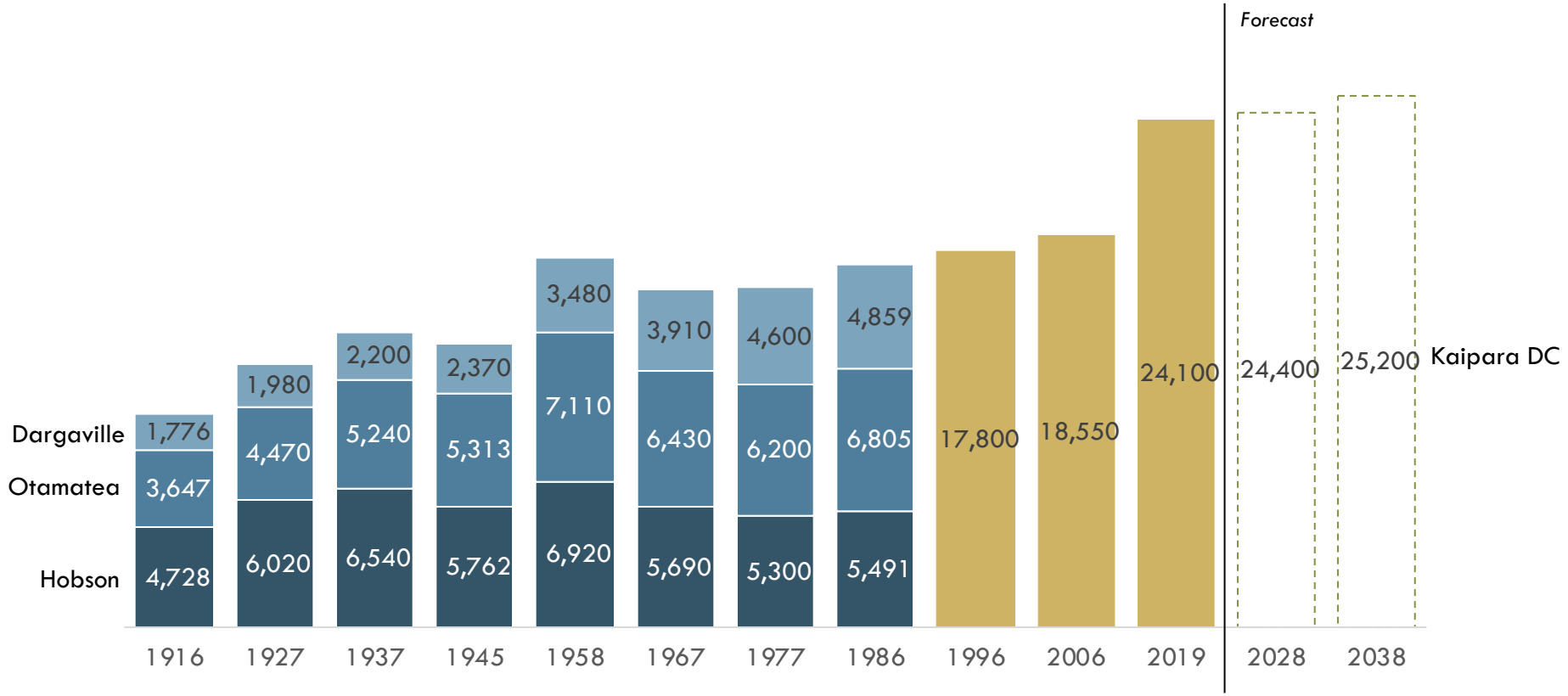


Source: Statistics NZ; Coriolis estimates and analysis

The population of the Kaipara DC has grown strongly in the last decade, though growth is projected to slow going forward

REGIONAL POPULATION OF KAIPARA DISTRICT COUNCIL AND PREVIOUS COUNTIES

Residents; 1916-2019a; 2028-2038f

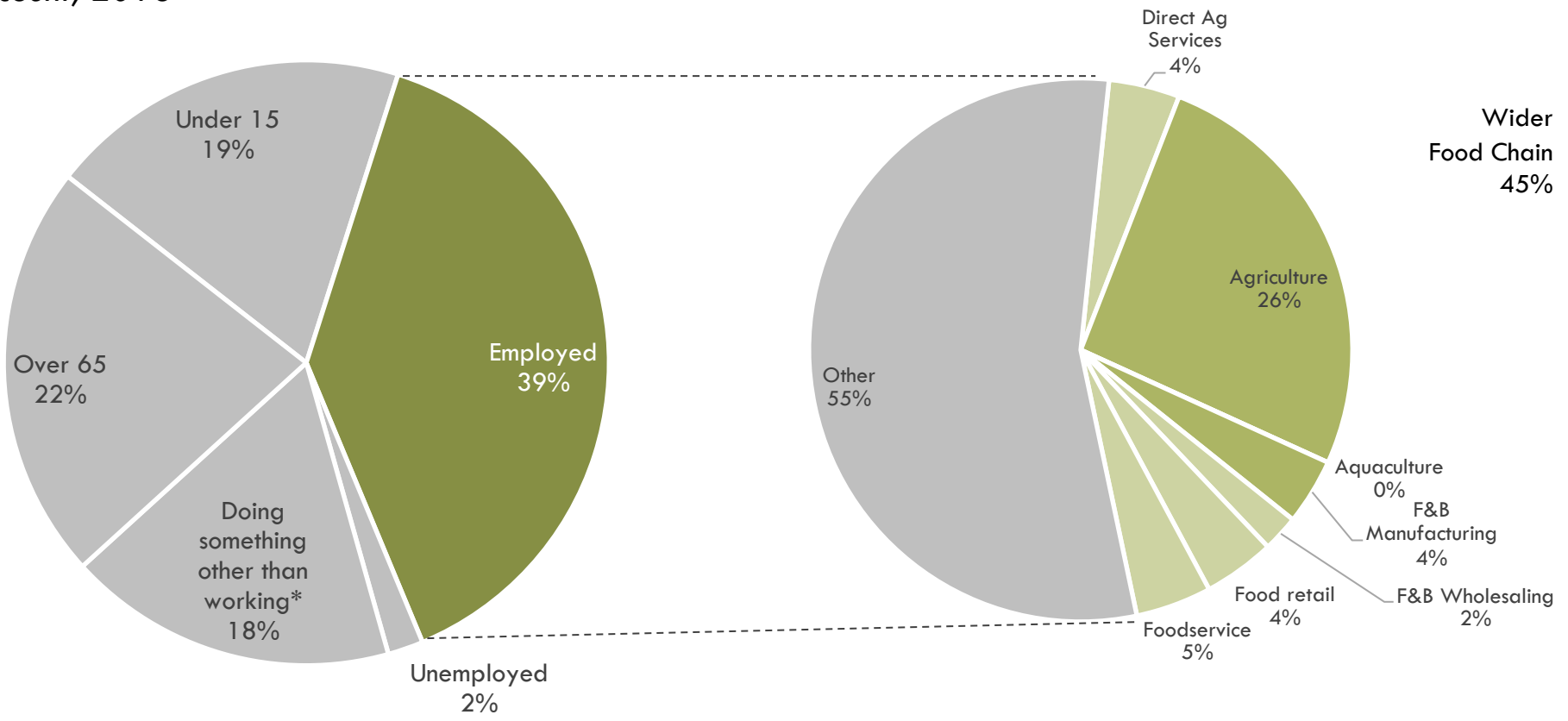


a = actual, f = forecast. Source: various historical SNZ Yearbooks; SNZ Estimated Resident Population for Territorial Authority Areas, at 30 June(1996+) (Annual-Jun)"; "SNZ "Subnational ethnic population projections, by age and sex, 2013(base)-2038 update"; Coriolis analysis

The wider food industry accounts for almost half of all employment in Kaipara

KAIPARA DC EMPLOYMENT STATUS

Headcount; 2018



TOTAL = 22,869 "usually resident"

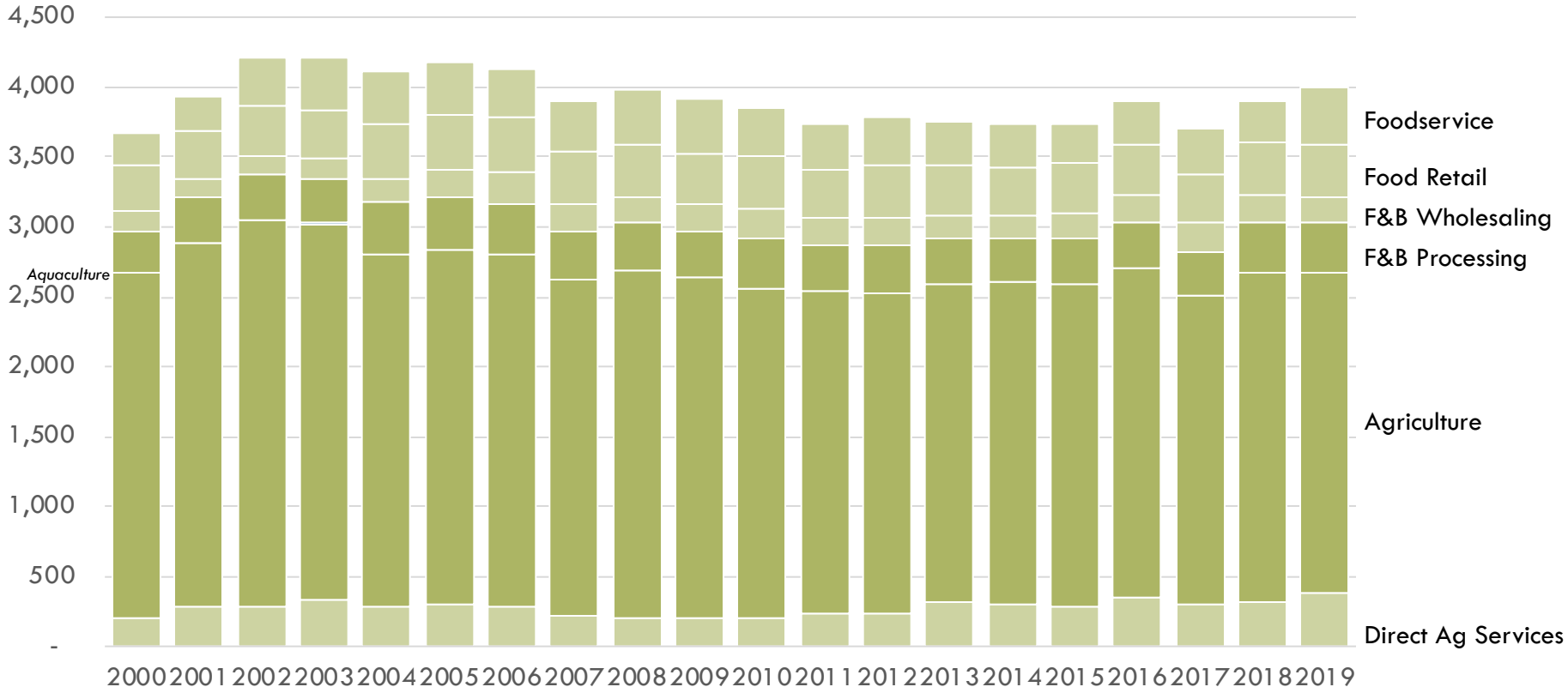
TOTAL = 8,878 employed in region

** Or potentially employed outside the region; Note: employed includes "self employed"; Source: Statistics NZ; Infometrics; Coriolis analysis and estimates*

The challenge for the region is that – over the past two decades – Kaipara has not created employment across the F&B chain

KAIPARA EMPLOYMENT IN WIDER FOOD CHAIN

Headcount; actual; 2000-2019

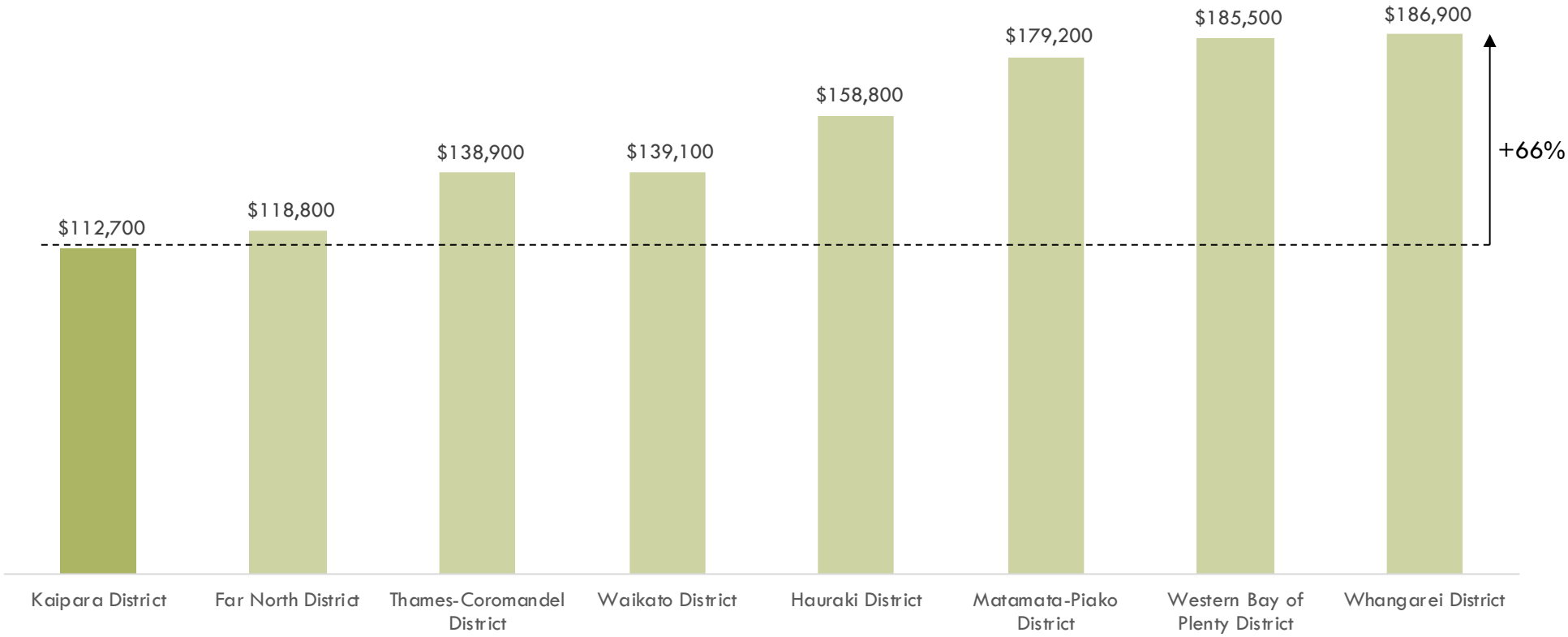


Note: Excludes labour service providers (e.g. picking gangs); Source: Statistics NZ; Coriolis analysis

Kaipara is underperforming against all of its neighbours in creating agricultural output from its land

AGRICULTURAL GDP PER SQUARE KILOMETRE: KAIPARA VS. CLOSE REGIONS

NZ$/sqkm; 2019

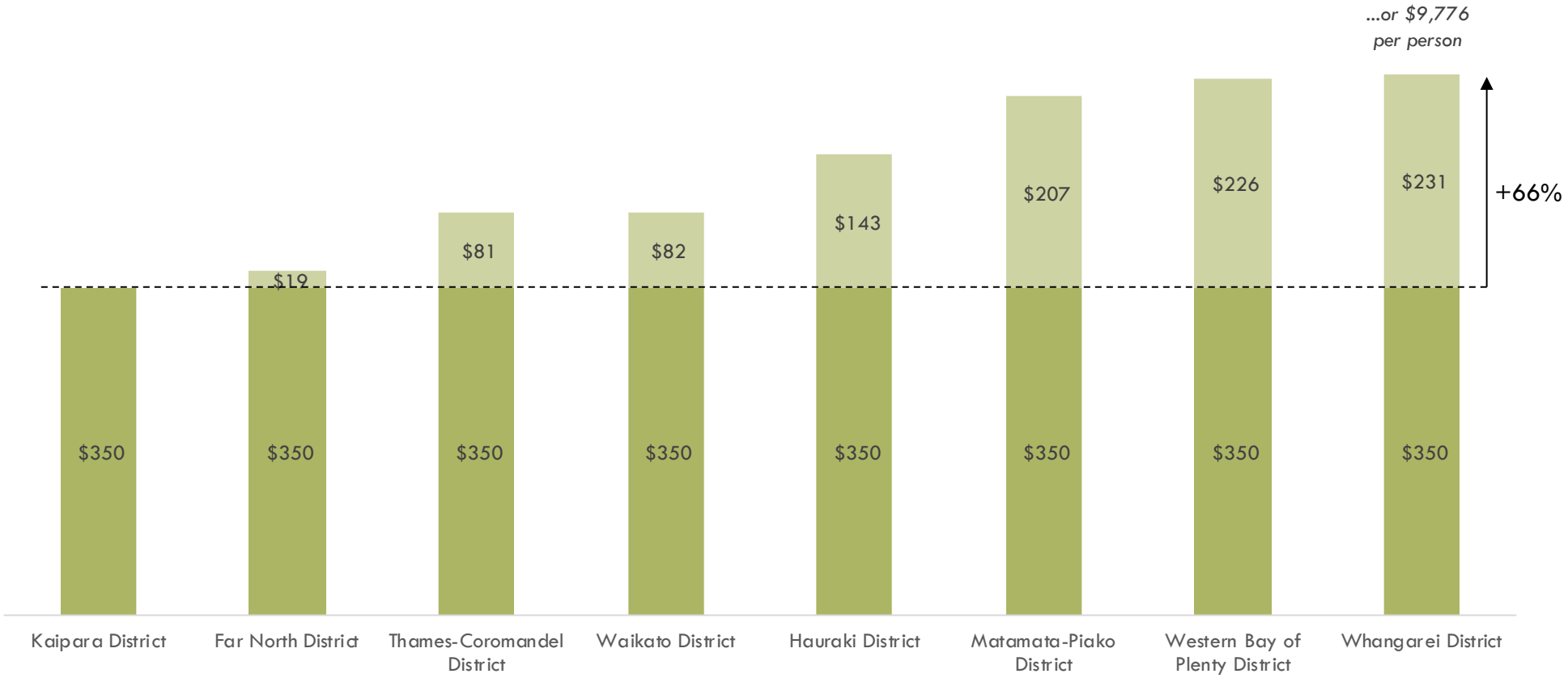


Source: MBIE "Modelled Territorial Authority GDP 2019 release"; SNZ; Coriolis analysis

If Kaipara could match the performance of neighbours, it could add ~$20m to ~$230m directly to regional GDP

NEW KAIPARA AGRICULTURAL GDP IF KAIPARA COULD MATCH THESE CLOSE REGIONS

NZ$m; 2019



Source: MBIE "Modelled Territorial Authority GDP 2019 release"; SNZ; Coriolis analysis

The Kaipara Kickstart project will create a step change enabling sustainable, long term growth in the region

With a kind climate, great soils and the largest harbour in the Southern Hemisphere, Kaipara has rolling farmlands fringed with spectacular bays and beaches. As the perfect gateway between Auckland and the rest of the North, this part of Northland region is largely unknown and its potential untapped. Kaipara is waiting for catalytic investment to unlock growth and development which will benefit the whole of Northland.

There is a huge opportunity to "kickstart" Kaipara by focusing on renewing what was done well in the past, building future-proofed infrastructure and opening up its land and resources which lie alongside Auckland.

The three interlocked projects – Kai (Growing the Kai in Kaipara), Wharves (Kaipara Moana Activation Plan) and Roads – are like the three legs of a stool. The step-change effect of the combination of these three projects is greater than the sum of its parts. These three initiatives have a collective investment fund of approximately $28M and will benefit not only the communities within Kaipara but the wider Northland region.

Source: Kaipara Kickstart presentation

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DEVELOPING A COMPELLING STORY

ASSESSING THE OPPORTUNITIES

Kaipara can produce more kai (food)

- Kaipara has a unique position in the New Zealand food landscape
- Kaipara has a subtropical climate that provides attractive growing conditions
- Kaipara has the resources required to produce more food

Kaipara kai has a strong base on which to build

- Kaipara has a range of food production that is working well; all have opportunities to build value
- Kaipara is fully integrated into the wider New Zealand food and beverage production landscape
- The relative competitiveness of the various primary and secondary products produced in Kaipara varies significantly

Kaipara kai has a mix of sectors currently

- Kaipara District has three distinct types of food producer
- However, the vast majority of existing value created in agriculture in Kaipara comes from globally competitive sectors at scale

Kaipara kai is well supported, but more investment (particularly in water storage) is required to unlock growth

- Kaipara is well supported with a wide range of complementary activities supporting industry growth
- Kaipara has access to a robust infrastructure to support industry growth, but more is needed to realise the opportunity
- In particular, new investment in water storage in the Kaipara would unlock growth
- While a wide range of options exist for water storage in the Kaipara, there is a clear "sweet spot" in terms of project scale

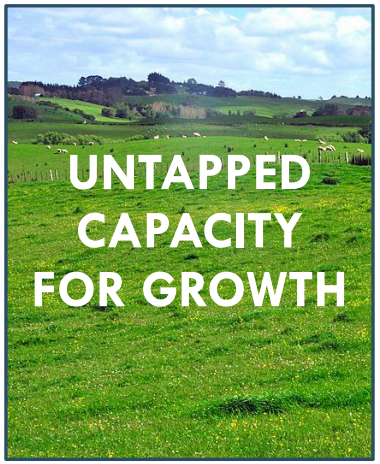
The growth of Kaipara kai will drive regional transformation

- Three potential future scenarios for Kai in Kaipara are proposed
- These future scenarios lead to the identification of specific gaps and opportunities for Kaipara
- The growth and transformation of the Kaipara Kai food industry will drive the emergence of numerous future benefits.

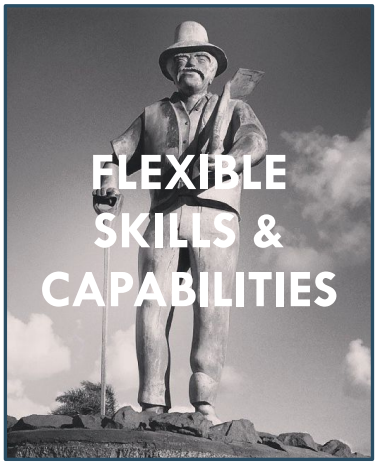
Kaipara has a unique position in the New Zealand food landscape

- Relatively large annual rainfall
- Different products from other regions
- Allows an extended growing window
- Part of a portfolio to create year round supply
- Complementary rather than competitive with many other regions

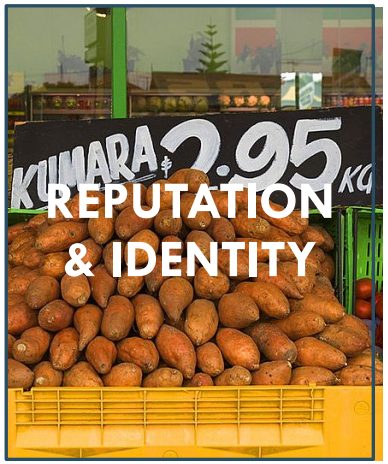
- Labour pool
- Customers
- Specialised skills
- Air & Sea ports
- Foodbowl product development facility
- Crown Research Institutes



- Large amounts of fertile land
- Low current production per hectare
- Massive pressures on Auckland production regions
- Kaipara is the next logical "market garden" for Auckland



- Pioneering spirit
- Open to new ideas
- History of farming
- Proven management capability
- Drive and motivation
- Proven world-class capabilities in cattle systems
- Dominate domestic kumara production



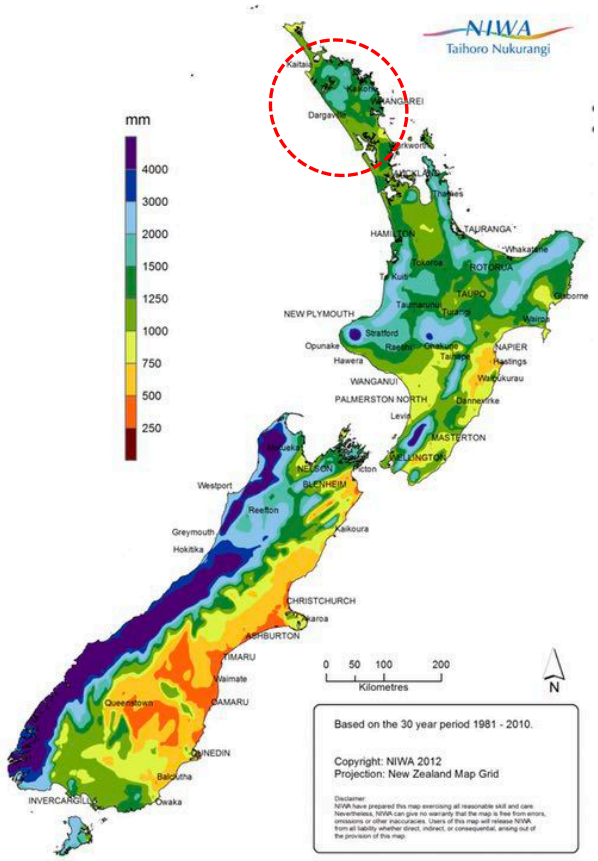
- Trusted producer of food
- Integral part of Fonterra (#1 dairy) and Silver Fern Farms (#1 meat) supply system
- Kumara Capital of New Zealand
- Crop production capabilities

Photo credits (Coriolis; Pixabay; CC-SA 4.0 (LBM1948); CC BY-NC-SA 2.0 (easegil); CC-BY 2.5 (Jshook)

Kaipara has a subtropical climate that provides attractive growing conditions

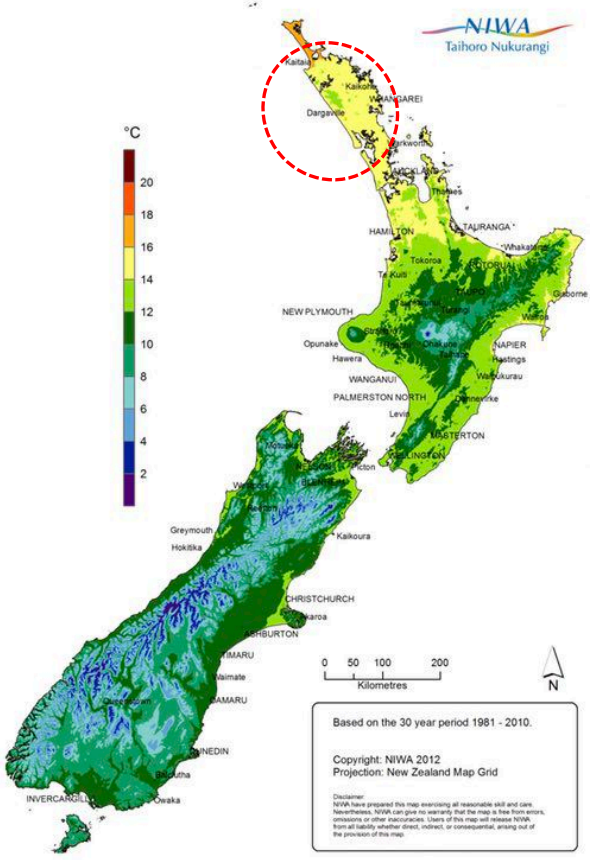
NZ MEDIAN ANNUAL TOTAL RAINFALL

mm; Averages from 1981-2010



NZ MEDIAN ANNUAL AVERAGE TEMP.

Degrees; Averages from 1981-2010



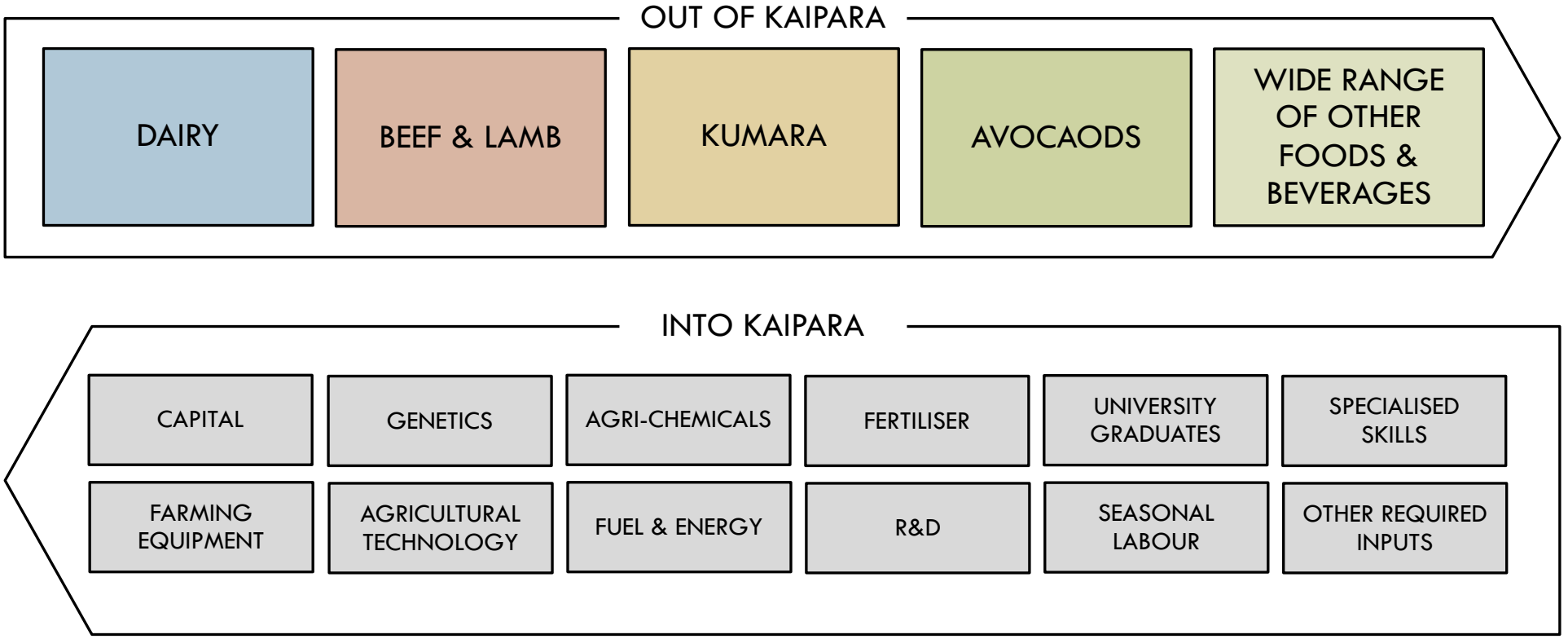
Source: NIWA

Kaipara has the resources required to produce more food

Kaipara is fully integrated into the wider New Zealand food and beverage production landscape

HOW DOES KAIPARA FIT INTO THE NEW ZEALAND LANDSCAPE FOR KAI PRODUCTION?

Model; 2020



Kaipara has a range of food production that is working well; all have opportunities to build value

FOOD PRODUCTION WORKING WELL & OPPORTUNITIES TO BUILD VALUE AROUND THAT FOOD

Model; 2020

	DAIRY	BEEF & LAMB	KUMARA	AVOCADOS	OTHER
Current State	- Large sector at scale - Export focused - Globally competitive - Primarily simple, low complexity dairy ingredients - Currently one large processor	- Large sector at scale - Export focused - Globally competitive - Primarily simple, low complexity meat primals and related - Currently one large processor	- Protected by biosecurity - Domestic focused - Not export competitive - 90-95% of NZ production - Clear cluster with strong capabilities - Most value added occurs outside region	- Strong industry growth to date - Protected by biosecurity - Export focused - 95% of exports to biosecure Australia - Not export competitive outside Australia - Signs of approaching trouble in Australia	- Wide range of other food products produced in the region - At low scale - Primarily lifestyle production - Primarily targeting local or and tourist markets - Emerging leaders showing the way
Opportunities to build value around that food	- Infant formula - Dairy-based nutritionals - Specialty cheeses - Yoghurt and other cultured - Pizza cheese targeting foodservice - UHT milk & cream	- Case-ready consumer and foodservice cuts - Smoked, marinated and similar - Processed meats - Sausages - Beef jerky - Pet food - Soups - Ready meals	- Frozen kumara fries - Kumara snack chips - Soups - Ready meals - Dried powders - Dehydrated, instant - Alcoholic spirits	- Dips - Spreads - Oils - New packaging systems - Smoothie bases	- Foodservice (e.g. foodtrucks) - Development of food tourism trails - Scale up to target national market

The relative competitiveness of the various primary and secondary products produced in Kaipara varies significantly

SCORING OF RELATIVE COMPETITIVENESS OF VARIOUS KAIPARA KAI SECTORS

Relative score (low, medium, high); as of 2020

		WORLD CLASS PRODUCTION SYSTEMS			SITUATION IN KAIPARA		MARKETS	
	EFFICIENT & COMPETITIVE FARM INPUTS	HIGH EFFICIENCY, HIGH YIELDS	RELATIVELY LARGE OPERATIONS	PROVEN, SCALABLE SYSTEMS	EFFICIENT PRIMARY PACKING & PROCESSING	EFFICIENT VALUE ADDED PROCESSING	STRONG DOMESTIC MARKET	EXPORT MARKET ACCESS & POSITION
DAIRY	●	●	◑	●	●	◑	●	●
MEAT	●	●	◑	●	●	◑	●	●
KUMARA	●	◑	○	◑	◑	○	◑	○
AVOCADOS	◑	◑	◑	●	◑	○	◑	◑
OTHER	◑	○	○	○	○	○	○	○

○ LOW
◑ MEDIUM
● HIGH

Source: conceptual model is from Coriolis "Pathway to Competitiveness" completed July 2016 for Western Australian Department of Agriculture

Kaipara District has three distinct types of food producer

1

LIFESTYLE/HOBBY AT FARMERS MARKET SCALE

Niche production and processing primarily targeting local consumers and tourists visiting region

$10k - $1m
per firm

Table Olives/Olive Oil
Local Fruit & Veg
Sauces & Chutneys
Baked Goods
Coffee
Food Trucks

2

BIOSECURE SECONDARY CROP AT DOMESTIC SCALE

Market leader with a strong share (90-95%) of a secondary crop sold almost exclusively in the NZ market

$50m+
overall

Kumara

3

GLOBALLY COMPETITIVE AT SCALE

Scale production of commodities where New Zealand has strong competitive advantage

$100m+
per firm

Beef & Sheep
(Silver Fern Farms)

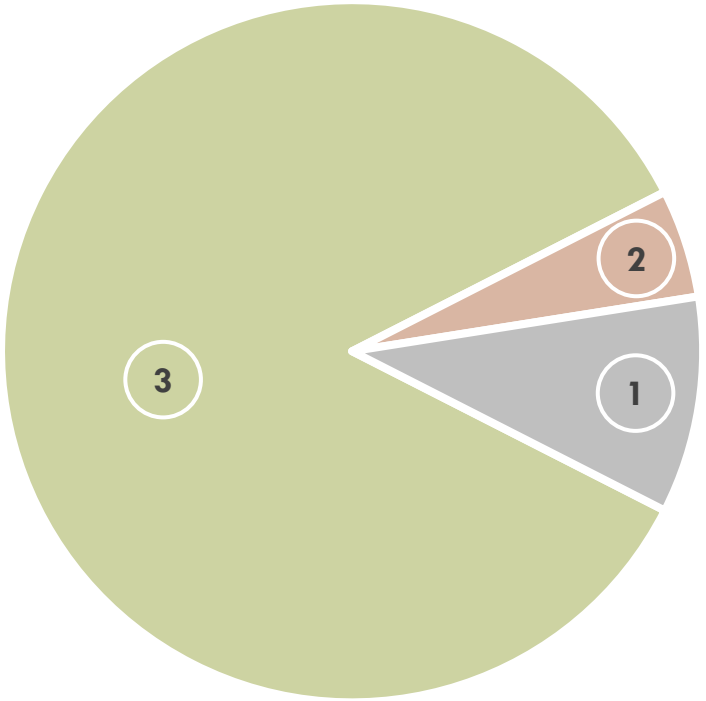
Dairy
(Fonterra)

However, the vast majority of existing value created in agriculture in Kaipara comes from globally competitive sectors at scale

KAIPARA DISTRICT AG VALUE BY TYPE

% of NZ$; 2018

ESTIMATE



3

GLOBALLY COMPETITIVE AT SCALE

2

BIOSECURE SECONDARY CROP AT DOMESTIC SCALE

1

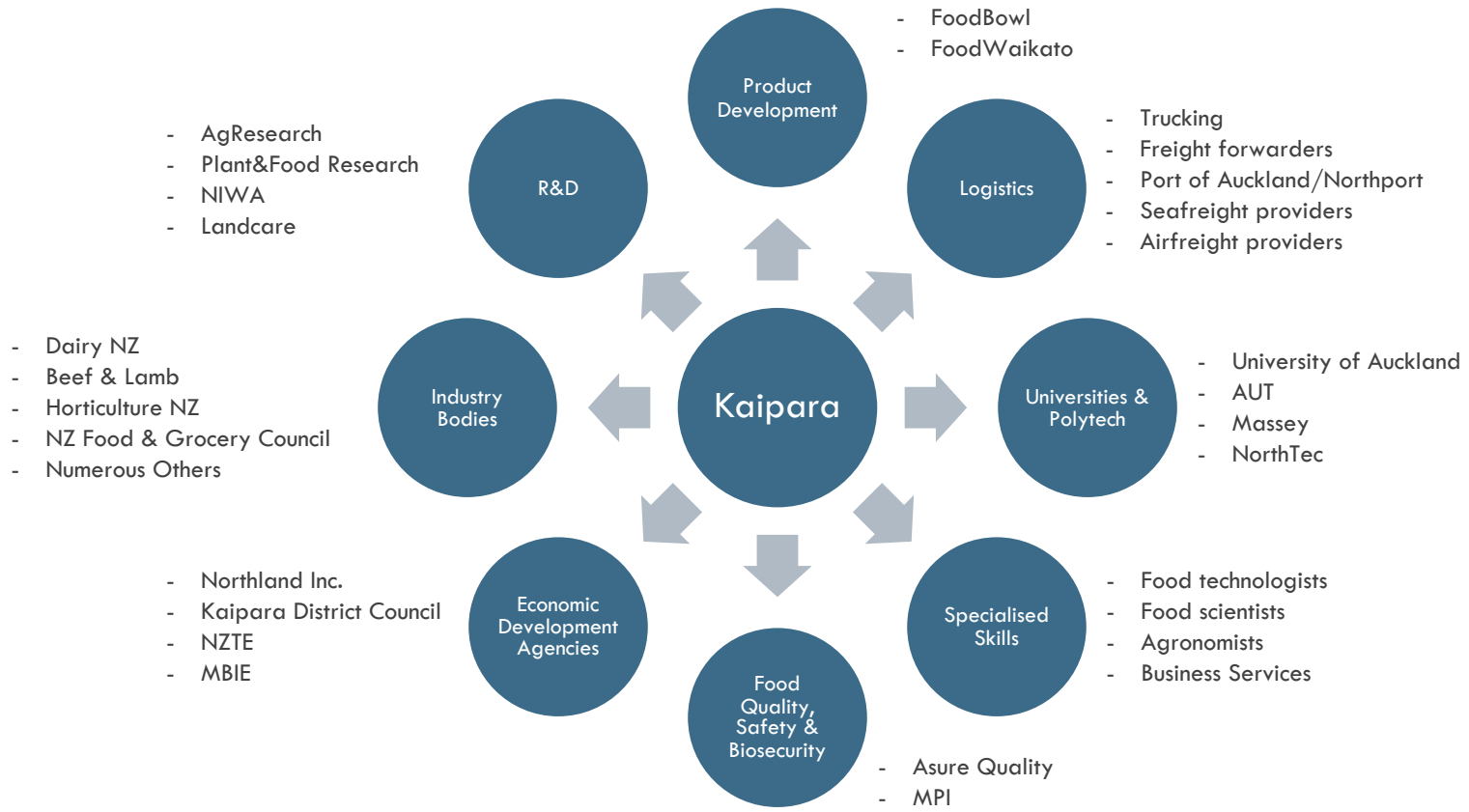
LIFESTYLE/HOBBY AT FARMERS MARKET SCALE

Source: Coriolis analysis and estimates

Kaipara is well supported with a wide range of complementary activities supporting industry growth

COMPLEMENTARY ACTIVITIES SUPPORTING KAIPARA

2020



Kaipara has access to robust infrastructure to support industry growth, but more is needed to realise the opportunity

KAIPARA KAI INFRASTRUCTURE INVENTORY: WHAT EXISTS? WHAT IS NEEDED?

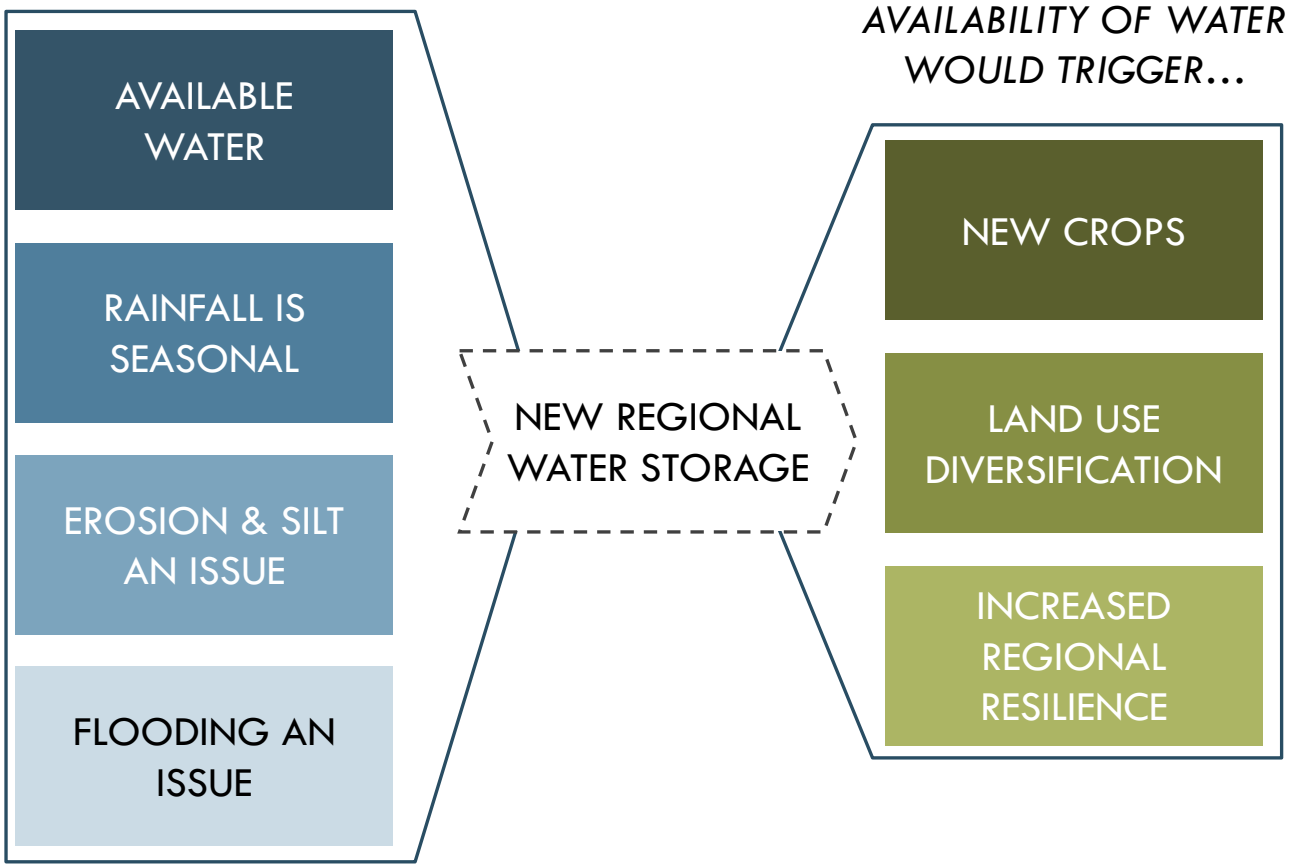
2020

IN CLOSE PROXIMITY			*IN-REGION*		*NEEDED*
UNIVERSITIES & POLYTECH	FOODBOWL & FOOD WAIKATO	CRI & OTHER RESEARCH PROVIDERS	ROAD NETWORK	ELECTRICAL GRID	*ADDITIONAL WATER STORAGE*
AUCKLAND & WHANGAREI PORTS	AUCKLAND INTERNATIONAL AIRPORT	AGRICHEMICAL PLANTS	LOGISTICS SERVICES	PHONE & INTERNET SERVICES	*IMPROVED ROADS & INTERNET*
GENETICS & BREEDING FIRMS	EQUIPMENT SUPPLIERS	AGRITECH FIRMS	LARGE MEAT & DAIRY PLANTS	KUMARA PACKHOUSES & COOLSTORES	*UPGRADED WHARVES*
PACKAGING PLANTS	MARKET FLOORS & WHOLESALERS	LARGE SCALE DISTRIBUTION HUBS	OTHER SMALLER FOOD PACKERS & PROCESSORS	KAIPARA KAI HUB	*NEW PROCESSING PLANTS*

In particular, new investment in water storage in the Kaipara would unlock growth

THE CASE FOR WATER STORAGE IN THE KAIPARA

Model; 2020



- *Relatively high seasonal rainfall*
- *Large volumes through Kaipara river*

- *Heavy in winter*
- *Often dry in later summer*
- *Climate change amplifying effect*

- *Kaipara river is visibly silty and murky*
- *Large amounts of soil being carried into the sea*
- *Causing silting of the harbour*

- *Need to protect prime farmland*
- *Need to protect Kaipara township*

- *"Elite soils" available*
- *Clear opportunities suiting Kaipara available*
- *Higher productivity plant based systems*

- *Need to move away from reliance on cattle systems*
- *Need to diversify*

- *Reduce inter-year variance*
- *Reduce boom and bust cycles*
- *Reduce threats from drought and flooding*

While a wide range of options exist for water storage in the Kaipara, there is a clear "sweet spot" in terms of project scale

RANGE OF OPTIONS FOR WATER STORAGE IN THE KAIPARA

Model; 2020

SEPARATE WATER STORAGE PROJECTS UNDERWAY

	On-Farm Storage		Local "Community Scale"/Sub-Regional		Regional/National
	Small Scale	**Large Scale**	**Storage Solutions**	**Small Dams/Similar**	**Large Scale Dams**
FOR	- Network of small on-farm dams - Relatively low tech - Low cost extension of seasonal availability - Can occur "under the radar" - Unlikely to trigger public concerns - Often good cost/benefit	- Multiple options exist (tanks, earthworks, in-ground) - Can occur "under the radar" - Unlikely to trigger public concerns	- Can target smaller areas with high potential - Limited strain on environment - Multiple options exist (tanks, earthworks, in-ground)	- Can target smaller areas with high potential - Limited strain on environment - Need to remain low profile/low impact - Need to avoid being "visible from the road"	- Likely in combination with hydroelectric - Can potentially dramatically reduce silt and erosion - Can improve water quality - Good cost/benefit if you exclude years it takes to get required permissions
AGAINST	- Requires fall; does not suit flat properties - Cannot hold water inter-year	- High capital cost per litre - Limited proven models with strong economics	- High capital cost per litre - Needs water users in concentrated area (to minimise distribution costs)	- Complex, time consuming - Most of the costs of a large dam but fewer benefits	- High political risks - High visibility - Will trigger protests - Likely to take decades - Likely court challenges - High chance of failure

Clear "Sweet Spot"
Balance of economics and local support

Three potential future scenarios for Kai in Kaipara are proposed

THREE POTENTIAL FUTURE SCENARIOS FOR KAIPARA

Model; 2020

	1 INDUSTRIAL SCALE	2 AUCKLAND'S FARM	3 ITALIAN-STYLE REGIONAL IDENTITY
Model	"Idaho"	"Pukekohe"	"Tuscany"
Summary	Kaipara becomes a global low cost producer of plant and animal proteins	Kaipara replaces Pukekohe as the key producer of market garden crops for the growing Auckland market	Kaipara develops a unique Kai identity as a producer of premium foods as part of an enviable lifestyle
Details	- Producing primarily using global scale farms - Utilising high tech, high productivity production systems at scale - Achieving world class yields per hectare and per head - Delivering high levels of on-farm productivity with low on-farm labour - Major investments in new processing facilities in the region - Most Kaipara kai employment is post farmgate	- Producing primarily perishable crops targeting domestic markets - "Insulated" by biosecurity - Potentially driven by significant migration of large, well capitalised (from selling land) Pukekohe growers - Leading to a much wider range of crops being grown in the Kaipara - Triggering significant investment in new packhouses and new processors - Triggering upgraded logistics services and facilities/hubs	- Producing a highly diverse range of premium lifestyle foods - Know for its unique, signature foods and beverages - Renown as the NZ destination for food enthusiasts, both domestic and international - Possessing a strong regional identity with consumers as an aspirational "lifestyle" location - Small quantities at high prices (rather than high volumes at low prices)

These future scenarios lead to the identification of specific gaps and opportunities for Kaipara

FUTURE SCENARIOS THAT IDENTIFY GAPS AND OPPORTUNITIES

Model; 2020

GAPS	SCENARIOS	OPPORTUNITIES
- Currently only global scale in dairy and beef - Knowledge gaps in scaling up for global markets - Large competitiveness gap to bridge in many sectors - May lack deep pool of enough local capital - Farm landscape currently set for low scale farms - Locals not clearly "on board" for scale operations	1 INDUSTRIAL SCALE	- Building competitiveness beyond existing products - Increasing regional productivity - Accessing world markets beyond biosecurity - Transformative regional production upside (100x) - Would trigger construction of post-farmgate processing - Only scenario likely to trigger true "transformation"
- Limited practical, proven crop capabilities beyond kumara currently - Low awareness of Kaipara's huge potential for growth outside the region - Significant lack of spare packhouse capacity - Conflict between locals and "the big guys"	2 AUCKLAND'S FARM	- Clear path forward for solid, constant growth - Subdivisions and land sales will free up regional capital for reinvestment - Potential to attract new skills and capabilities - Requires improved logistics chains to Auckland - Major regional production upside (10x)
- Mixed existing skills and capabilities in developing and delivering truly premium products - Limited unique positioning and identity - Lack of strong food tourism message and pathways - Focused on food; underperforming in beverages - Ongoing process of subdivision leading to dominance of uneconomic farms units across much of Kaipara	3 ITALIAN-STYLE REGIONAL IDENTITY	- Potential to create strong synergies between existing diverse product ranges - Build on and grow existing production systems through premiumification - Potential to develop Kaipara as a lifestyle brand - Strong potential to increase land values - Embrace and make a strength of small blocks

The growth and transformation of the Kaipara Kai food industry will drive the emergence of numerous future benefits

WHAT DOES KAIPARA'S KAI FUTURE LOOK LIKE?

Model; 2020

SOCIAL	CULTURAL	ECONOMIC	ENVIRONMENTAL
- Growing regional employment in high productivity, value added roles - Growing regional population; new families arriving in the region - Regional GDP and GDP/capita ahead of other regions - Regional Kai educational programs exist - Improving social indicators (e.g. health outcome)	- Kaipara has a strong food identity beyond kumara - Kai sits at the heart of regional identity - Kaipara is recognised as a destination for food tourism - Local iwi play a leading role in transforming land use - Strong regional pride in regional Kai identity - Kai leads in changing regional attitudes and opinions	- Kai continues to be a key driver of the regional economy - Kai continues to create regional growth in incomes and employment - Kai jobs are predominantly in value-added product transformation and knowledge based roles (e.g. marketing) - Significant parts of the Auckland food industry have shifted to Kaipara	- Kaipara remains an attractive place to live - Kai production systems are widely recognised as sustainable by the public - Kaipara's rivers and waterways are clean and swimmable - Kaipara leads New Zealand in sustainability - Clear, easily understood systems exist for monitoring outcomes

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DEVELOPING A COMPELLING STORY

ASSESSING THE OPPORTUNITIES

Wide ranging changes impacting the agri-food industry create opportunities for Kaipara

- The New Zealand agri-food environment is changing
- These ongoing changes in the New Zealand agri-food environment are creating opportunities for Kaipara
- Kaipara has the potential to more rapidly harness technology and innovation to improve outcomes
- Kaipara has extensive circular economy opportunities, as this example from the kumara sector demonstrates
- There are significant opportunities and potential for cluster and smart specialisation with Kai in Kaipara

Kaipara has clear avenues for growth in this changing environment

There are new avenues for growth for Kaipara kai in existing medium and large sectors

1. Adding more value in the region to existing export focused ingredients
2. Transition kumara from domestic to export competitiveness
3. Scaling up Kaipara volumes of existing export fruits (avocados & kiwifruit)

There are new avenues for growth for Kaipara kai in small, emerging and new sectors

4. High productivity, vertically integrated animal systems (poultry & pigs)
5. Scale up of existing and new aquaculture opportunities (mussels & oysters)
6. Scale up of existing & emerging secondary & emerging crops (olives)
7. Development of new crops not yet produced in region at any scale

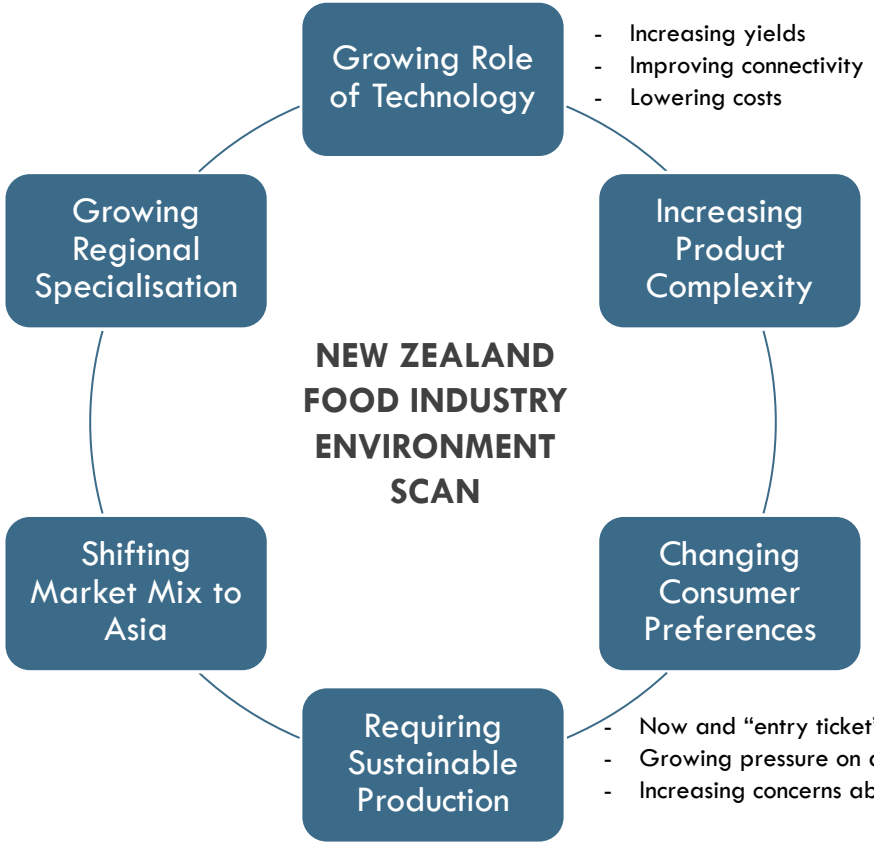
In aggregate, these new avenues for growth for Kaipara kai can deliver significant growth to the region

- Kaipara's kai has strong potential to transition to a larger, more diversified, more value added future

The New Zealand agri-food environment is changing

NEW ZEALAND FOOD INDUSTRY ENVIRONMENT SCAN

Model; 2020



- Increasing yields
- Improving connectivity
- Lowering costs

- Moving to shelf-ready packaged goods rather than ingredients
- Local adoption and implementation of emergent global trends rapidly
- Growing role of packaging technology

- Growth of Lifestyles of Health & Sustainability (LOHAS) consumers
- Growing vegetarianism and veganism among some groups
- Polarisation of consumers into premium and discount (disappearance of middle market)

- Now and "entry ticket" in many markets
- Growing pressure on agricultural CO2 and methane
- Increasing concerns about water quality

- Emergence of the Asian Century
- China, China, China
- Leading to changing product mix and changing flavour profiles
- Varies by product (e.g. wine vs. infant formula)

- Regions focusing on specific crops (e.g. apples in Hawke's Bay)
- Driven by economies of scale in packhouses (fewer, larger operators)
- Driven by need to be globally competitive

These ongoing changes in the New Zealand agri-food environment are creating opportunities for Kaipara

IMPLICATION FOR KAIPARA FROM NZ FOOD INDUSTRY ENVIRONMENT SCAN

Model; 2020

TREND	HOW DOES KAIPARA COMPLEMENT THIS?
GROWING REGIONAL SPECIALISATION	- Kaipara is already the NZ specialist in kumara - Kaipara has clear specialisation in cattle systems - Kaipara has growing capabilities in avocados, kiwifruit and other sub-tropicals - Kaipara needs to develop new specialisations (this project) - Kaipara should focus on doing a small number of things well - Kaipara has opportunities across a wide range of new and emerging agricultural systems
GROWING ROLE OF TECHNOLOGY	- Kaipara needs to continue to adopt and implement new technology - Kaipara has capabilities in piloting new technologies - Kaipara has local leaders quick to adopt new technologies - Kaipara has adaptable "kiwi ingenuity" mindset open to change - Kaipara can use technology to become more competitive - Kaipara is well positioned to Auckland knowledge centres - Kaipara has linkages with Northland tech cluster and tech week
INCREASING PRODUCT COMPLEXITY	- Kaipara currently primarily produced raw ingredients - Kaipara recognises the opportunity to shifting to producing more complex products in the region - Kaipara will need to develop new skills in the region - Kaipara's leaders have a strong desire to add value

TREND	HOW DOES KAIPARA COMPLEMENT THIS?
CHANGING CONSUMER PREFERENCES	- Kaipara predominantly produces safe, health foods - Kaipara has strengths in plant-based agricultural systems - Kaipara's leaders have strong interest in plant based proteins - Kaipara appears over-weighted to discount consumers - Kaipara is well positioned to develop a more compelling premium offer through scale-up of smaller pioneers
REQUIRING SUSTAINABLE PRODUCTION	- Kaipara agriculture is already highly sustainable by most real measures - Kaipara is focused on low intensity land use to date - Kaipara is well positioned to produce using sustainable production systems - Kaipara is improving sustainability further in numerous ways - Kaipara is not yet acknowledged or rewarded for its sustainability - Kaipara is moving quickly to adapt to a changing world
SHIFTING MARKET MIX TO ASIA	- Kaipara is close to the centre of local Asian populations - Kaipara has constant, solid, ongoing supply chains to Asia - Kaipara is well positioned to access Asian markets via Auckland airport giving rapid access to key buyers - Kaipara currently exports large quantities of two products in high demand in Asia (dairy and beef)

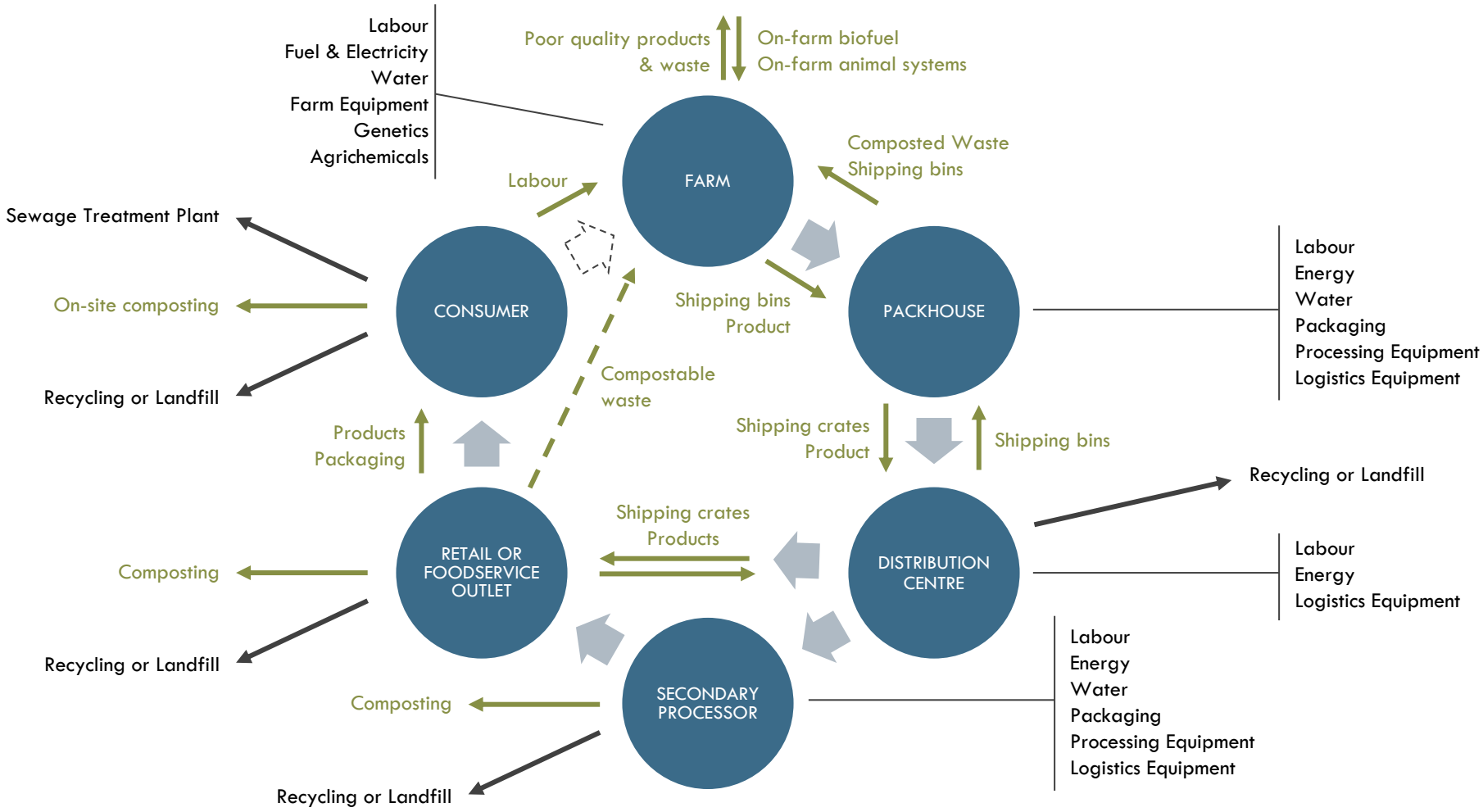
Kaipara has the potential to more rapidly to harness technology and innovation to improve outcomes

KAIPARA KAI OPPORTUNITIES RELATED TO TECHNOLOGY AND INNOVATION

Model; 2020

FARM EQUIPMENT	GENETICS	ENERGY	SMART IRRIGATION SYSTEMS	VIRTUAL SUPPORT SERVICES	FERTILISER & AGRI-CHEMICALS
Labour Saving	Yield Improving	Lower Cost	Higher Yields	On-Line Delivery	Higher Yields
Cost saving	Disease Resistance	More Reliable	Enabling New Crops	Skills Development	Lower Usage
Quality Improving	Quality Improving	Locally Produced	More Stable Production	Further Education	Lower Cost
Yield Improving	Yield Improving		Lower Risk	AI/Template Based Accounting & Legal	More Targeted
Variability & Risk Reducing	Variability & Risk Reducing			Pest & Disease Identification	Less Hazardous

Kaipara has extensive circular economy opportunities, as this example from the kumara sector demonstrates



There are significant opportunities and potential for cluster and smart specialisation with Kai in Kaipara

CLUSTER AND SMART SPECIALISATION POTENTIAL FOR KAI IN KAIPARA

Model; 2020

What are you talking about?
What is a "cluster"?
What is "smart specialisation"?

"A business cluster is a geographic concentration of interconnected businesses, suppliers, and associated institutions in a particular field. Clusters are considered to increase the productivity with which companies can compete, nationally and globally."

"Smart specialisation is a policy framework combining industrial, innovation as well as educational policies (including their design, implementation, and evaluation) in order to promote new growth opportunities based on innovation and knowledge."

Where can Kaipara form production clusters or smart specialisations?

Kumara

Avocados

Kiwifruit

Emerging Subtropicals (especially bananas and pineapples)

Animal feeds

Oilcrops (e.g. soybeans)

Premium, specialty foods

Olives

What next steps are required to build and amplify emerging clusters in Kaipara?

- Activities to support collaboration among existing producers (R&D, processing, marketing, promotions)
- Identification of opportunities to work together pre-market (e.g. cost sharing)
- Identification of export market opportunities requiring shared resources and scale
- Identification of R&D gaps
- Identification of causes of low yields and high costs relative to global leaders
- Facilitation of consensus on shared path forward
- Identify key partnerships and alliances possible with other regions and knowledge holders

There are new avenues for growth for Kaipara kai in existing medium and large sectors

WHAT ARE NEW AVENUES FOR GROWTH? EXISTING MEDIUM/LARGE

2020

SITUATION CREATING OPPORTUNITY	NEW AVENUE FOR GROWTH	WHAT YOU WOULD NEED TO BELIEVE
- Existing Fonterra and Silver Fern Farms (SFF) plants are globally competitive - However, they primarily produce simple, low complexity ingredients - The vast majority of the value added to Kaipara meat and dairy is done outside the region	1 **ADDING MORE VALUE IN THE REGION TO EXISTING EXPORT FOCUSED INGREDIENTS**	- Skills and capabilities exist in Fonterra and SFF to transition to more complex consumer products - Business case for plant upgrades stacks up financially - Alternatively, new value added processors can be attracted to the region
- Kaipara dominates New Zealand kumara production currently (90-95%) - The industry is currently focused on the domestic market and exports are minor	2 **TRANSITION KUMARA FROM DOMESTIC TO EXPORT COMPETITIVENESS**	- Kaipara kumara farmers can match the productivity of kumara farmers in the US - Higher productivity will make the kumara industry export competitive - High value markets would welcome competitively priced New Zealand kumara
- Kiwifruit and avocados are grown in Kaipara in relatively small, but growing, quantities - New Zespri gold kiwifruit produce very high yield in the North of New Zealand - New Zealand has large and rapidly growing exports of these fruit driven by market demand	3 **SCALING UP KAIPARA VOLUMES OF EXISTING EXPORT FRUITS (AVOCADOS & KIWIFRUIT)**	- New gold kiwifruit varieties would produce export class quality and high yields in Kaipara - Kaipara's climate and soils suit subtropical fruit - Limited existing scale in production and packhouses can be overcome - Emerging challenges in the Australian avocado market can be managed

There are new avenues for growth for Kaipara kai in small, emerging and new sectors

WHAT ARE NEW AVENUES FOR GROWTH? SMALL, EMERGING & NEW

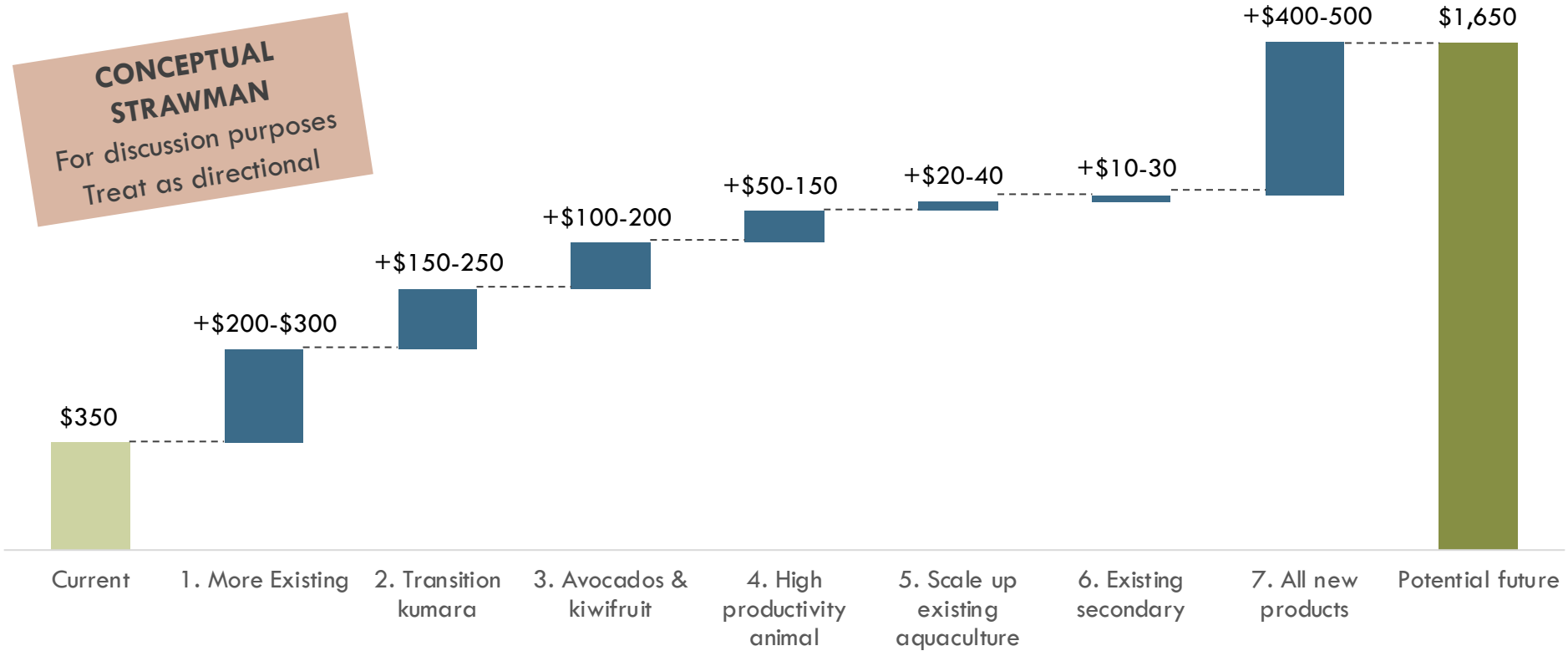
2020

SITUATION CREATING OPPORTUNITY	NEW AVENUE FOR GROWTH	WHAT YOU WOULD NEED TO BELIEVE
- Growing domestic demand for chicken meat, eggs and fresh pork (all biosecure) - All produced in vertically integrated systems - Pressures on existing Auckland production - Spread of production areas to reduce risk	4 **HIGH PRODUCTIVITY, VERTICALLY INTEGRATED ANIMAL SYSTEMS (POULTRY & PIGS)**	- Kaipara is better positioned to supply growing domestic demand than other regions - Local concerns around smell and scale can be overcome through location and planning - Large processors can be attracted to the region
- A large amounts of coastline on both the east and west coasts - Kaipara harbour is sheltered from the ocean - Aquaculture is underdeveloped currently - Kaipara has a strong group of passionate leaders driving industry growth	5 **SCALE UP OF EXISTING AND NEW AQUACULTURE OPPORTUNITIES (MUSSELS & OYSTERS)**	- Kaipara suits aquaculture production of key species in demand in export markets - Past limitation and challenges in regional aquaculture can be overcome - Areas most suited to aquaculture can be farmed without running into local opposition
- A large number of small producers producing a small amount of a large number of products - Kaipara has a strong group of passionate leaders driving industry growth	6 **SCALE UP OF EXISTING & EMERGING SECONDARY & EMERGING CROPS (OLIVES)**	- Local market can absorb additional volumes - Challenges with seasonal labour can be overcome - Locals can gain the skills to take the next step - Kaipara can outcompete other regions
- Large amounts of land at low productivity - Primarily low density cattle systems - Peer group regions are much more diverse - Ongoing shift to plant based foods	7 **DEVELOPMENT OF NEW CROPS NOT YET PRODUCED IN REGION AT ANY SCALE**	- Locals have the stamina to develop a new industry - Local production can rapidly reach real world prices - Capital can be attracted to build required processing infrastructure (e.g. crushing plant)

In aggregate, these new avenues for growth for Kaipara kai can deliver significant growth to the region

RELATIVE SCALE OF PROPOSED NEW AVENUES FOR GROWTH

Model; NZ$m; 2020 vs. hypothetical future



Source: Coriolis analysis and estimates

Kaipara's kai has strong potential to transition to a larger, more diversified, more value added future

WHAT IS KAIPARA'S KAI POTENTIAL? WHAT DOES KAIPARA'S KAI POTENTIAL LOOK LIKE?

Model; 2020

CURRENT SITUATION		POTENTIAL FUTURE STATE
Large amounts of land used at very low productivity	→	Large amounts of land used at high productivity
90%+ of regional food production from two platforms (cows and kumara)	→	Diversified food economy with multiple production platforms
Limited national and almost no international identity as a food producer beyond Kumara Capital	→	Recognised both domestically and in key premium markets as a producer of safe, high quality foods
Low levels of secondary processing done in the region	→	Regional products taken to final consumer ready form with a barcode
Very limited participation in "centre of the store" processed foods products	→	Multiple Kaipara raw materials come together at scale into complex processed food products (e.g. baby foods)

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ASSESSING THE OPPORTUNITIES

This section looks at North Carolina for new ideas and new insights for Kaipara agriculture

Why North Carolina?

- North Carolina is a reasonable peer for Kaipara in many ways (e.g. climate, geography)
- North Carolina is the largest sweet potato (aka. kumara) growing state in the US and it is growing share

North Carolina shows that there is room for improvement in Kaipara's kumara industry

- Sweet Potato growers in South Carolina are large and efficient relative to Kaipara
- North Carolina's growing sweet potato production is coming almost exclusively from large farms
- One average large grower in North Carolina produces almost as many sweet potatoes as the Kaipara
- Kaipara will face all the same challenges in many of the other proposed crops, that hold it back in Kumara exporting

North Carolina demonstrates that Kaipara can become export competitive in kumara

- As a result of having large, efficient sweet potato growers, the US has large and growing sweet potato exports

North Carolina make strong suggestions for new agricultural products with potential for Kaipara

- Despite similarities, North Carolina has a very different agricultural production profile than the Kaipara District
- North Carolina uses many of its other crops in rotation with sweet potato (kumara)
- North Carolina uses most of its ag land to produces a handful of products
- North Carolina suggests a relatively narrow range of agricultural products for the Kaipara District
- However, North Carolina has a "long tail" of crops that it produces, some of which could provide inspiration for Kaipara

This section looks at North Carolina for new ideas for Kaipara

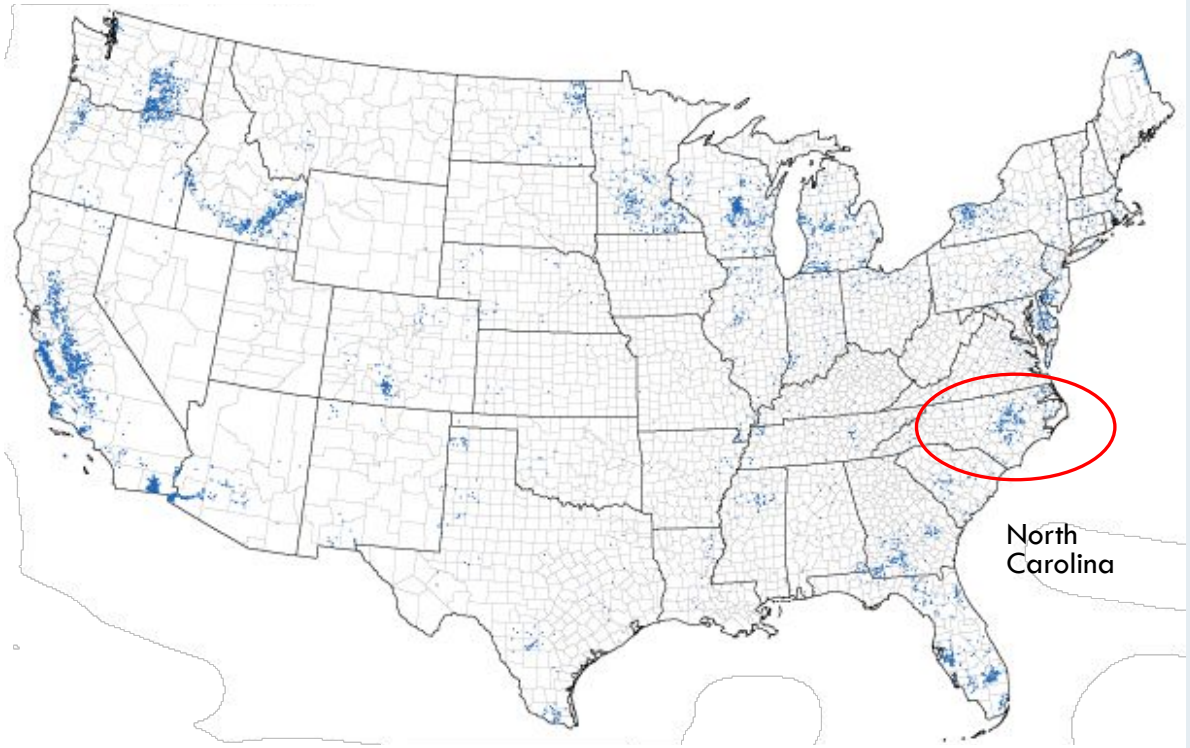
An agricultural landscape typical of the North Carolina coastal plain

Photo Credit: CC-BY 2.0 (John A. Kelley, USDA Natural Resources Conservation Service)

North Carolina is a reasonable peer for Kaipara in many ways

UNITED STATES VEGETABLE AREA HARVESTED

Acres; 1 dot = 1,000 acres; 2017



Colony of England originally settled by English, Scots & Irish colonists.

The climate of North Carolina is mild and equable. Most of **North Carolina** has a humid, sub-tropical **climate**, with short, mild winters and sultry summers.

North Carolina experiences heavy rainfall (1.1m/year). North Carolina gets some kind of precipitation, on average, 112 days per year.

Summer high is 30-32°C and Winter average is 11°C.

The region occasionally gets severe weather, including tornadoes, heavy rains and tropical cyclones.

The state was originally forested, but little old growth is left.

The bulk of vegetable production in North Carolina occurs in the broad coastal plains that encompasses 45% of the state. The hilly and mountainous interior away from the coast primarily raises cattle, however livestock are raised extensively across the state.

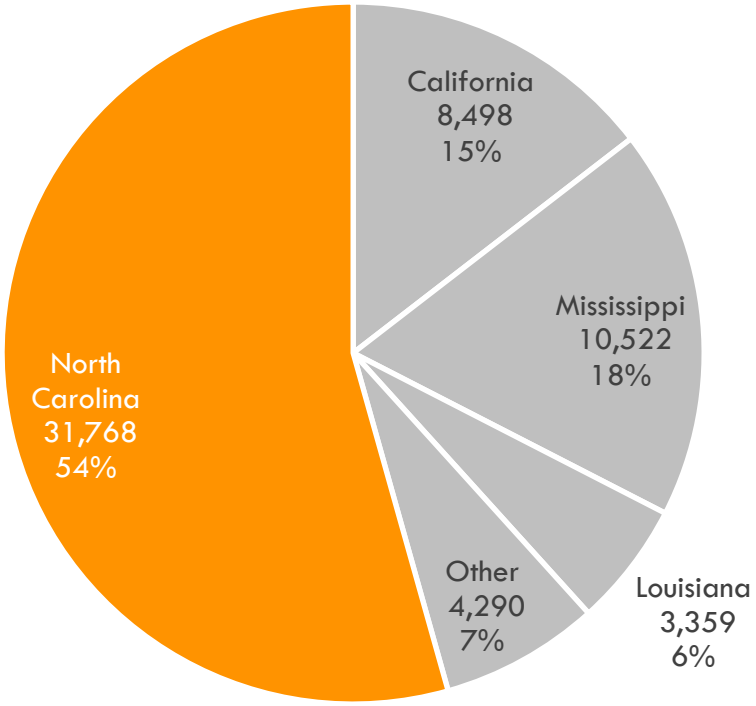
The state is the largest producer of sweet potatoes in the United States.

Source: USDA Census of Agriculture 2017

Why North Carolina? North Carolina is the largest sweet potato (aka. kumara) growing state in the US and it is growing share

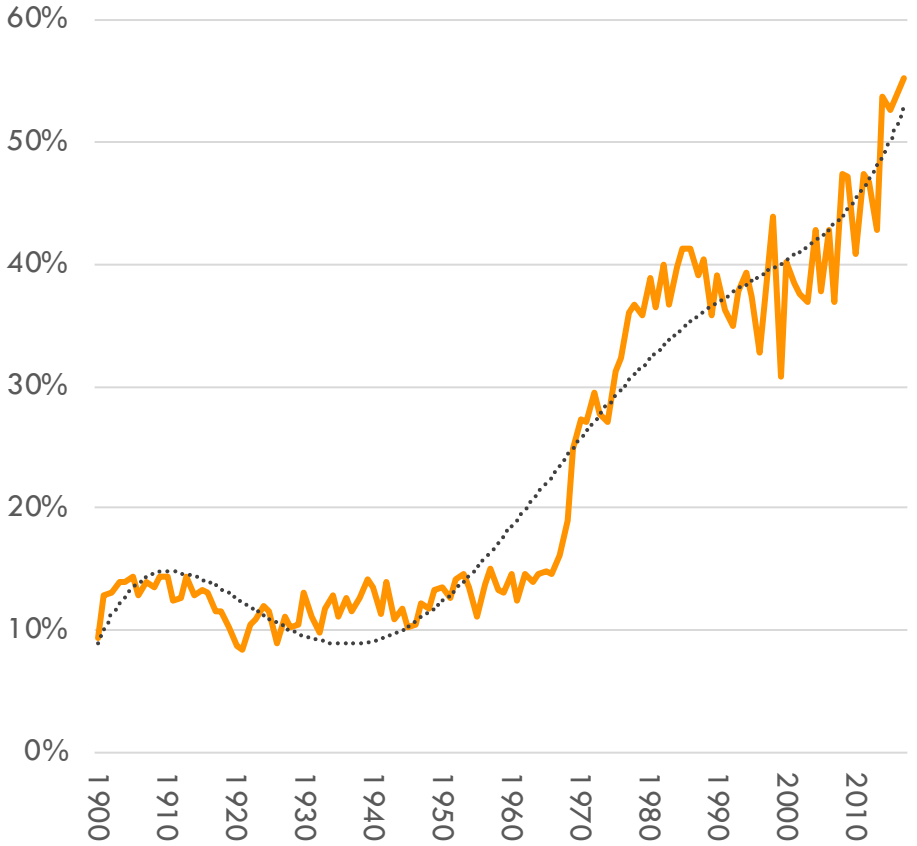
US SWEET POTATO AREA BY STATE

Hectares; 2018



N. CAROLINA AS A % OF US PRODUCTION

% of tonnes; 1900-2017

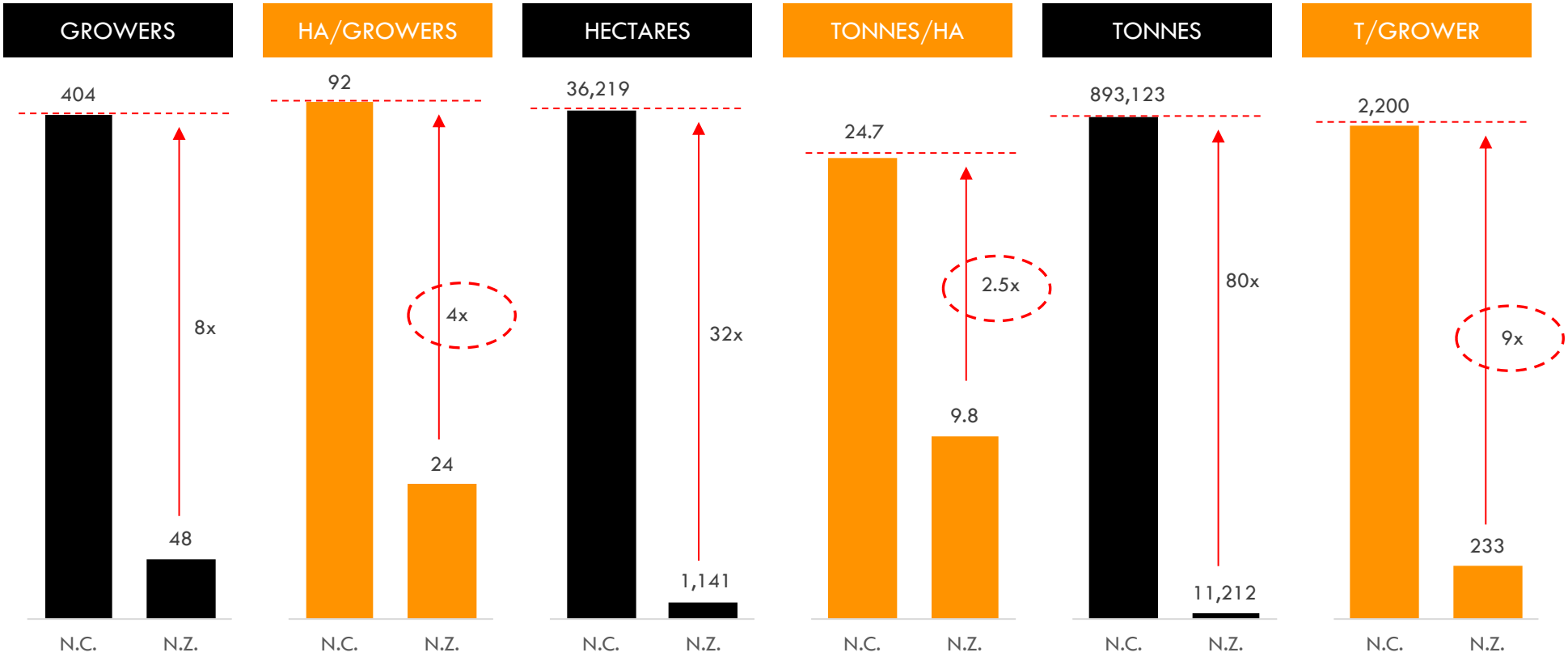


Source: USDA ERS; USDA Census of Agriculture; Coriolis analysis

Sweet Potato growers in South Carolina are large and efficient vs. NZ (Kaipara 90-95% of NZ production)

INDUSTRY SIZE AND PERFORMANCE METRICS: NORTH CAROLINA VS. NEW ZEALAND

Select variables as given; 2017 or as available

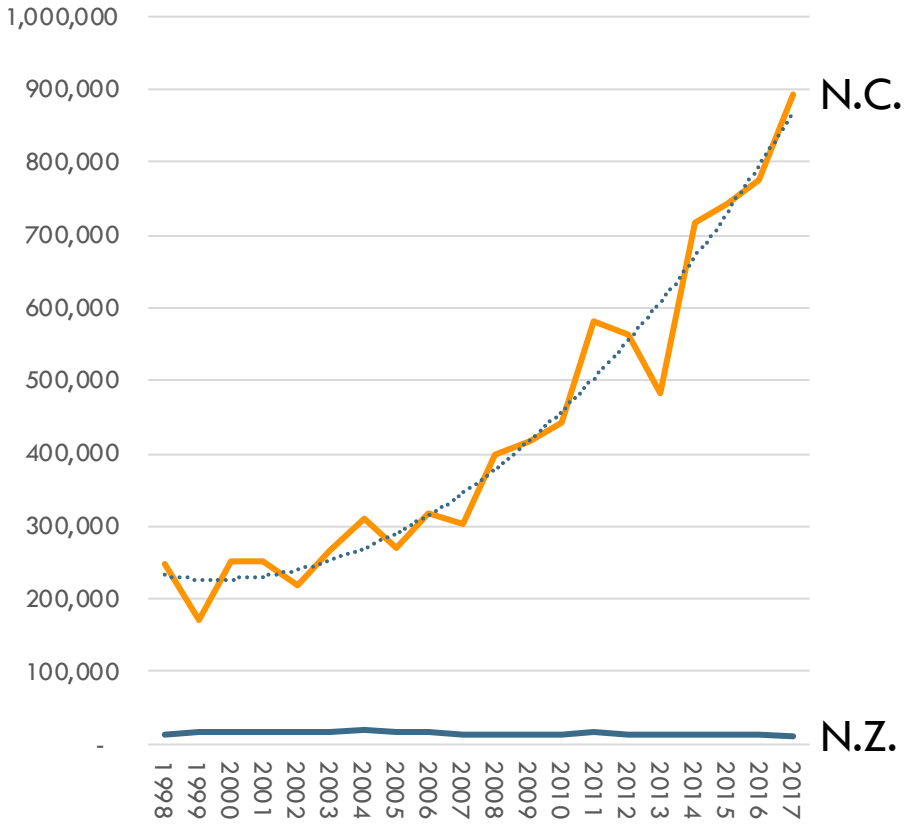


Note: NC data is growers 2ha+; Source: UN FAO; USDA Census of Agriculture; USDA ERS; Plant & Food FreshFacts; Coriolis analysis

North Carolina's growing sweet potato production is coming almost exclusively from large farms

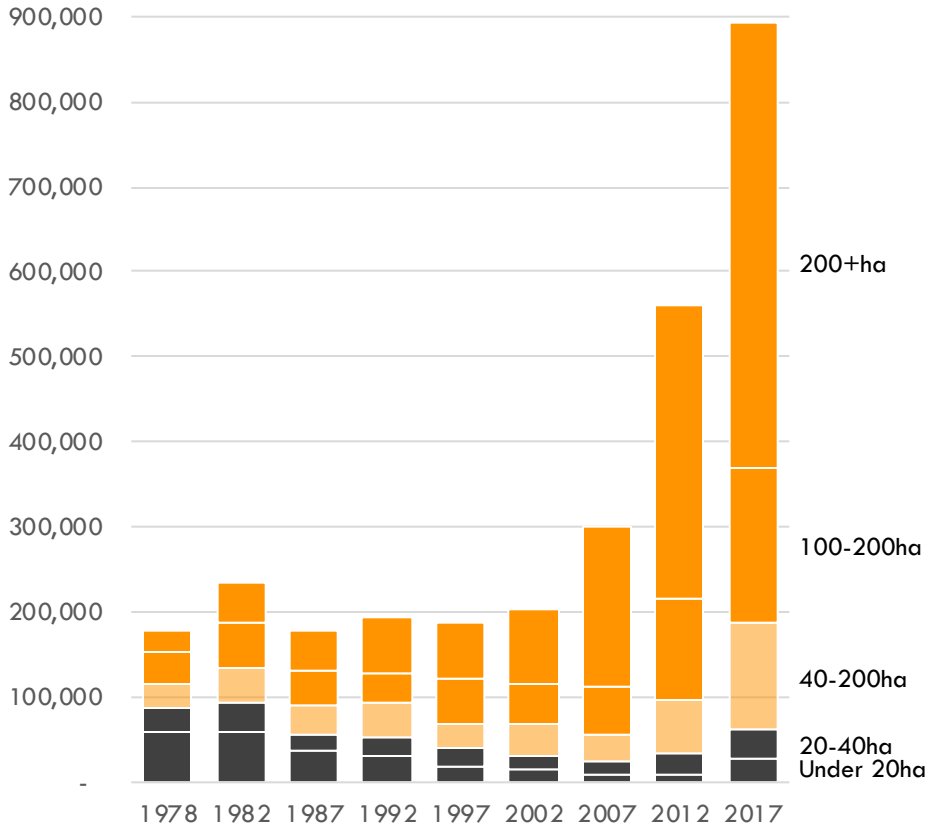
SWEET POTATO PRODUCTION: NC VS. NZ

Tonnes; 1998-2017



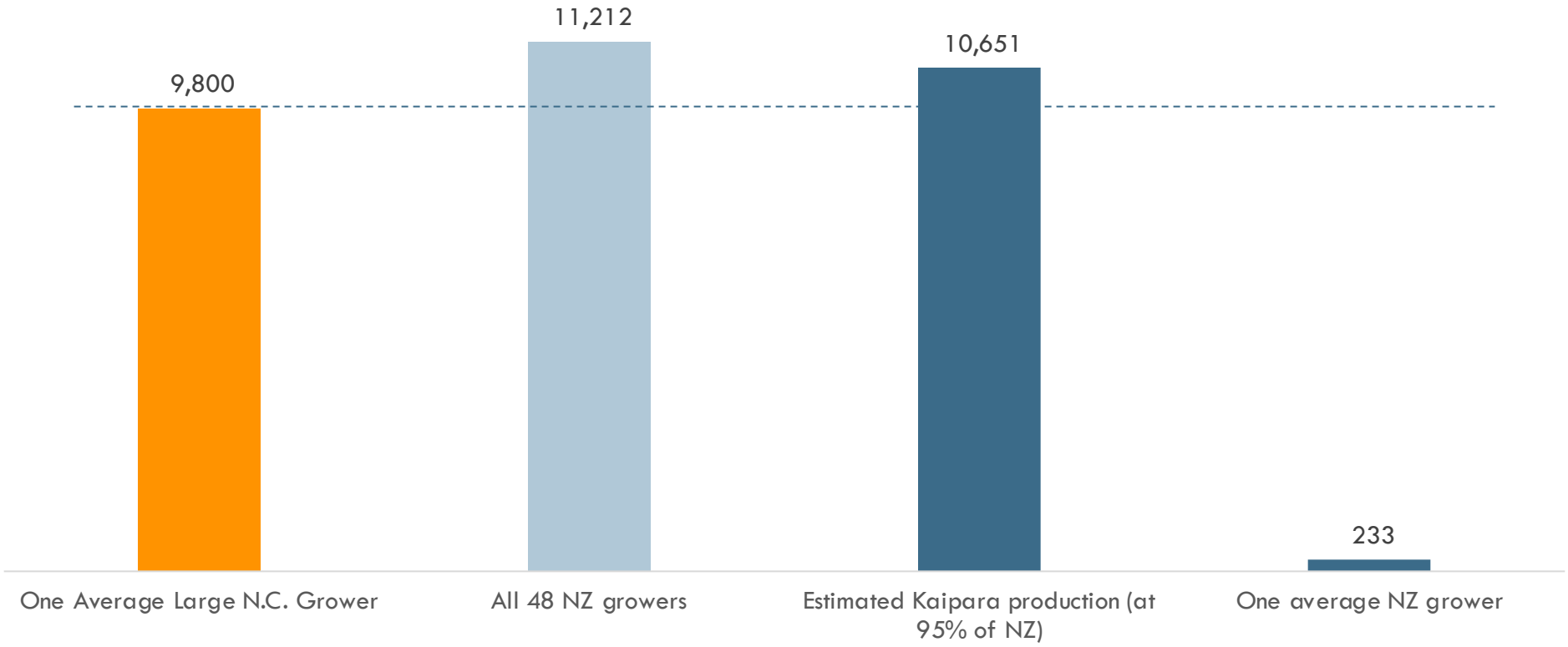
TOTAL NORTH CAROLINA SWEET POTATO PRODUCTION BY FARM SIZE

Tonnes, 1978-2017



Note: NC data is growers 2ha+; Source: UN FAO; USDA Census of Agriculture; USDA ERS; Plant & Food FreshFacts; Coriolis analysis

<u>One</u> average large grower in North Carolina produces almost as many sweet potatoes as the Kaipara



Note: "Average large" is average of all farmers with 200+ hectares; Source: UN FAO; USDA Census of Agriculture; USDA ERS; Plant & Food FreshFacts; Coriolis analysis

Kaipara will face <u>all</u> the same challenges in many of the other proposed crops, that hold it back in Kumara exporting

WHY ISN'T KAIPARA A SUCCESS IN EXPORT KUMARA MARKETS?

Relative to global export regions Kaipara has…

Small Farms/Small Fields
Low Yields
High Labour Requirements
Low Mechanisation
Lack of Latest/Largest Equipment
Fragmented Production

THESE ARE EXACTLY THE SAME CHALLENGES KAIPARA WILL FACE IN OTHER MAJOR COMMERCIAL CROPS

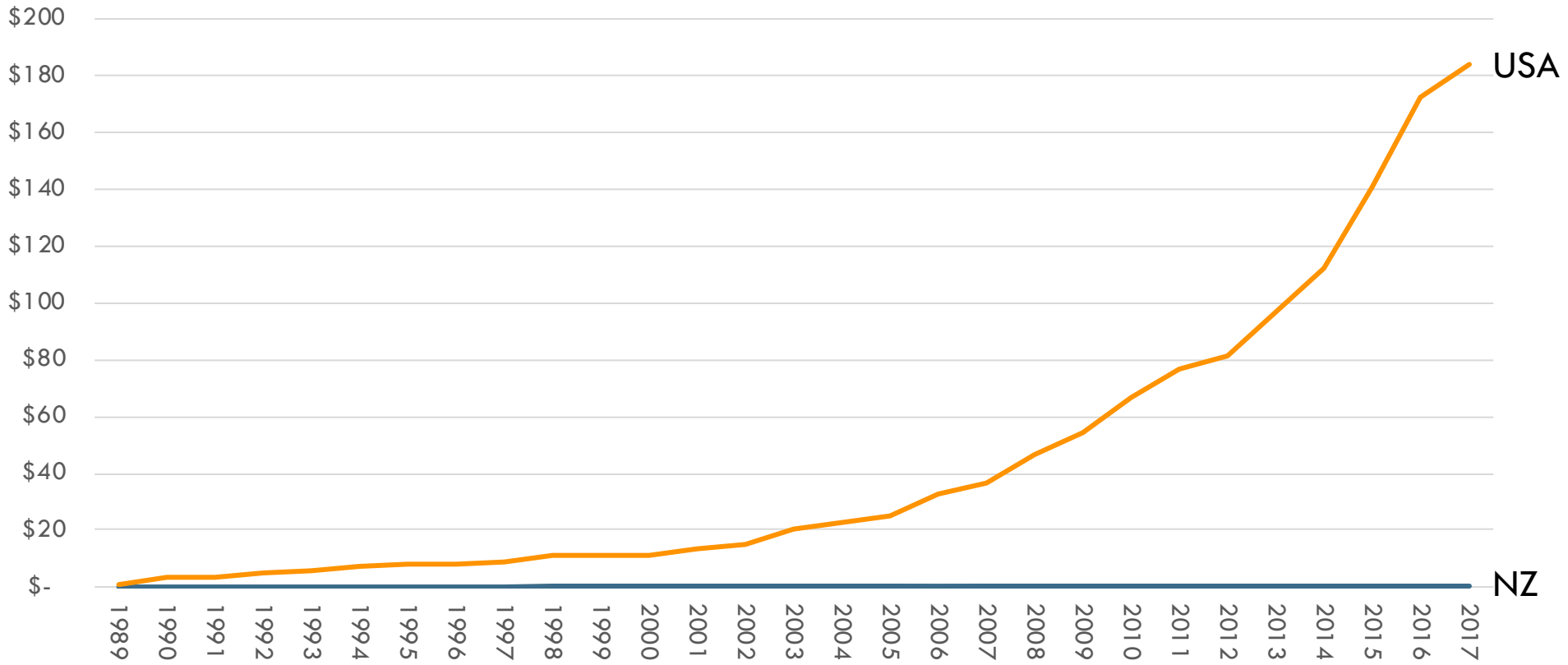
To succeed in global exports as a developed country you need…

Large Farms
High Yields
High Labour Productivity
Mechanised Production
Large Packhouses at Scale
Large Processors at Scale

As a result of having large, efficient sweet potato growers, the United States has large and growing sweet potato exports

SWEET POTATO EXPORT VALUE: USA VS. NEW ZEALAND

US$m; 1961-2018

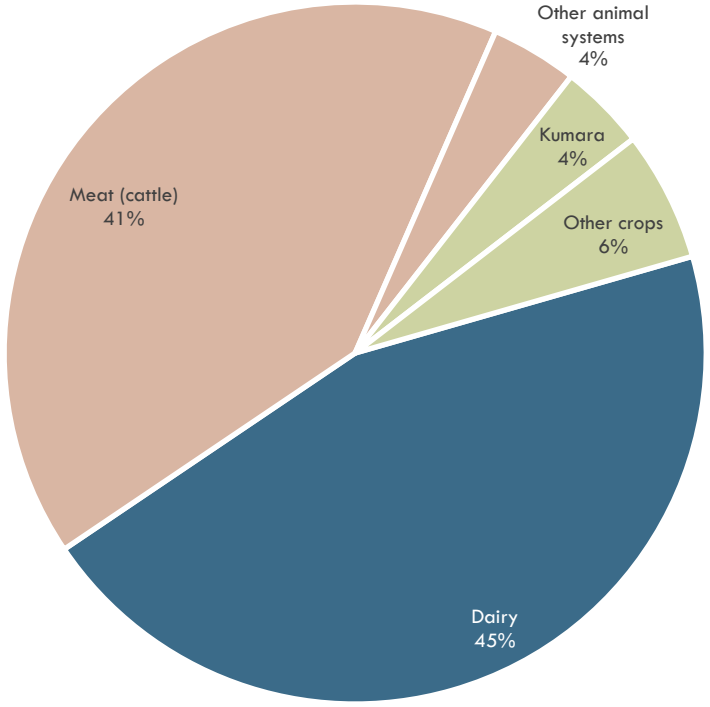


Source: UN FAOSTAT; Coriolis analysis

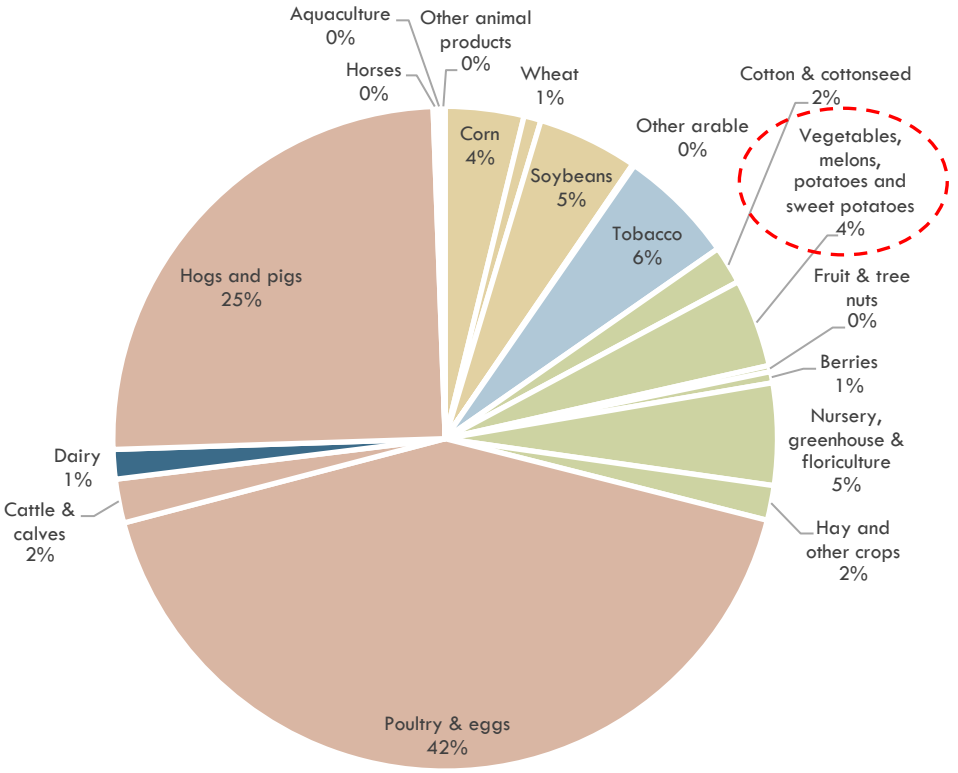
Despite similarities, North Carolina has a very different agricultural production profile than the Kaipara District

KAIPARA DISTRICT AG VALUE BY TYPE
% of NZ$; 2018

ESTIMATE



NORTH CAROLINA AG VALUE BY TYPE
% of US$; 2017



Source: USDA Census of Agriculture; Coriolis analysis and estimates

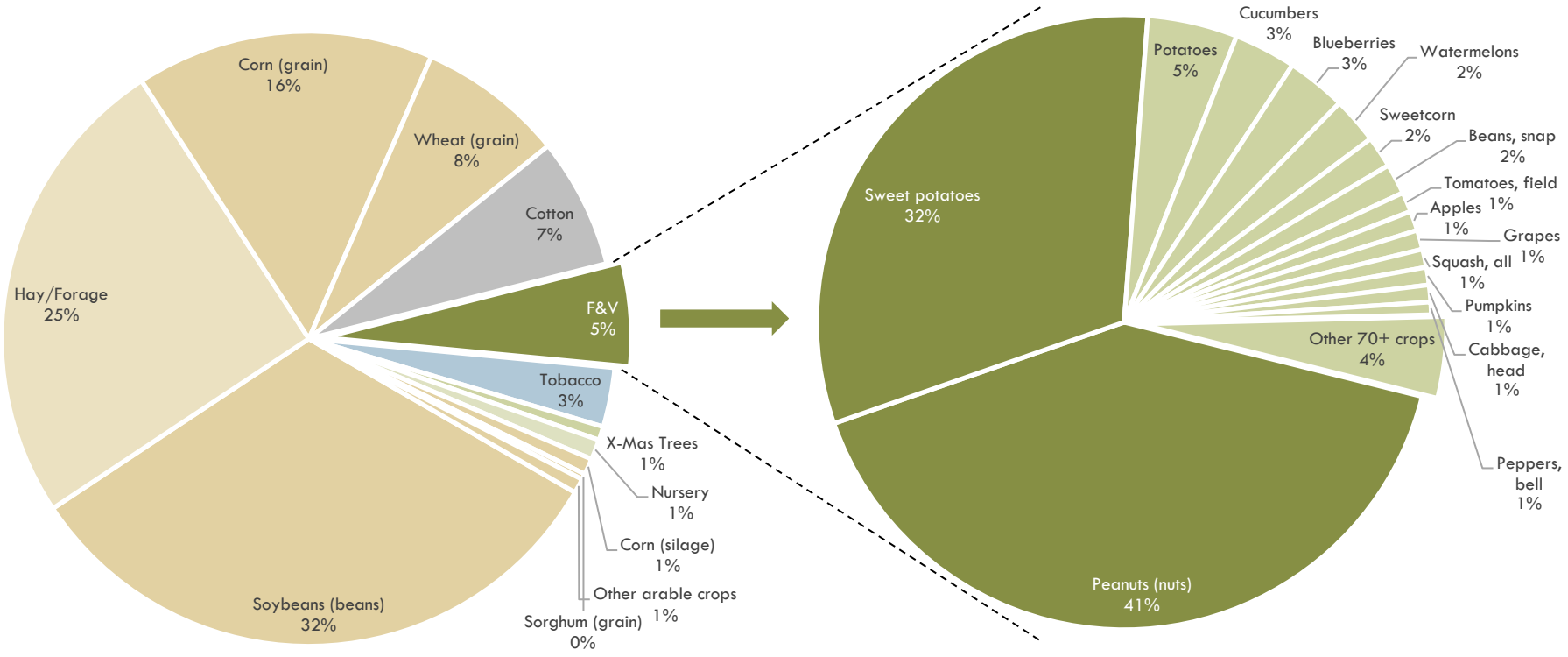
North Carolina uses many of its other crops in rotation with sweet potato (kumara)

CROP WE HAVE IN KAIPARA DISTRICT	WHAT DO THEY ROTATE WITH IT IN NORTH CAROLINA?
Sweet Potato (aka. Kumara)	Soybeans Peanuts Corn Wheat Cucumbers Beans, snap Cotton Tobacco

North Carolina uses most of its ag land to produce a handful of products

NORTH CAROLINA AGRICULTURAL LAND USE BY CROP

% of hectares; 2017



Source: USDA Census of Agriculture; Coriolis analysis and estimates

North Carolina suggests a relatively narrow range of agricultural products for the Kaipara District

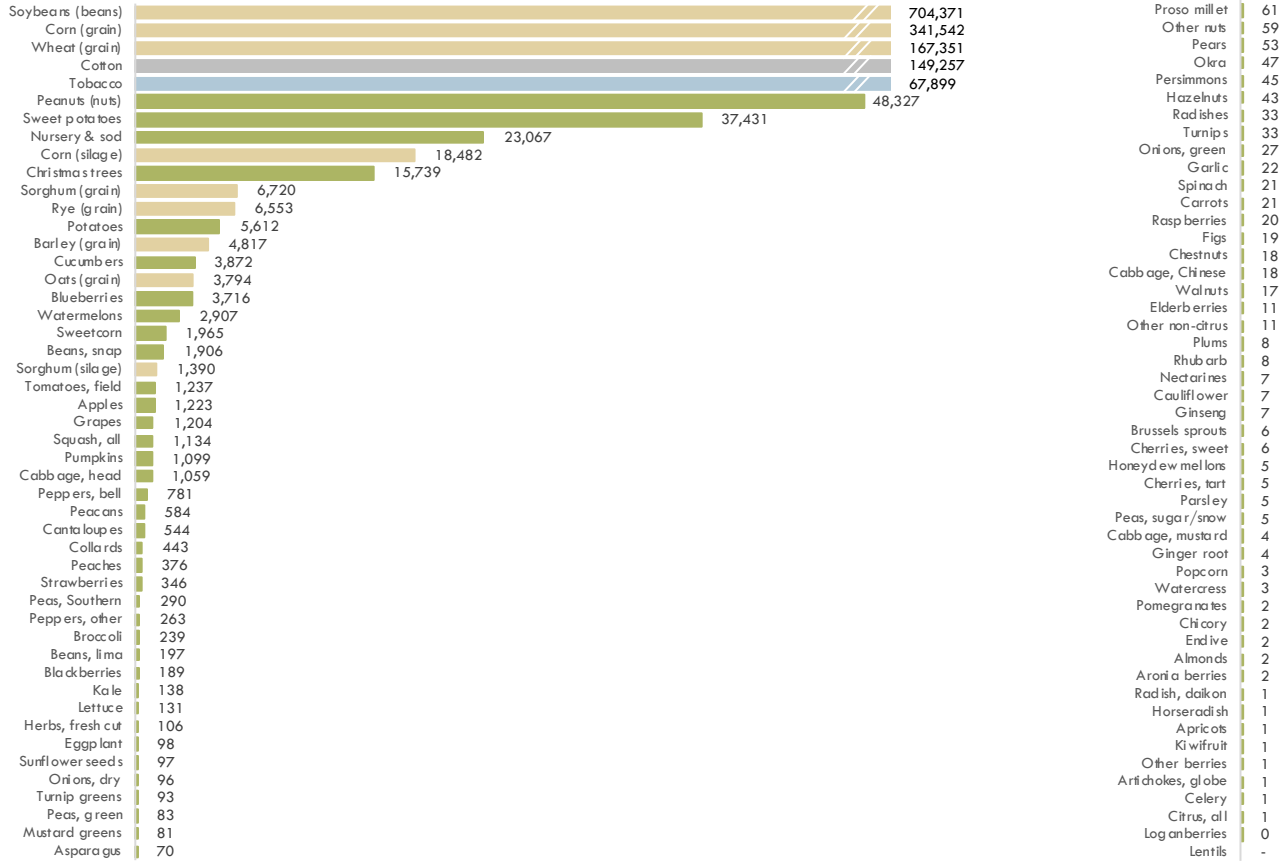
ANIMAL SYSTEMS
Meat Chicken
Eggs
Pork

CROP SYSTEMS
Feed (for animal systems)
Soybeans
Maize/Corn/Sweetcorn
Sweet Potato (Kumara)
Peanuts
Potatoes
Cucumbers
Blueberries
Watermelons
- - - - - - - - - -
Cotton
Tobacco
Christmas Trees

However, North Carolina has a "long tail" of crops that it produces, some of which could provide inspiration for Kaipara

NORTH CAROLINA AGRICULTURAL LAND USE BY CROP

Hectares; 2017



Source: USDA Census of Agriculture; Coriolis analysis and estimates

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Stage I sought feedback on regional kai opportunities

Sectors with high potential for growth in Kaipara exist at the intersection of hobbyists and industries at scale

NOT EVERYTHING IS POSSIBLE OR IN SCOPE

- We received clear guidance on the focus of project and the types of products to be assessed for opportunities
- The project must consider both products targeted at "the farmers market" and export markets
- There are a range of products that would suit the Kaipara that can not be considered as they lack "social license"
- Existing property boundaries cannot be easily redrawn or transition to radically different field structures
- Numerous plant and animal systems are eliminated by these criteria (e.g mink farming)
- In summary, product opportunities identified must be actionable in the medium term, be approved and meet the expectations of locals

IMPORT DATA HIGHLIGHTS SOME MARKET NEEDS NOT CURRENTLY BEING MET LOCALLY

- NZ only sources a handful of foods from the rest of the world in any volume or value, predominantly animal feeds

The products that Kaipara can produce fall into four broad groups (hobby, domestic supply, substitute current imports and export market opportunities)

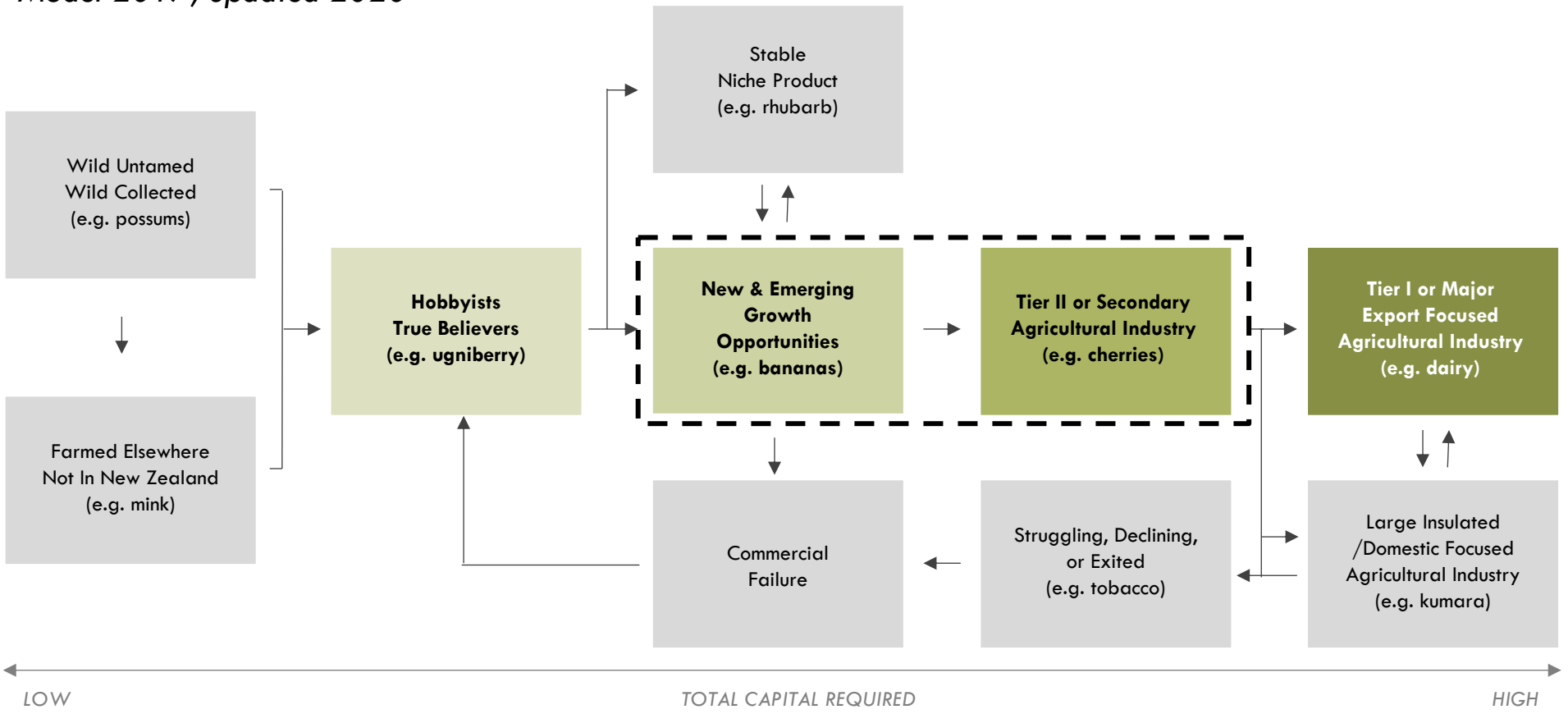
STAGE I PRODUCTS WERE IDENTIFIED AND SCREENED

- To identify and prioritise regional opportunities that suit Kaipara, the project used a robust, multi-stage screening process
- Stage I received input from a wide ranging group of regional stakeholders on their ideas for new opportunities for Kaipara Kai
- Plant & Food Research also identified five new opportunities for inclusion as part of their ongoing process
- Regional stakeholders and Plant & Food identified a wide range of growth platforms for Kaipara Kai
- Identified products were screened for any known issues or challenges in Kaipara

Sectors with high potential for growth in Kaipara exist at the intersection of hobbyists and industries at scale

POTENTIAL DEVELOPMENT PATHWAYS FOR NEW AGRICULTURAL INDUSTRIES

Model 2017; updated 2020



Source: Coriolis Agrifutures Australia "New Opportunities in New and Emerging Agricultural Industries in Australia" Dec 2017

We received clear guidance on the focus of project and the types of products to be assessed for opportunities

WANT

- Shovels/plows in the ground
- Actionable now
- Quick outcomes
- Results not reports
- "Foundation Piece"
- Viable/Actionable
- Mainly status quo +1, adjacencies
- "But maybe one future looking"

DON'T WANT

- Just a report
- Theoreticals
- Can not be actioned by farmers in the region in the short term
- Plant/animals not in New Zealand now

Source: Kaipara Kai Steering Group; Kaipara Kai Advisory Group

The project must consider both products targeted at "the farmers market" and export markets

	PRODUCTS SUITED TO SMALLER, LIFESTYLE PRODUCERS PREDOMINANTLY ON THE EAST COAST OF THE KAIPARA REGION		PRODUCTS SUITED TO LARGER COMMERCIAL FARMING OPERATIONS PREDOMINANTLY ON THE WEST COAST OF THE KAIPARA REGION
LAND	- Patchwork of small blocks - Land price set by non-farming value (i.e. as a lifestyle property)		- Large amounts of land available - Land value set by farming returns
OPERATORS	- Primarily lifestyle and hobby farmers with a range of motivations and objectives	**AND**	- Professional farmers focused on commercial production as a business
KEY MARKETS	- Local farmers market - Gourmet stores - High end foodservice - Farmgate and direct sales		- Supermarkets - Commercial foodservice - Further processors - Large plants or packhouses in the region
PACKING & PROCESSING SCALE	- On-farm processing in a shed - Owned by producer		- Regional processing in a large facility at scale - Owned by a cooperative of farmers (Fonterra, SFF, Delta)
	SMALL LOCAL LIFESTYLE CRAFT/HOBBY VARIETY NICHE		LARGE VOLUME SCALE REVENUE EXPORTS COMPETITIVE

Source: Kaipara Kai Steering Group; Kaipara Kai Advisory Group

There are a range of products that would suit the Kaipara that can not be considered as they lack "social license"

EXAMPLES OF PRODUCTS THAT WOULD SUIT KAIPARA BUT THAT LACK "SOCIAL LICENSE"*

TOBACCO

- 8 million tonnes of tobacco products were produced globally in 2018
- Volume growing at 1.4% per annum
- US$730b industry globally in 2019
- Top global producers include China, Brazil, India, United States, Zimbabwe, Zambia and Argentina
- 1.8 billion tailor made cigarettes and 532 tonnes of roll-your-own tobacco sold in New Zealand

But…

You need a NZ government license to grow it and they are not giving them out

OPIUM

- Major global agricultural crop (legally and illegally)
- Used in drugs morphine, thebaine, codeine, papaverine, noscapine and oripavine, among others
- Production for use as a pharmaceutical ingredient now legal in four Australian states
- About 10,000ha and 450 growers in Tasmania

But…

Banned in New Zealand despite the rumoured offer of a billion dollar pharmaceutical plant

TROUT AQUACULTURE

- Can be produced on land or in sea cages (similar to salmon)
- Global production of trout in aquaculture is 844,942t worth US$3.8b
- NZ industry leaders indicate it could be a $1b industry in NZ
- Trout were introduced and now are endemic in many NZ rivers

But…

Banned in New Zealand because perceived risk to existing fisheries

FEEDLOT DAIRY

- Barn/feedlot dairy accounts for almost all milk produced in North America and Europe
- Per animal productivity four times New Zealand results
- Largest dairy farm in Idaho produces more milk than Taranaki from one quarter the cows
- Waste is managed responsibly on site rather than washed into streams

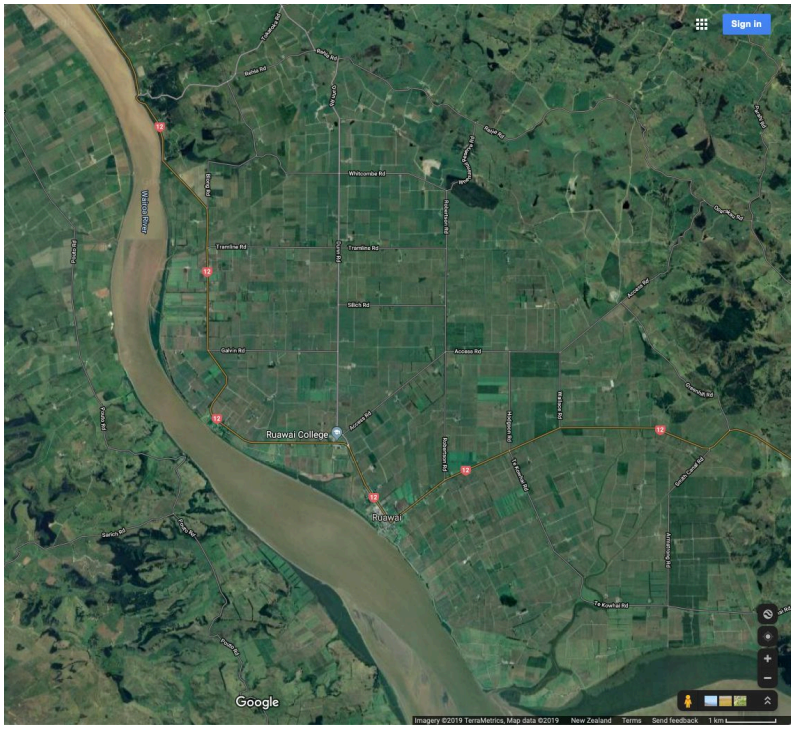
But…

You need NZ government permission to do it and the answer is probably no

** Select examples; many, many more exist; Photo credit: CC0 (Max Pixel); CC-BY-NC-SA 2.0 (Arthur Chapman); CC-BY-NC-SA 2.0 (Arthur Chapman); CC-BY 2.0 (Larry & Teddy Page)*

Existing property boundaries cannot be easily redrawn or transition to radically different field structures

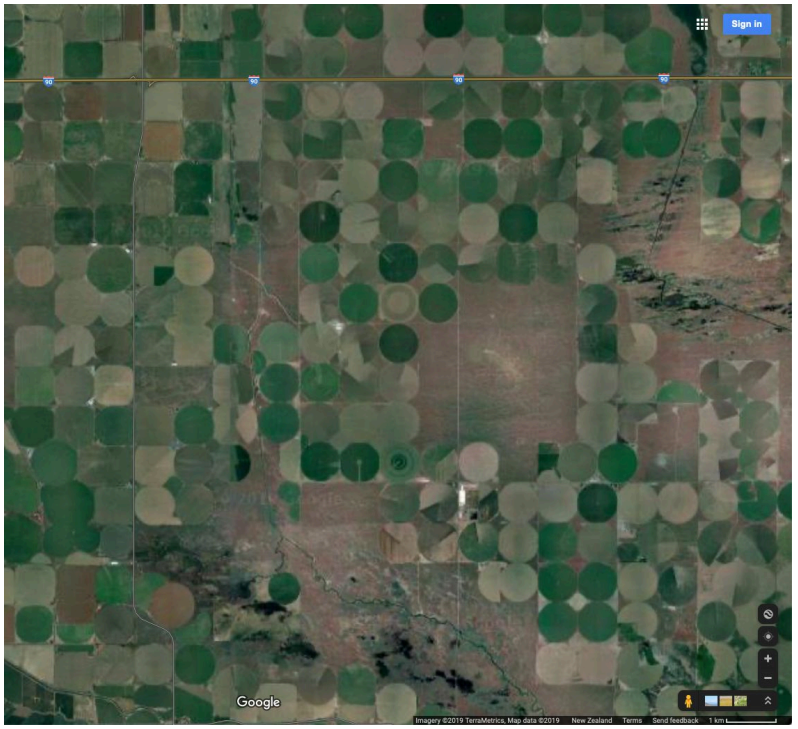
16km



KAIPARA

Huge number of small fields laid out for settlers who would be using 1850's technology

16km



EASTERN WASHINGTON STATE

Smaller number of large fields designed for large agribusiness firms using 2020 technology

Numerous plant and animal systems are eliminated by these criteria

SELECT EXAMPLES

*Photo credit: Pixabay (FranzisFoto); public domain (USDA ARS); CC-SA 3.0 (Peripitus); public domain (*Martin B Smith Jr.); public domain (Bernard Spragg); purchased (Shutterstock)

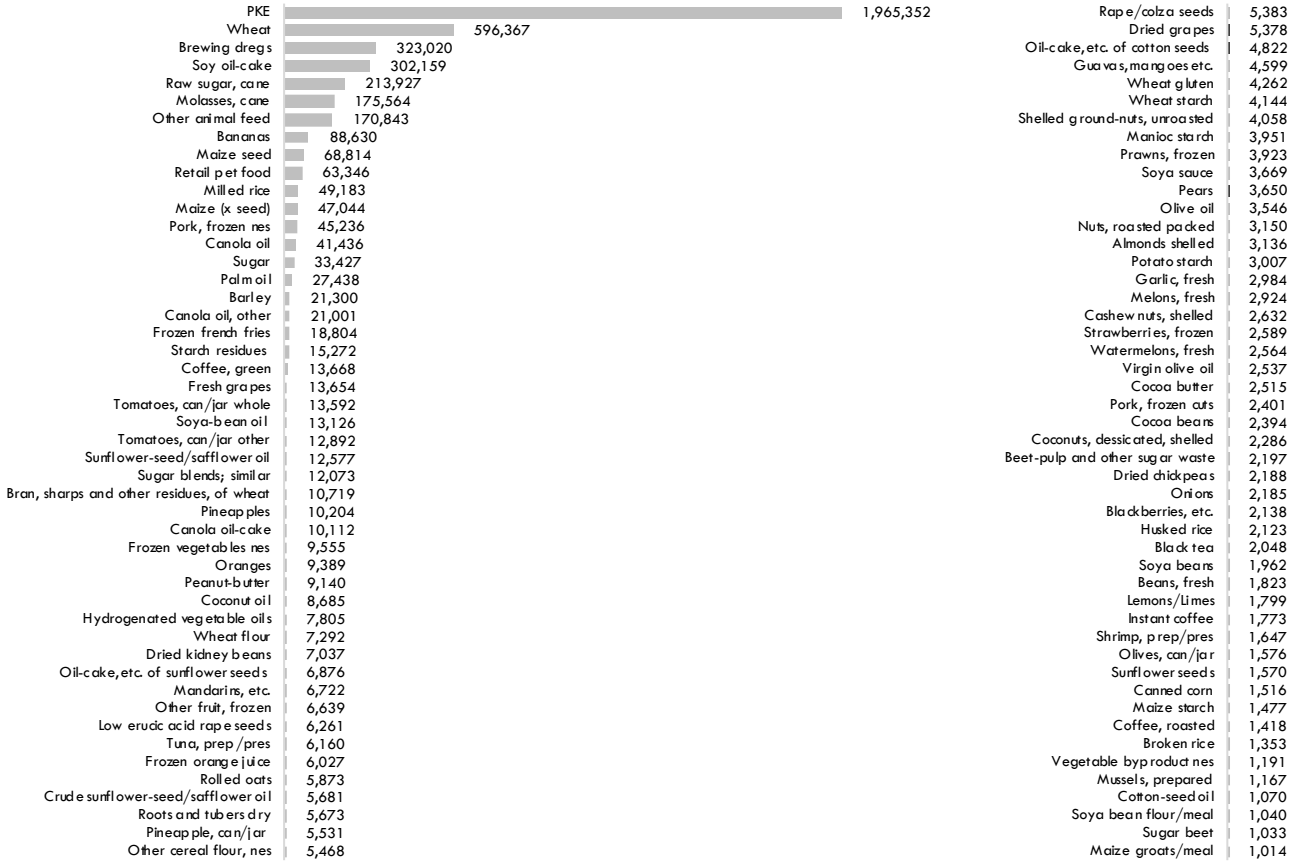
In summary, product opportunities identified must be actionable in the medium term, be approved and meet the expectations of locals

DEFINED SUCCESS AS…	BUT THEREFORE EXCLUDING…
Results in the short term	Animals & crops not yet introduced into country
Shovels in the ground/Action on the ground	Things requiring significant development
Jobs, jobs, jobs	Things without a proven production system
Existing operators changing	Attracting new, large producers to the region
Local trials	Global agribusiness “landing from space”
No one upset or protesting	Products that will cause controversy
Supported by voters and rate payers	Products that create strong smells or emissions
Legal, approved and broadly environmentally sustainable	Products outside the “New Zealand consensus”
THEREFORE…	THEREFORE NOT…
Familiar & Understood Status Quo +1 Leveraging existing skills & systems No dramatic changes to the landscape	New & Unknown Anything unfamiliar that doesn’t “make sense” Radically new systems and very different skills Overtly or visibly global scale agriculture

What is imported? NZ only sources a handful of foods from the rest of the world in any volume, predominantly animal feeds*

NEW ZEALAND MINIMALLY PROCESSED FOOD IMPORT VOLUME BY TYPE

Tonnes; top 98 products; 2018

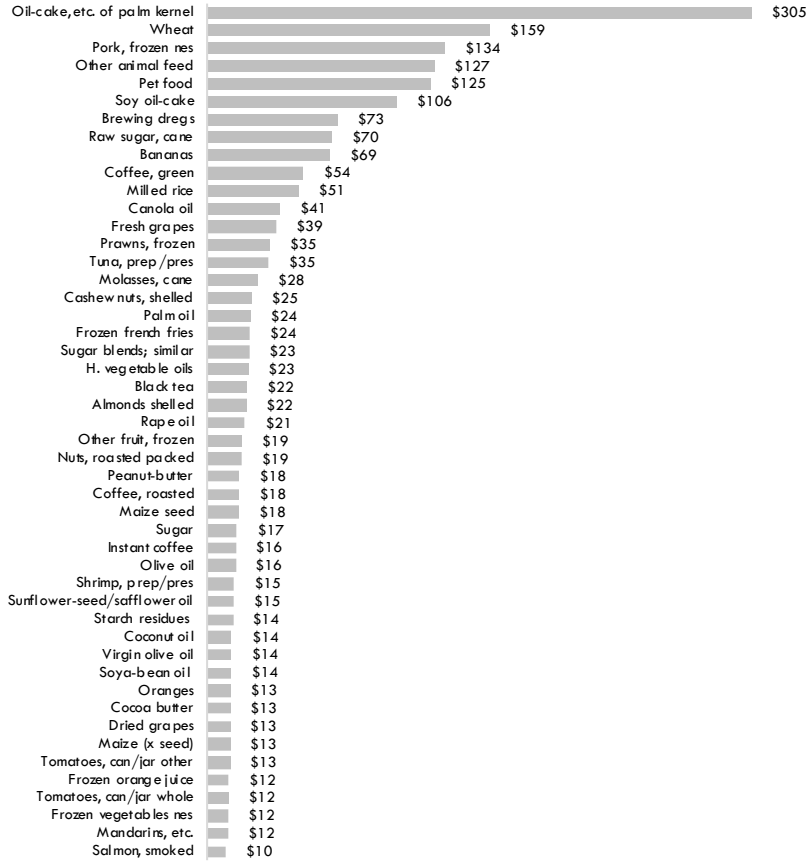


*PKE = Palm Kernel Expeller * Or allowed in through biosecurity; Source: UN Comtrade data; Coriolis analysis and classification*

What is imported? NZ only buys a handful of foods from the rest of the world in any value, predominantly animal feeds

NEW ZEALAND MINIMALLY PROCESSED FOOD IMPORT VALUE BY TYPE

US$m; top 98 products; 2018



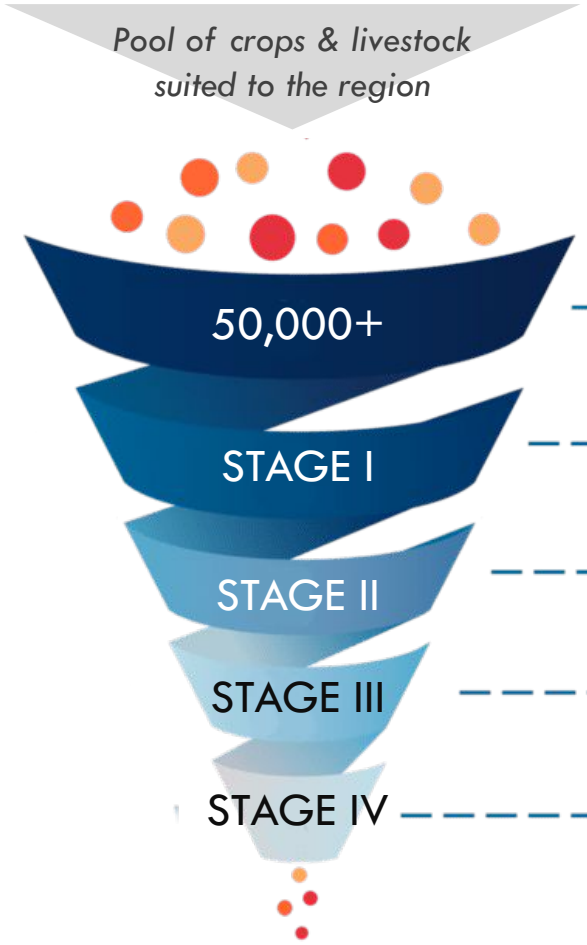
Source: UN Comtrade data; Coriolis analysis and classification

The products that Kaipara can produce fall into four broad groups

1	2	3	4
LOCAL HOBBY/LIFESTYLE	**DOMESTIC SUPPLY**	**CURRENTLY IMPORTED**	**EXPORT MARKETS**
Grow and produce premium food and beverage products …	"Muscle into" existing NZ food production sectors and win against competitors plus expand seasonal windows…	Substitute existing food imports with locally produced products…	Produce foods in high demand where Kaipara can compete…
… sold locally in small quantities at high prices	… at the existing market price less effect of new volumes on equilibrium	… at the quality adjusted world price plus freight plus some "NZ" premium	… at the quality adjusted world price less freight plus some "NZ" premium
Olives Globe Artichoke *Cherimoya* *Figs* *Tamarillo*	Sweetcorn Tomatoes Capsicums *Feijoa* *Lettuce* *Kumara*	Rice Bananas Pineapples Soybeans Sorghum *Sugarcane*	Avocado Potatoes Kiwifruit *Onions* *Dairy* *Beef*

Easy ← → *Hard*

To identify and prioritise regional opportunities that suit Kaipara, the project used a robust, multi-stage screening process



→	*Hypothetical Universe*	All plants and animals ever farmed by humans in some way
→	*From Stakeholders & Research*	Interviews and research to identify products potentially having merit in Kaipara
→	*Evaluation & Comparison*	Identified products compared across common set of metrics
→	*High Potential Opportunities*	Profiles of high potential products with robust demand
→	*OPTIONAL: In-Depth Analysis*	In-depth evaluation of market situation and sectoral development plan

Source: Coriolis

Stage I received input from a wide ranging group of regional stakeholders on their ideas for new opportunities for Kaipara Kai

CONTRIBUTED TO STAGE I PRODUCT LIST

CONTRIBUTOR	SECTOR ROLE
Snow Tane	Te Roroa (iwi)
John Greensmith	Avocado grower in Tapora
Don Windley	Echo Valley Olives
Georgina Connelly	Te Uri-o-Hau (iwi)
Anthony Blundell	Kaipara Kumara
Shane Rudolph	Range of horticulture and animal products
Grant West	Sheep and beef farmer
Rick and Ben Simpkin	Fieldco
Andre de Bruin	Kumara grower

CONTRIBUTOR	SECTOR ROLE
Bert and Rebecca Borger	Te Rata Family Farm (eggs)
Alastair McCahon	Dairy farmer
Peter Hobman/Shane Kells	Sheep & Goat Milk
Hamish Alexander	Avocado grower
Briar Huggett	Beef + Lamb NZ
Locky Wilson	Delta (Kumara)
Jim Dollimore	Biomarine
Hal Harding	Kumara grower

*Plant & Food Research also identified five new opportunities for inclusion as part of their ongoing process**

IDENTIFIED BY PLANT & FOOD PROCESS

Plant & Food RESEARCH
RANGAHAU AHUMĀRA KAI

** Note the Plant & Food project began before this project commenced and will be ongoing after this project is finished*

Regional stakeholders and Plant & Food identified a wide range of growth platforms for Kaipara Kai

TOTAL OPPORTUNITIES IDENTIFIED

Hemp
Hops
Avocados
Olives
Peanuts

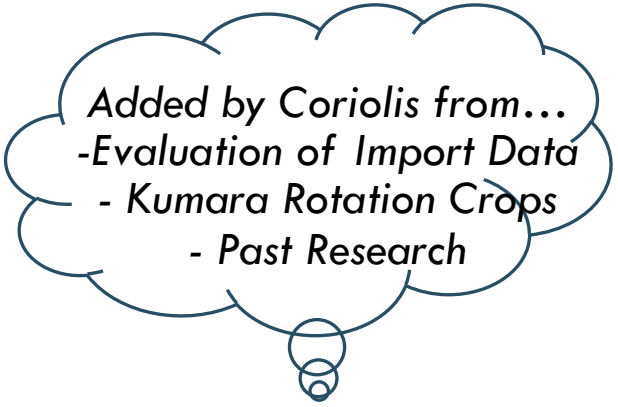
Honey
Kiwifruit
Blueberries
Oranges
Hemp
Hops
Avocados

Grains [1]
"Arable Crops"[1]
Olives
J. Artichokes
Beef (Wagyu)
Sheep
Sweetcorn

Tomatoes
"Undercover"[2]
Watermelons
Eggs
Mussels
Pigs
Capsicums

Bananas
Meat Chicken
Beets
Peanuts
Potatoes
Livestock Feed[1]
"Plant Proteins"[3]

Sheep Milk
Goat Milk
Rice
Oysters



Livestock Feed
Carrots
Ducks
Globe Artichokes
Pineapples

1. This was interpreted to mean climatically suitable arable crops (rice, sorghum, soybeans, industrial hemp); 2. This was interpreted to mean the key greenhouse crops in NZ (capsicums, tomatoes and cucumbers); 3. This was interpreted to mean high protein plants (e.g. peanuts, soybeans)

Identified products were screened for any known issues or challenges in Kaipara…

OPPORTUNITY	PASS THROUGH?	NEW NEWS FOR KAIPARA	STAKEHOLDER SUPPORT	PLANT & FOOD PROCESS	RESERVATIONS/LIMITATIONS/ISSUES/CHALLENGES/DEAL KILLERS
Avocados	Yes	◑	●	●	
Bananas	Yes	●	●		
Beef (Wagyu)	No	◑	●		Mixed opinions; can plant segregate chain?; a "definite maybe"
Beets	Yes	●	●		
Blueberries	Yes	◑	●		
Capsicums	Yes	●	●		
Carrots	Yes	●			
Cucumbers	Yes	●	●		
Ducks	Yes	●			
Eggs	Yes	◑	●		
Globe Artichokes	Yes	●	◑		
Goat Milk	Yes	●	●		
Hemp	Yes	●	●	●	
Honey	No	○	◑		Gold rush already happened; already being exploited where possible
Hops	Yes	●	●	●	
Jerusalem Artichokes	Yes	●	●		
Kiwifruit	No	○	◑		Known and understood in region; being exploited where licenses available
Meat Chicken	Yes	◑	●		

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

Identified products were screened for any known issues or challenges in Kaipara… (continued)

OPPORTUNITY	PASS THROUGH?	NEW NEWS FOR KAIPARA	STAKEHOLDER SUPPORT	PLANT & FOOD PROCESS	RESERVATIONS/LIMITATIONS/ISSUES/CHALLENGES/DEAL KILLERS
Mussels	Yes	◑	●		
Olives	Yes	○	●	●	
Oranges	No	○	◑		Known and understood in region; area declining across Northland
Oysters	Yes	○	◑		
Peanuts	Yes	●	●	●	
Pigs	Yes	●	●		
Pineapples	Yes	●			
Potatoes	Yes	●	●		
Rice	Yes	●	●		
Sheep	No	○	○		Known and understood in region; some challenges with farming sheep in the region (e.g. eczema from rye grass)
Sheep Milk	No	●	◑		Some challenges with farming sheep in the region (e.g. eczema); industry is small scale (basically three firms); goats identified as more suitable
Sorghum	Yes	●	●		
Soybeans	Yes	●	●		
Sweetcorn	Yes	◑	●		
Tomatoes	Yes	●	●		
Watermelons	No	○	◑		Known and understood in region; historical experience was mixed

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

TABLE OF CONTENTS

DEVELOPING A COMPELLING STORY

ASSESSING THE OPPORTUNITIES

The following crops, animal & aquaculture systems emerged from Stage I and were evaluated in Stage II

PLANT SYSTEMS / CROPS				
ARTICHOKE, GLOBE	ARTICHOKE, JERUSALEM	AVOCADO	BANANAS	BEETROOT
BLUEBERRIES	CAPSICUMS	CARROTS	CUCUMBER	HEMP, INDUSTRIAL
HOPS	OLIVES	PEANUTS	PINEAPPLES	POTATOES
RICE	SORGHUM	SOYBEANS	SWEETCORN	TOMATO

LAND-BASED ANIMAL SYSTEMS				
CHICKEN, MEAT	CHICKEN, EGGS	DUCKS	GOAT, DAIRY	PIGS

AQUACULTURE SYSTEMS	
MUSSELS	OYSTERS

ARTICHOKE, GLOBE

PRODUCT PROFILE	
Common names	Artichoke, globe artichoke, French artichoke, green artichoke
Scientific name	Cynara cardunculus var. scolymus
Type of plant	Vegetable; herbaceous perennial; edible flower head
Cultivation cycle	Perennial (though can be grown as annual) Hand harvested year round into baskets/bags Highest production is September to November Cut to ground after harvest to encourage regrowth Typically produces the edible flower in second year+ Cultivated from vegetative cuttings or seeds Can be planted out from greenhouses to time market
Suited climate	Warmer coastal climate regions, but cool season crop Requires good soil, regular watering and feeding Moderately salt tolerant; wide range of soils Require phosphorus, potassium and nitrogen Susceptible to frosts which damage appearance
Where does it grow similar to Kaipara?	Italy, Argentina, Spain, California (Monterey County) Dry summers, mild, moist winters; 10-30 degrees C
Part eaten	Flower head (thistle-like head)
Origin	North Africa/Mediterranean area
Established in NZ	Introduced by early settlers

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: CC BY-SA 3.0 (Jamian); Shutterstock

ARTICHOKE, GLOBE

ELEVATOR PITCH: WHY KAIPARA?

Globe artichoke are an exotic vegetable that has growing awareness of its health giving properties. Globe artichoke are well suited to the climate in some parts of Kaipara. Kaipara can become the kumara and artichoke capital of New Zealand.

DRIVERS OF GROWTH

- Research showing health giving properties of compound cynarin, which can improve liver and gall bladder function, increase secretion of digestive juices and lower blood cholesterol
- Growing interest in Mediterranean foods and diet
- Growth of Spanish and Italian cuisines and foodservice in NZ
- Low but growing consumption due to increasing awareness
- Wide range of suitable cooking methods (bake, boil, grill, microwave, roast, steam, stuff)

VALUE-ADDED OPPORTUNITIES

- Preserved in oil in jars or canned
- Herbal tea
- Liqueur
- Natural green dye can be obtained from leaves

MARKET SITUATION

- Very low domestic consumption of globe artichokes in a fresh form; most fresh consumption is likely home grown
- Primary competition is from imported preserved artichokes in oil or brine in a can/jar; imported prepacked or in bulk for local repack (e.g. Delmaine)
- Product is stocked across most NZ supermarkets on shelf and in the service deli counter; most stores have 1-2 sku
- Key suppliers are Italy, Spain and other Mediterranean countries

CURRENT NEW ZEALAND PRODUCTION SITUATION

- Very limited information is available
- Primarily home garden/hobbyist production
- Small amounts produced in New Zealand for domestic market

KEY RISKS & SENSITIVITIES

- Relatively labour intensive, particularly at harvest and post harvest
- Susceptible to powdery mildew, verticillium wilt and other diseases

WHAT YOU WOULD NEED TO BELIEVE

- Kaipara can compete with other regions of New Zealand
- Domestic demand for artichokes can be stimulated leading to increased consumption of globe artichokes

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
-	40-60t (est) $0.m	-	$0.1-0.3m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	○
Mechanically harvested	○
Value-added opportunities	◑
MARKETS	
Wide spread of markets/buyers	○
Wide spread of prices	◑
Origin important or called out at POS	◑
COMPETITORS	
Biosecurity or other domestic barriers	●
Can we get to the world price?	○
Attractive competitive set	◑
KAIPARA, NEW ZEALAND	
High performance genetics available	○
Required skills for success	●
Leverage regional & country reputation	◑
OVERALL	○

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

ARTICHOKE, JERUSALEM

PRODUCT PROFILE	
Common names	Jerusalem artichoke, sunroot, sunchoke, girasole, Canada potato, topinambour, and lambchoke
Scientific name	Helianthus tuberosus (numerous improved varieties exist in N. America)
Type of plant	Tuber; root vegetable; herbaceous perennial plant
Cultivation cycle	Propagated from tubers; 10-12t/ha Grow tall (3m+); compete strongly with weeds Typically harvest in 15-20 weeks Can be left in ground for extended harvest Requires specialised/modified harvester
Suited climate	Temperate zone; at least 125 frost-free days Prefers 20-30 degrees C; not very hot climates Dislike heavy clay and acid soils Dislikes being waterlogged; under 150cm rain
Where does it grow similar to Kaipara?	Across most of North America
Part eaten	Tuber
Origin	North America
Established in NZ	Unclear; likely early settlers?

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: CC BY-SA 3.0 (Gilabrand); Shutterstock

ARTICHOKE, JERUSALEM

ELEVATOR PITCH: WHY KAIPARA?

Kaipara has proven capabilities in root crops with kumara and can extend this leadership into "Sunchokes" ("Kiwichokes"?)

DRIVERS OF GROWTH

- Novel root vegetable
- Reputation for health giving properties; folk remedy for diabetes
- Rich in the carbohydrate inulin (8 to 13%), which is a polymer of the monosaccharide fructose

VALUE-ADDED OPPORTUNITIES

- Wide range of uses, including baked, fried and sliced fresh in salads
- Processed as chips and other snacks or as frozen "fries"
- Processed and used as a dietary fibre in food manufacturing
- Made into an alcoholic spirit in Germany ("Topinambur" or "Topi")
- Whole plant or unused parts can be used as animal feed or forage
- Can be used to produce fructose

MARKET SITUATION

- Very low consumer awareness among domestic consumers; consumer confusion between globe artichokes and Jerusalem artichokes
- Currently very low domestic consumption gourmet vegetable in a fresh form
- As a root crop, it competes with better known substitutes such as potatoes, kumara, onions and carrots
- Some apparent imports (though this is unclear due to the trade code being a "catch all" code containing a number of related products

CURRENT NEW ZEALAND PRODUCTION SITUATION

- Very limited production, primarily home gardeners and hobbyists

KEY RISKS & SENSITIVITIES

- Market demand; no tradition of consumption; no use in any major cuisine or popular dish
- Better "offer" from other competing root crops (value, price, taste)
- Need to "educate the consumer"

WHAT YOU WOULD NEED TO BELIEVE

- New Zealand consumer can be introduced to and convinced to consume Jerusalem artichokes
- Jerusalem artichokes can be produced in commercial quantities at prices competitive with competing root vegetables in Kaipara

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
~420t ~$1.0m	Unknown	1t $0.01m	$1-2m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	◑
Mechanically harvested	●
Value-added opportunities	●
MARKETS	
Wide spread of markets/buyers	○
Wide spread of prices	○
Origin important or called out at POS	◑
COMPETITORS	
Biosecurity or other domestic barriers	◑
Can we get to the world price?	○
Attractive competitive set	●
KAIPARA, NEW ZEALAND	
High performance genetics available	○
Required skills for success	●
Leverage regional & country reputation	◑
OVERALL	◑

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

AVOCADO

PRODUCT PROFILE	
Common names	Avocado, avo, avocado pear, alligator pear, palta
Scientific name	Persea americana
Type of plant	Fruit tree
Cultivation cycle	Desired varieties are grafted to specialty rootstocks Take 3+ years to produce commercial quantities Two flowering types (A and B cultivars) needed for successful commercial pollination Requires regular fertiliser application
Suited climate	Subtropical; needs frost free location Shelter belts required; needs very limited wind Need free draining, alluvial soil; "dislike wet feet" Can't handle heavy clay soils Susceptible to phytophthora cinnamomi (root rot)
Where does it grow similar to Kaipara?	Northland, Auckland, Bay of Plenty, New South Wales Queensland, California
Part eaten	Fruit
Origin	Central America
Established in NZ	1900's

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: Shutterstock; Dollar Photo

AVOCADO

ELEVATOR PITCH: WHY KAIPARA?

The warm, subtropical environment and excellent soils of certain subregions in Kaipara means it is ideally situated to produce avocados targeting export markets.

DRIVERS OF GROWTH

- Perceived as a healthy food
- Can act as a natural spread replacing butter
- Wide range of uses, including fresh, on toast, in dips and sliced in salads
- Trend or fad among Millennials for "avocados on toast"
- Growing popularity of Mexican and other Latin American cuisines
- Widespread use in foodservice

VALUE-ADDED OPPORTUNITIES

- Guacamole and other processed dips
- Avocado oil
- Avocado oil based spreads
- Smoothie ingredient
- Ice cream

MARKET SITUATION

- Domestic consumption is growing
- Local market competes with exports for supply and primarily takes second grade "export reject"

CURRENT NEW ZEALAND PRODUCTION SITUATION

- In 1972 there was one commercial orchard in New Zealand; today there are almost 900 growers across the North Island
- Production is concentrated in the Bay of Plenty and Northland

KEY RISKS & SENSITIVITIES

- Industry is reliant on two key markets: New Zealand (1/3 of crop) and Australia (2/3 of crop); very small quantities sent elsewhere
- New Zealand is currently the only other country allowed into the Australian market, which pays the highest prices in the world
- New Zealand and Australian prices are +50% above the world price due to both countries having biosecurity restrictions
- Chile has signed a Free Trade Agreement with Australia and is going through the process of getting their avocados into Australia; this will likely drive down prices and disrupt markets

WHAT YOU WOULD NEED TO BELIEVE

- Avocados are suited to Kaipara climatic conditions in some places
- Parts of Kaipara can produce commercial yields of avocados at competitive prices

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
-	887 growers 3,839ha 22,608t $142m	$104.7m	$5-10m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	●
Mechanically harvested	○
Value-added opportunities	◑
MARKETS	
Wide spread of markets/buyers	◑
Wide spread of prices	◑
Origin important or called out at POS	◑
COMPETITORS	
Biosecurity or other domestic barriers	●
Can we get to the world price?	◑
Attractive competitive set	◑
KAIPARA, NEW ZEALAND	
High performance genetics available	●
Required skills for success	●
Leverage regional & country reputation	◑
OVERALL	●

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

BANANAS

PRODUCT PROFILE	
Common names	Banana (dessert banana), plantain (cooking banana)
Scientific name	Musa acuminata, Musa balbisiana, hybrids of these
Type of plant	Officially a herb; herbaceous flowering plant
Cultivation cycle	Propagated asexually from offshoots Fruit after 18-22 months; frost can kill above ground Growth stops at under 15 degrees Celsius Grow year round other than winter (June/July) Dislike wide; require humid, sheltered locations Often produced commercially in very large plantations to achieve scale in required facilities and equipment; typically co-located with packhouse
Suited climate	Commercial production is primarily in tropical countries Subtropical varieties with better cold tolerance exist Prefer deep, well drained, acidic soils Good drainage is key for successful production
Where does it grow similar to Kaipara?	Mexico, Queensland, New South Wales, Northland
Part eaten	Fruit (primarily) Also flower, leaves, trunk
Origin	New Guinea; have been spread worldwide from here
Established in NZ	1890's

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: CC BY-SA 2.5 (Steve Hopson); CC BY-SA 2.5 (José Reynaldo da Fonseca)

BANANAS

ELEVATOR PITCH: WHY KAIPARA?

The warm, subtropical environment and excellent soils of certain subregions in Kaipara means it is ideally situated to produce bananas pitched at mid-to-upper income New Zealand consumers plus hospitality providers looking for a locally produced alternative to imported fruit.

DRIVERS OF GROWTH

- "Naturally wrapped/packaged" lunchbox fruit for kids
- Palatable flavour that is popular worldwide
- Strong association with various health benefits
- Regular marketing by key imported brands (e.g. Dole)

VALUE-ADDED OPPORTUNITIES

- Banana chips
- Banana puree
- Banana flour
- Banana cake and other banana based desserts
- As a flavouring in juices and drinks
- As an ingredient in various processed foods
- Stems, leaves used as animal feed
- Stems and flowers used in cooking
- Stems used as plates, homeware

MARKET SITUATION

- The average New Zealand family consumes 18kg of bananas per year; effectively all of these come from imports currently
- Key suppliers are Ecuador, other South American countries and the Philippines

CURRENT NEW ZEALAND PRODUCTION SITUATION

- Relatively common in gardens in Northern parts of North Island
- Small quantities being produced in Northland and sold into farmers markets and foodservice
- Current research into new varieties

KEY RISKS & SENSITIVITIES

- Lack of proven, scalable production systems working in New Zealand

WHAT YOU WOULD NEED TO BELIEVE

- A significant percent of New Zealanders will pay a premium for locally produced bananas
- Banana production in New Zealand can be commercial despite the relatively high labour requirements across the production system
- Available subtropical varieties in New Zealand can be scaled up to produce commercial yields at an acceptable price

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
$100m	Hobby	-	$3-5m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	◑
Mechanically harvested	○
Value-added opportunities	○
MARKETS	
Wide spread of markets/buyers	●
Wide spread of prices	○
Origin important or called out at POS	●
COMPETITORS	
Biosecurity or other domestic barriers	◑
Can we get to the world price?	○
Attractive competitive set	○
KAIPARA, NEW ZEALAND	
High performance genetics available	○
Required skills for success	◑
Leverage regional & country reputation	●
OVERALL	○

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

BEETROOT

PRODUCT PROFILE	
Common names	Beetroot, table beet, red beet, dinner beet
Scientific name	Beta Vulgaris ("Conditiva" group; excluding sugar beet)
Type of plant	Vegetable; root crop; edible tap root and leaves
Cultivation cycle	Annual; harvest in 10 weeks; mechanically harvested Can be grown year round in Northland Typically grown in rotation to reduce diseases, pests and weeds
Suited climate	Grows in a very wide range of climates Needs regular water to avoid going woody Needs boron supplementation Beetroot likes a soil pH of 6.5 to 7.5
Where does it grow similar to Kaipara?	Auckland, Waikato, Northland
Part eaten	Tap root; leaves
Origin	Middle East; Mediterranean
Established in NZ	Introduced by early settlers

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: CC (Evan Amos); Shutterstock

BEETROOT

ELEVATOR PITCH: WHY KAIPARA?

Kaipara has proven capabilities in root crops with kumara and can extend this leadership into beetroot.

DRIVERS OF GROWTH

- Seen as a healthy root crop; "packed with nutrients"
- Leaves are high in beta carotene (an anti-oxidant); source of fibre
- Growing research on health attributes (e.g. blood pressure)
- Growth of healthy smoothies; beetroot gives red colour and unique flavour
- Consumers seeking healthy foods and snacks
- Growing interest in plant based diets
- Iconic New Zealand addition to hamburgers

VALUE-ADDED OPPORTUNITIES

- Canned
- Pre-cooked and ready to eat
- Beet juice; beet shots
- Beetroot chips and other snacks; beetroot fries
- Ingredient in pre-prepared salads
- Natural food colouring
- Medicinal properties (shown to reduce high blood pressure)

MARKET SITUATION

- Beetroot are sold fresh on the domestic market to consumers and foodservice customers for use in salads and a wide range of other meals
- Beetroot are sold into food processors for use in healthy "potato chip" type products, "french fry" type products and as an ingredient in a wide range of other food products

CURRENT NEW ZEALAND PRODUCTION SITUATION

- New Zealand has an existing beetroot industry focused on domestic production
- Domestic production is growing strongly; production volumes appear to have doubled from 2014 (16,00t) to 2018 (28,000t)

KEY RISKS & SENSITIVITIES

- Other regions of New Zealand already producing at scale

WHAT YOU WOULD NEED TO BELIEVE

- Kaipara can displace existing New Zealand production regions
- The market can absorb more beetroot without crashing the price
- Parts of the Kaipara region have the climatic conditions required to produce high quality beetroot at competitive prices

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
1,033t $0.8m	30-40 growers 28,000t 380ha $8m	678t $0.2m	$2-3m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	◑
Mechanically harvested	●
Value-added opportunities	●
MARKETS	
Wide spread of markets/buyers	●
Wide spread of prices	○
Origin important or called out at POS	○
COMPETITORS	
Biosecurity or other domestic barriers	●
Can we get to the world price?	○
Attractive competitive set	◑
KAIPARA, NEW ZEALAND	
High performance genetics available	●
Required skills for success	●
Leverage regional & country reputation	○
OVERALL	◑

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

BLUEBERRIES

PRODUCT PROFILE	
Common names	Blueberry
Scientific name	Vaccinium corymbosum (Highbush); Vaccinium ashei (Rabbiteyes); Vaccinium angustifolium (Lowbush)
Type of plant	Flowering/fruiting bush
Cultivation cycle	Perennial; mature in 10 years Fruiting: High Bush (Nov-Feb); Rabbiteyes (Jan-Apr) Most NZ bred varieties are Rabbiteyes (low chill) Benefit from cross pollination from multiple varieties Ripen on bush over an extended period
Suited climate	Temperate to subtropical by variety Need free draining, high acidity soils; heavy mulch Dislike unmodified, heavy clay soils Organic content of at least 3%; pH of 4.0 to 5.5 Drought sensitive; typically requires irrigation
Where does it grow similar to Kaipara?	Northland, South Carolina, North Carolina, Georgia, other parts of US, South America
Part eaten	Berry
Origin	North America
Established in NZ	Early 20th Century

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: CC BY-SA 4.0 (Petar Milošević); Shutterstock

BLUEBERRIES

ELEVATOR PITCH: WHY KAIPARA?

Kaipara is well positioned to produce new varieties of blueberries suited to regional conditions. Kaipara has a good location, near Auckland and the Auckland airport, with relatively low cost land. Kaipara also has the skills and systems required for success.

DRIVERS OF GROWTH

- Blueberries positioning as a "superfruit"; they are high in antioxidants and anti-inflammatory properties; also "anti-aging" properties
- Blueberries contain anthocyanins, other polyphenols and various phytochemicals that have health giving properties

VALUE-ADDED OPPORTUNITIES

- Juice
- Jams, jellies, syrups and concentrates
- Ingredient in processed foods (e.g. breakfast cereals)
- Ingredient in baked goods (e.g. muffins)
- Fruit "wine"

MARKET SITUATION

- Fresh local production market is 2/3 export and 1/3 domestic; domestic receives export reject
- New Zealand and Australia are the key markets for fresh New Zealand fruit; both markets are biosecure
- Australia is currently effectively the main primary export market (95%); handful of Asian markets take the remaining 5%
- Exports were showing strong growth, though growth has stabilised in the past three years
- Fresh imports basically prohibited by biosecurity (and cost)
- Frozen imports are common and are used for situations calling for low cost ingredients (e.g. smoothies; store brands)

CURRENT NEW ZEALAND PRODUCTION SITUATION

- Plant & Food Research has conducted extensive research on blueberries and developed a number of new cultivars suited to local conditions
- Blueberries are produced across New Zealand
- The New Zealand blueberry industry had been achieving strong growth through a combination of domestic demand and export success into AU
- However, production growth has slowed and the market is showing signs of saturation

KEY RISKS & SENSITIVITIES

- Market saturation; developing profitable markets beyond the NZ/AU biosecurity bubble
- Growing global production in low cost countries such as Peru and China
- Low production scale relative to major global agribusiness operators

WHAT YOU WOULD NEED TO BELIEVE

- Kaipara can build a strong position in the New Zealand blueberry industry relatively "late in the game"
- Kaipara can achieve growth even though the market is showing signs of saturation/maturation

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
0.2t $0.002m	50 growers 740ha 2,825t $56m	$35m	$3-5m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	◑
Mechanically harvested	◑
Value-added opportunities	◑
MARKETS	
Wide spread of markets/buyers	◑
Wide spread of prices	◑
Origin important or called out at POS	◑
COMPETITORS	
Biosecurity or other domestic barriers	●
Can we get to the world price?	◑
Attractive competitive set	○
KAIPARA, NEW ZEALAND	
High performance genetics available	●
Required skills for success	●
Leverage regional & country reputation	◑
OVERALL	◑

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

CAPSICUM

PRODUCT PROFILE	
Common names	Capsicum, sweet pepper, bell pepper, pepper
Scientific name	Capsicum annuum (subgroup)
Type of plant	Technically a fruit/berry; treated as vegetable
Cultivation cycle	Annual; can be grown in field or greenhouse Grown from seed; 40-45k plants per ha (greenhouse) Plants bear fruit for ten months before being replaced Plants will produce 40+ fruit per plant per year Production is possible year round in greenhouses
Suited climate	Grown worldwide in greenhouses; outdoor in warmer climates Requires warm, moist soil or hydroponics Ideal temperature range of 21 to 29 °C Sensitive to low temperatures
Where does it grow similar to Kaipara?	California, Texas, Mexico, Auckland, Northland, NSW, Victoria, Spain
Part eaten	Fruit
Origin	Mexico/Central America
Established in NZ	1920's following development of mild bell pepper cultivar in Hungary in early 20th Century

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: CC BY-SA 3.0 (Kham Tran); Pexels (Quang Nguyen Vinh)

CAPSICUM

ELEVATOR PITCH: WHY KAIPARA?

Kaipara is ideally placed to produce capsicum targeting both growing domestic consumption and key export markets Australia and Japan. Kaipara is well positioned with a location close to the population of Auckland and the Auckland port and airport (for exports). Kaipara also has a relatively mild climate year round.

DRIVERS OF GROWTH

- Widespread use across many cuisines
- Growing Asian population in New Zealand
- Perceived as a healthy, fresh vegetable with multiple uses
- Used in salads, in stir-frys, baked, in curries, as a pizza topping, etc.

VALUE-ADDED OPPORTUNITIES

- As an ingredient in dips
- Pre-cut frozen pieces (on their own or as part of a mix)
- Other non-sweet (i.e. spicy) varieties have a much wider range of uses

MARKET SITUATION

- Relatively high domestic consumption per capita at ~3.5 kg/person apparent / across all forms
- Sold across all supermarkets and greengrocers; significant use in foodservice channels, particularly ethnic restaurants
- Imports from Australia (133t), the Netherlands (235t) and Fiji (10t) predominantly through winter months (May-Aug)
- Exports peak Oct-Jan and go primarily to Australia (692t), Japan (3,160t) and various Pacific Islands

CURRENT NEW ZEALAND PRODUCTION SITUATION

- Historically primarily low tech field production
- Industry shifting to more advanced greenhouse production for higher yields, better quality and year round production
- A small number of large growers now dominate domestic production (e.g. Southern Paprika)

KEY RISKS & SENSITIVITIES

- Greenhouses are expensive to build and expensive to operate
- As a result, only the operators with the best management survive (need to achieve high yields and excellent cost management)

WHAT YOU WOULD NEED TO BELIEVE

- Kaipara growers can access the capital required to construct modern greenhouses
- Kaipara growers have the skills and capabilities required to compete with existing greenhouse operators

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
395t $3.1m	22 growers 85ha 21,000t $46m	4,105t $21m	$5-10m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	●
Mechanically harvested	○
Value-added opportunities	◑
MARKETS	
Wide spread of markets/buyers	●
Wide spread of prices	○
Origin important or called out at POS	○
COMPETITORS	
Biosecurity or other domestic barriers	◑
Can we get to the world price?	◑
Attractive competitive set	○
KAIPARA, NEW ZEALAND	
High performance genetics available	●
Required skills for success	◑
Leverage regional & country reputation	◑
OVERALL	◑

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

CARROTS

PRODUCT PROFILE	
Common names	Carrot
Scientific name	Daucus carota subsp. sativus
Type of plant	Root vegetable; enlarged taproot
Cultivation cycle	Annual; mechanically harvested Grown from seed; 70-80 days; full sun Typically grown in rotation to reduce diseases, pests and weeds
Suited climate	Typically a cool weather vegetable Deep, loose, moist, but well draining soils Avoid lumpy, stony soils as these distort the root shape Full sun; 16-21 degrees C; pH 6.3 to 6.8
Where does it grow similar to Kaipara?	All across Southern Europe; Victoria; Auckland; elsewhere in New Zealand
Part eaten	Root; greens are edible, but rarely eaten by humans
Origin	Persia or Central Asia
Established in NZ	Introduced by early visitors to Maori

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: Public Domain (ARS/USDA); CC BY-SA 4.0 ()

CARROTS

ELEVATOR PITCH: WHY KAIPARA?

Kaipara could develop a position as a winter source for carrots leveraging the existing capabilities in kumara to enter the market.

DRIVERS OF GROWTH

- Wide range of eating uses, including raw, boiled, steamed, baked & fried
- Widespread use in soups, baby foods, ready meals and numerous other dishes across multiple cuisine styles globally
- Associated with various health properties (e.g. beta carotene, eyesight)
- Healthy snack, particularly for children
- Growing consumer demand for healthy juices and smoothies

VALUE-ADDED OPPORTUNITIES

- Carrot juice, either stand alone or in a mixture
- Carrot cake
- Baby foods
- Frozen, cut pieces and in mixed vegetable assortments
- Carrot based "potato chips" and other snacks

MARKET SITUATION

- Common, everyday vegetable available year round in New Zealand
- Prices vary through the year based on season and supply conditions
- Purchased by household consumers and foodservice operators

CURRENT NEW ZEALAND PRODUCTION SITUATION

- Carrots are a major vegetable already produced across multiple regions of New Zealand
- Existing regions are already at scale and have large packhouses, well developed supply chains and existing customer relationships
- There is no clear gap in the market "calling out" for Kaipara supply

KEY RISKS & SENSITIVITIES

- Strong existing competition with skills and depreciated assets
- Unclear ability to achieve required high yields in Kaipara conditions

WHAT YOU WOULD NEED TO BELIEVE

- Parts of Kaipara would have the right soil and climatic conditions for winter production of carrots (due to lower temperatures)
- Kaipara can produce carrots of a quality as good as or better than existing key production regions

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
44t $0.3m	45 growers 2,600ha 164,000t $30m	Fresh 9,584t/$8m Frozen 1,267t/$1.9m	$3-5m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	◑
Mechanically harvested	●
Value-added opportunities	◑
MARKETS	
Wide spread of markets/buyers	●
Wide spread of prices	◑
Origin important or called out at POS	◑
COMPETITORS	
Biosecurity or other domestic barriers	◑
Can we get to the world price?	●
Attractive competitive set	◑
KAIPARA, NEW ZEALAND	
High performance genetics available	●
Required skills for success	●
Leverage regional & country reputation	○
OVERALL	◑

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

CUCUMBERS

PRODUCT PROFILE	
Common names	Cucumber
Scientific name	Cucumis sativus (numerous varieties; typically split into slicing, pickling and burpless)
Type of plant	Creeping vine in gourd family that bears "fruit" that are treated as vegetables
Cultivation cycle	Annual Grown in greenhouses and outside in fields, depending on variety and intended usage
Suited climate	Grown worldwide in greenhouses; outdoor in warmer climates Requires warm, moist soil or hydroponics
Where does it grow similar to Kaipara?	Auckland, Northland
Part eaten	
Origin	India/South Asia; now grown worldwide
Established in NZ	Wide range of varieties brought by early settlers

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: CC BY-SA 3.0 (Nick Youngson); CC BY-SA 3.0 (Higreen vegetables)

CUCUMBERS

ELEVATOR PITCH: WHY KAIPARA?

Kaipara is ideally placed to produce cucumbers targeting growing domestic consumption. Kaipara is well positioned with a location close to the population of Auckland. Kaipara also has a relatively mild climate year round.

DRIVERS OF GROWTH

- Shift to healthier lifestyles
- Desire for quick, convenient meals
- Increased salad consumption; cucumber as an easy salad ingredient
- New varieties with better eating characteristics (thinner, more edible skin, edible seeds, improved flavour, convenient shape for slicing)

VALUE-ADDED OPPORTUNITIES

- Gourmet pickles
- Pre-packed salads

MARKET SITUATION

- Relatively small domestic market for fresh cucumbers and low consumption (0.4 kg/capita)
- Imports primarily June – August; Australia the only current supplier
- Exports are relatively minor (1-2% of crop) and go to Hong Kong (24t), Australia (1t) and Pacific Islands (5t)
- Almost all processed products (e.g. pickles) are imported

CURRENT NEW ZEALAND PRODUCTION SITUATION

- Historically primarily low tech field production
- Industry shifting to more advanced greenhouse production for higher yields, better quality and year round production
- Small number of large growers and a large number of small growers
- Produced in greenhouses year round; field production in summer

KEY RISKS & SENSITIVITIES

- Greenhouses are expensive to build and expensive to operate
- As a result, only the operators with the best management survive (need to achieve high yields and excellent cost management)
- China produces 77% of global supply

WHAT YOU WOULD NEED TO BELIEVE

- Kaipara growers can access the capital required to construct modern greenhouses
- Kaipara growers have the skills and capabilities required to compete with existing greenhouse operators

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
104t $0.4m	51 growers 71ha 2,000t $20m	31t $0.3m	$2-3m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	●
Mechanically harvested	◑
Value-added opportunities	○
MARKETS	
Wide spread of markets/buyers	●
Wide spread of prices	◑
Origin important or called out at POS	○
COMPETITORS	
Biosecurity or other domestic barriers	●
Can we get to the world price?	○
Attractive competitive set	◑
KAIPARA, NEW ZEALAND	
High performance genetics available	●
Required skills for success	◑
Leverage regional & country reputation	○
OVERALL	◑

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

HEMP (INDUSTRIAL)

PRODUCT PROFILE	
Common names	Hemp, industrial hemp
Scientific name	Cannabis sativa (industrial, low THC varieties; wide range of varieties exist)
Type of plant	Annual herbaceous flowering plant
Cultivation cycle	Grown outdoors in fields (industrial/non-THC) Planted September to November Matures in 3-4 months Seeds can be planted with grain drills into fields While relatively robust and hardy, commercial production requires fertilisation, weed, disease and pest mgmt. (it is not some eco-friendly miracle plant) Can be grown before winter cereals or monoculture Needs strong weed control for first two weeks
Suited climate	Temperate to Mediterranean with good rainfall Avoid waterlogged acidic or extremely light soils Prefers deep, humus-rich, high nutrient soils
Where does it grow similar to Kaipara?	Northland (THC-version), Australia, Greece, India, Turkey Italy, Spain, France
Part used	Seeds, leaves, stalks, whole of plant
Origin	China (?); Eastern Asia
Established in NZ	Likely introduced by sailors and whalers

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: CC BY-SA 3.0 (Aleks); Flickr(Marcia O'Connor)

HEMP (INDUSTRIAL)

ELEVATOR PITCH: WHY KAIPARA?

The Northland region has a long history of producing hemp without the benefit of the law. With the ongoing law changes occurring, there is now an opportunity for Kaipara to develop a position as a leading supplier of industrial hemp by leveraging proven regional skills and capabilities.

DRIVERS OF GROWTH

- Trendy "bad boy" reputation among some consumers
- Eco-Chic image of hemp based products
- Hemp seeds contain 31% protein
- Huge range of uses
- High awareness, high publicity sector that is "in the news"

VALUE-ADDED OPPORTUNITIES

- Hemp oil
- Hemp "milk"
- Hemp protein
- "Superfood" in protein bars, hemp pasta, and hulled seed products.
- Ingredient in various foods (e.g. seeds in breakfast cereals)
- Clothing
- Cosmetics
- Fibre; paper; rope/cordage
- Building materials
- Biofuels

MARKET SITUATION

- Global industrial hemp market is expected to reach US$10.6bn by 2025, with a compound annual growth rate (CAGR) of 15%
- Domestic, New Zealand market is evolving and changing rapidly driven by the ongoing, unresolved culture war between "the hippies" and "the conservative mainstream"
- What is and is not legal changes regularly; the domestic market is currently completely dependent on politics and politicians; rules change constantly and regularly; the rules are likely to change again shortly
- Relatively small and modest amounts of processed hemp products currently imported into New Zealand (e.g. clothes)
- Growing use in food products (again thanks to law changes) such as protein balls, crackers, protein powders, oils, etc. (e.g. 22 SKU at Countdown)

CURRENT NEW ZEALAND PRODUCTION SITUATION

- History of trials, experiments and changing rules and regulations
- Government rules around the commercial cultivation of hemp have changed regularly; we expect this will continue
- Most recent change treated hemp seeds as "just another edible seed"
- Farmers must apply to the Ministry of Health for a permit to cultivate, deal, breed, import or sell viable seed, and must pay a fee
- Commercial production currently centered in Canterbury, Waikato and Hawkes Bay; 18/19 commercial crop reportedly 1,000 hectares
- Two major players: Ashburton-based Midlands Seed (which produces various seed products) and North Island-based HempFarm NZ (Landcorp/Pamu grows for them) with 500ha
- Industry expects 2,000ha in 19/20 and 10,000ha in 5 years
- "Hemp crops could return $4000 a hectare, with a 120-day plant cycle and relatively low input costs"

KEY RISKS & SENSITIVITIES

- China is the largest producer of industrial hemp (~70%), followed by France and Canada
- Market is highly regulated and subject to the whims of politicians and the rules can change quickly driven by "media situations"
- Industrial hemp cross pollinates with THC-containing varieties, reducing the productivity of those (which may possibly irritate some locals)

WHAT YOU WOULD NEED TO BELIEVE

- Parts of Kaipara would have the right soil and climatic conditions for production of industrial hemp
- Northland can compete with Canterbury, Canada and France in production costs and efficiency

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
Processed forms (e.g. clothes)	1,000ha	N/A	$5-10m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	◑
Mechanically harvested	●
Value-added opportunities	●
MARKETS	
Wide spread of markets/buyers	◑
Wide spread of prices	◑
Origin important or called out at POS	◑
COMPETITORS	
Biosecurity or other domestic barriers	○
Can we get to the world price?	◑
Attractive competitive set	◑
KAIPARA, NEW ZEALAND	
High performance genetics available	◑
Required skills for success	●
Leverage regional & country reputation	◑
OVERALL	◑

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

HOPS

PRODUCT PROFILE	
Common names	Hops, common hop
Scientific name	Humulus lupulus (wide range of varieties used for different styles of beer)
Type of plant	Dioecious, perennial, herbaceous climbing plant which sends up new shoots in early spring and dies back to a cold-hardy rhizome in autumn
Cultivation cycle	Planted in rows 2-2.5 metres apart Trained up permanent wire trellises in "hop yard" Sends up new bines in spring; harvested late summer Can be mechanically harvested
Suited climate	Moist temperate climates with cold winters Prefers deep, humus-rich, high nutrient soils
Where does it grow similar to Kaipara?	Nelson, Spain, Argentina (global production is primarily Washington State, Oregon and Germany)
Part eaten	Flowers (hop cones) used in brewing beer Minor other uses (herbal teas, herbal medicines) Young shoots are edible when cooked
Origin	Northern Europe
Established in NZ	Introduced by early English and German settlers to the Nelson region

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: CC BY-SA 3.0 (LuckyStarr); Pixabay

HOPS

ELEVATOR PITCH: WHY KAIPARA?

There is growing demand from craft and microbreweries for new, distinct varieties of hops that impart unique flavours. Based on Plant & Food climate research, Kaipara can become a new hop producing region for New Zealand.

DRIVERS OF GROWTH

- Growing beer consumption, particularly in China
- Growing interest in microbrewed beers leading to a demand for more, different varieties and sources of hops than was the case historically
- Contains a wide range of substances including myrcene, humulene, xanthohumol, myrcenol, linalool, tannins, and resin
- Hops are of interest for hormone replacement therapy and are under basic research for potential relief of menstruation-related problems

VALUE-ADDED OPPORTUNITIES

- Beer
- Non-alcoholic hop based beverages
- Herbal teas
- Herbal medicines

MARKET SITUATION

- New Zealand domestic beer consumption is declining, both overall and per capita; market is shifting to "less but better" beer
- Strong shift underway from a small number of large, traditional, inoffensive, big brand beers to a large number of small, distinct craft and microbrewed beers with a much wider range of flavour profiles
- This shift is leading to growing demand for New Zealand hops
- Imports primarily from USA (151t), Germany (17t) Australia (17t), and Czech (3.5t)
- Exports growing off a low base ($6m in 1999 to $15m in 2018)
- NZ is the ~8th largest hop producing country globally (~1% of global production)

CURRENT NEW ZEALAND PRODUCTION SITUATION

- Industry traditionally located in Nelson
- Significant long term research on improved varieties suited to New Zealand conditions funded by Plant & Food (and predecessors)
- Industry was under competitive pressure historically; growth of craft microbrewed beers has revitalised sector
- New growers entering the industry (+10 new growers in last decade)
- Production area is growing (+150ha in last decade)
- Quantity produced is not growing as strongly (similar quantities (720-760t) but of higher quality targeting higher prices)

KEY RISKS & SENSITIVITIES

- Demand for beer flat-to-down in developed world on a volume basis
- Current microbrew "craze" may prove a fad or fashion may shift
- Dermatitis in 3% of farm workers; toxic to dogs

WHAT YOU WOULD NEED TO BELIEVE

- Hops - traditionally a cool, temperate climate crop grown predominantly in cooler locations like Washington State, Oregon, Idaho, Germany, Czech and Albania – can be produced successfully in Kaipara which has a warm, subtropical climate

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
~200t $7m	25 growers 525ha 722t $22m	$14.9m	$1-2m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	◑
Mechanically harvested	○
Value-added opportunities	◑
MARKETS	
Wide spread of markets/buyers	●
Wide spread of prices	●
Origin important or called out at POS	●
COMPETITORS	
Biosecurity or other domestic barriers	○
Can we get to the world price?	●
Attractive competitive set	●
KAIPARA, NEW ZEALAND	
High performance genetics available	●
Required skills for success	●
Leverage regional & country reputation	●
OVERALL	●

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

OLIVES

PRODUCT PROFILE	
Common names	Olive
Scientific name	Olea europaea (multiple subspecies; hundreds of cultivars)
Type of plant	Small fruiting tree
Cultivation cycle	Planted into groves for ease of management Propagated from cuttings or layers; some grafted Trees have a very long lifespan (e.g. 1,000+ years) Many cultivars are self-sterile; newer varieties are not Harvested in autumn and early winter Can be mechanically harvested; range of systems
Suited climate	Will grow in almost any well drained soils Prefer coastal climatic conditions Tolerate drought; highly disease and fire resistant
Where does it grow similar to Kaipara?	Northland, Auckland, NSW, Victoria, Spain, France, Greece, South Africa, Chile, Argentina
Part eaten/used	Fruit, oil (range of uses), leaves used in natural medicines
Origin	Mediterranean
Established in NZ	Introduced by early settlers

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: CC0 (Peakpx); CC BY-SA 4.0 (Frobles)

OLIVES

ELEVATOR PITCH: WHY KAIPARA?

Kaipara has a climate similar to the Mediterranean, the home of the olive. Kaipara can deliver premium table olives and olive oils to consumers in the Upper North Island looking for premium products produced locally.

DRIVERS OF GROWTH

- Popularity of Mediterranean diets and cuisine styles
- Growing awareness of health benefits of olives and olive oils
- Table olives use as an easy appetiser, hor d'oeuvre or snack
- Rich flavour of premium extra virgin olive oils

VALUE-ADDED OPPORTUNITIES

- Table olives (green, semi-ripe, black/ripe)
- Extra virgin olive oil (flavoured)
- Olive spread

MARKET SITUATION

- Domestic consumption of olive oil is about 1.2-1.3 l/capita across all channels and forms
- Domestic olive oil consumption is primarily supplied by imports (~95%) and imports growing at about 3% per year
- Table olives are a secondary category (~0.3kg/capita) also primarily supplied by imports (~95%) and imports growing at about 3% per year
- New Zealand supermarket chains primarily stock imported products of major global brands (e.g. Lupi, Borges) from Europe and Australia
- Domestically produced table olives and olive oil are predominantly sold through specialty stores and farmers markets
- A significant percent of domestic production is not harvested and processed due to low returns (relative to costs)

CURRENT NEW ZEALAND PRODUCTION SITUATION

- Olives are produced across New Zealand, primarily by small scale hobbyists and lifestyle farmers
- Following a period of growing growers numbers, planted area and production, the industry has matured and is consolidating into fewer, larger, more professional growers
- New Zealand olive area and olive production are both trending down
- The number of olive growers has fallen by -25% in the last decade

KEY RISKS & SENSITIVITIES

- Table olives and olive oil are global commodities with a known world price which will dictate the (quality adjusted) local price
- Olive tree pollen is extremely allergenic
- European industry has received significant support and subsidies
- Many large global farms produce more than New Zealand
- Imported olives often adulterated

WHAT YOU WOULD NEED TO BELIEVE

- A significant percent of New Zealand consumers are willing to pay a premium for locally produced table olives and olive oil
- Kaipara has comparative advantage in producing olives relative to other regions of New Zealand
- The New Zealand domestic market can absorb more high priced domestic table olives and olive oils
- Increased domestic production of New Zealand table olives and olive oil could be absorbed by the market without impacting prices

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
Table 1,576t/$8.6m Oil 6,000t/$42m	300 growers 2,172ha 3,000t (raw) $3.2m	Olive Oil $0.5m	$1-2m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	◑
Mechanically harvested	●
Value-added opportunities	●
MARKETS	
Wide spread of markets/buyers	●
Wide spread of prices	●
Origin important or called out at POS	●
COMPETITORS	
Biosecurity or other domestic barriers	○
Can we get to the world price?	○
Attractive competitive set	○
KAIPARA, NEW ZEALAND	
High performance genetics available	●
Required skills for success	●
Leverage regional & country reputation	●
OVERALL	◑

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

PEANUTS

PRODUCT PROFILE	
Common names	Peanut, groundnut, goober, monkey nut
Scientific name	Arachis hypogaea
Type of plant	Nitrogen-fixing legume Numerous cultivars exist with different characteristics
Cultivation cycle	Annual; sown in late spring; mechanically harvested Typically grown in rotation to reduce diseases, pests and weeds; needs good weed control
Suited climate	Tropics and subtropics; limited frost tolerance Harvest usually 90 to 130 days after planting Needs 500mm+ of water for good yields Grow best in light, sandy soils with a pH of 5.9-7, but will grow in heavier soils Need potassium, calcium and phosphate
Where does it grow similar to Kaipara?	Alabama, Georgia. Florida, Virginia, North Carolina, South Carolina, Argentina, New South Wales, Queensland
Part eaten	Edible seeds grown underground Use as a snack, in processed foods and as an oilcrop
Origin	South America
Established in NZ	Arrived with early settlers Unclear what cultivars are currently in the country

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: CC BY-SA 4.0 (Abhay Iari); CC BY-SA 4.0 (Texnix)

PEANUTS

ELEVATOR PITCH: WHY KAIPARA?

Kaipara is the ideal place to produce peanuts in New Zealand. Kaipara has a climate similar to key peanut producing regions (e.g. South Carolina). Kaipara kumara growers have the skills and capabilities required to produce peanuts. In addition, peanuts fix nitrogen in the soil as a rotation crop.

DRIVERS OF GROWTH

- Trend towards plant-based foods
- New diet trends (e.g. Paleo, Keto) moving away from carbohydrates
- Consumers desire for high protein foods; peanuts are high in protein
- Move towards healthy snacking
- Move to natural snacking products
- High energy density

VALUE-ADDED OPPORTUNITIES

- Peanut butter
- Packaged snack / part of a snack mix
- Ingredient in breakfast cereals
- Nut based "milks"
- Peanut-based confectionery (e.g. Whittakers Peanut Slab)
- Peanut oils (different variety; need to be low cost producer)
- By-products of processing can be fed to animals

MARKET SITUATION

- Domestic commercial usage is exclusively imports
- Multiple domestic users of raw/roasted peanuts, including peanut butter, confectionery and snacks
- Small amounts re-exported, primarily to islands and in value-added forms (e.g. peanut butter)

CURRENT NEW ZEALAND PRODUCTION SITUATION

- Hobby scale amounts currently produced domestically
- Multiple commercial trials since 1960's; trialed in Dargaville in 1970's
- Kaipara and Northland achieved high yields in these trials
- No current commercial production identified

KEY RISKS & SENSITIVITIES

- Availability of world-class cultivars
- World prices for peanuts, which are sensitive to weather events in key producing regions
- China is the largest global producer, with about 1/3 of global volume; however, this is mostly for domestic consumption

WHAT YOU WOULD NEED TO BELIEVE

- Kaipara can produce high quality peanuts that can replace imports from Australia at a competitive price
- Sufficient land can be located to achieve minimum scale required
- Kaipara growers can fund the commercial scale peanut harvesting equipment required to achieve scale
- Growing peanuts will return more than other land uses in the Kaipara
- Kaipara growers can quickly develop the skills required to produce world-class peanuts at competitive prices
- World-class cultivars can be sourced and brought into New Zealand through biosecurity

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
NZ$11m 4,058t $2,823/t	Hobby	Re-exports to islands	$5-10m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	◑
Mechanically harvested	●
Value-added opportunities	●
MARKETS	
Wide spread of markets/buyers	◑
Wide spread of prices	◑
Origin important or called out at POS	◑
COMPETITORS	
Biosecurity or other domestic barriers	○
Can we get to the world price?	◑
Attractive competitive set	●
KAIPARA, NEW ZEALAND	
High performance genetics available	◑
Required skills for success	●
Leverage regional & country reputation	●
OVERALL	●

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

PINEAPPLES

PRODUCT PROFILE	
Common names	Pineapple
Scientific name	Ananas comosus (range of commercial cultivars)
Type of plant	Herbaceous perennial
Cultivation cycle	Slips and suckers are planted commercially Planted in rows for easy weed control and harvesting Grow 1.5m high and 1m+ wide Take up to two years to be ready for harvesting Pollinated by birds/bats Two crops per plant (primary & ratoon crop) Mulched to the ground after cropping Use specialised harvesters that support field pickers
Suited climate	Most commercial production occurs in tropics Well suited to humid coastal lowlands; full sun Sub-tropical varieties exist and grow in Northland
Where does it grow similar to Kaipara?	Northland, China, Queensland, Paraguay, Argentina, South Africa, Mexico
Part eaten	Fruit
Origin	Southern Brazil and Paraguay
Established in NZ	Unclear; subtemperate varieties in 20th Century

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: Pixabay; CC BY-NC-ND 2.0 (Make fruit fair!)

PINEAPPLES

ELEVATOR PITCH: WHY KAIPARA?

New Zealand imports over 10,000 tonnes of pineapples annually. It is likely that 5-10% of New Zealand consumers would be interested in premium, locally produced pineapples. With its wet, warm climate, Kaipara is ideally positioned to supply the premium end of the New Zealand pineapple market with locally produced fruit.

DRIVERS OF GROWTH

- Use in fruit salads
- Use in a range of Asian dishes
- Use as a topping on pizza
- Shift from canned to fresh consumption
- Pineapples contain bromelain a compound that induces a feeling of well being and which is used in folk medicine, cosmetics and as meat tenderiser

VALUE-ADDED OPPORTUNITIES

- Pineapple juice
- Pineapple confectionery (e.g. candied)
- Dried pineapple
- Used as a topping on hamburgers, in fruit salads and on pizzas
- Fresh, chopped, pre-prepared

MARKET SITUATION

- Market is almost exclusively imports
- Fresh pineapple imports predominantly come from the Philippines (6,180t) and Ecuador (2,831); small amounts from Pacific Islands and Australia historically
- Average import price is NZ$1,440 per tonne dockside (or $1.44/kg)
- Large but declining amounts of canned pineapple also imported (5,500t worth $9m at $1,690/t)
- New Zealand could possibly supply the high price, biosecure Australian market with domestically produced fruit

CURRENT NEW ZEALAND PRODUCTION SITUATION

- Subtropical varieties of pineapple are grown in gardens in Northern New Zealand
- Hobby/trial scale amounts produced in Northland currently and sold primarily in farmers markets

KEY RISKS & SENSITIVITIES

- Pineapples are global commodities with a known world price which will dictate the (quality adjusted) local price (plus any "Buy Local" premium)
- Subtropical varieties have not had as much intensive breeding as tropical varieties which will impact yield
- Rats and ants can attack ripe crops
- Green pineapples are immature and toxic
- Existing laws around trading pineapple

WHAT YOU WOULD NEED TO BELIEVE

- A significant percent of New Zealand consumers are willing to pay a premium for locally produced pineapples
- Commercial production of pineapples in Kaipara can be successful at (1) the world price, (2) plus freight, and (3) plus some "buy NZ" or "buy local" premium

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
10,204t $15m ~$1,440/t	1-2t (?)	Re-exports to islands 10t	$1-2m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	○
Mechanically harvested	◑
Value-added opportunities	○
MARKETS	
Wide spread of markets/buyers	◑
Wide spread of prices	○
Origin important or called out at POS	◑
COMPETITORS	
Biosecurity or other domestic barriers	○
Can we get to the world price?	○
Attractive competitive set	○
KAIPARA, NEW ZEALAND	
High performance genetics available	○
Required skills for success	◑
Leverage regional & country reputation	◑
OVERALL	○

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

POTATOES

PRODUCT PROFILE	
Common names	Potato
Scientific name	Solanum tuberosum (5,000+ varieties worldwide); five major types: russet, red, gold, fingerling, and specialty
Type of plant	Root vegetable; starchy tuber; herbaceous perennial
Cultivation cycle	Propagated from seed potato/cuttings Mechanically sown and harvested Require fertilisation, weed, disease and pest mgmt. Require irrigation if local climate is dry
Suited climate	Will grow almost anywhere; staple food globally Prefer light, well-drained, sandy-loam soils. Slightly acidic soils with pH between 5-6 (by variety) Moist but not wet soils; 7-20°C soil temp. at planting Large scale processing grade production targeting export primarily in cooler climate regions (Idaho, Washington State, Canterbury, Canada, Belgium)
Where does it grow similar to Kaipara?	Northland, Auckland, Waikato, New South Wales, Victoria, Spain, Portugal, France, Italy, numerous others regions
Part eaten	Tuber root
Origin	Peru/Bolivia
Established in NZ	Introduced by sailors and whalers to Maori

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: CC BY-NC-ND 2.0 (Global Crop Diversity Trust); CC BY 2.0 (Grimme Group)

POTATOES

ELEVATOR PITCH: WHY KAIPARA?

Kaipara is a leader in kumara. Kaipara can build on this position by adding a narrow range of premium, gourmet potatoes targeting the fresh domestic market. This will be achieved by targeting a "unique" potato not currently produced in New Zealand from the over 5,000 existing varieties.

DRIVERS OF GROWTH

- Domestic consumption is flat-to-down; market is shifting to "less but better" with more consumption of gourmet, premium potatoes
- Time poor consumers looking for quick meal solutions
- Growth of foodservice channels; more meals away from home
- Increasing incomes and Westernisation of the diet in Asia leading to growth of fast food restaurants in Asia
- Income polarisation; disappearance of the middle class; potatoes as a very low cost food source for money stressed households

VALUE-ADDED OPPORTUNITIES

- Cleaned, washed and bagged or boxed in premium packaging
- Refrigerated hashbrowns or homefries
- Snack potato chips/crisps
- Processed frozen
- Instant mashed
- As part of a premium ready meal offer

MARKET SITUATION

- Four broad uses for New Zealand potatoes: processed frozen 55%, crisps/chips 19%, fresh 24% and seed 2%
- Three key processed frozen buyers: McCain, Balle Bros/Mr Chips and Talleys; suppliers are typically long term and on some form of contract
- Two key crisps/potato chips buyers: Pepsico/FritoLay and Griffins and a range of smaller, growing manufacturers
- Fresh/ware market is more diverse, with a wider range of buyers and sellers and more variations of potato provided

CURRENT NEW ZEALAND PRODUCTION SITUATION

- Large industry producing 527,190t across 171 growers (or 3,064t/grower) with 10,344ha achieving 51t/hectare
- New Zealand gets very high yields relative to other regions globally (beaten only by Washington State and Idaho)
- Growers are large by local standards, but still small by US standards
- Grown across the country; historically grown for local town supply
- Canterbury now ~45% followed by Auckland and Manawatu
- Regions specialise somewhat based on harvest time (itself based on local climate); Pukekohe planting in April/May for August new potatoes
- Commercial production for processed produces (e.g. french fries) is located near major processing plants

KEY RISKS & SENSITIVITIES

- Diseases, blights, etc.
- Local market prices are at least partially driven by global supply and demand via exports

WHAT YOU WOULD NEED TO BELIEVE

- Kaipara can create or develop a unique or defensible position in potatoes that allows it to thrive and survive
- Parts of Kaipara would have the right soil and climatic conditions for production of premium potatoes
- Kaipara can produce potatoes of a quality as good as or better than existing key production regions
- New Zealand needs more potatoes

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
Immaterial	171 growers 10,344ha 527,190ha $280m	Fresh $26.4m Processed $115m	$3-5m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	◑
Mechanically harvested	●
Value-added opportunities	●
MARKETS	
Wide spread of markets/buyers	◑
Wide spread of prices	◑
Origin important or called out at POS	◑
COMPETITORS	
Biosecurity or other domestic barriers	●
Can we get to the world price?	●
Attractive competitive set	○
KAIPARA, NEW ZEALAND	
High performance genetics available	●
Required skills for success	●
Leverage regional & country reputation	◑
OVERALL	◑

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

RICE

PRODUCT PROFILE	
Common names	Rice
Scientific name	Oryza sativa (multiple varieties/sub-varieties exist)
Type of plant	Seed of a grass species
Cultivation cycle	Normally grown as an annual in laser levelled fields Sown by aircraft in Australia in September Rice crops are grown in 5-25cm of water depending on growing conditions; fields dried out by harvest Mechanically harvested in Autumn Australian farmers average 10.8t/ha Livestock can graze on rice stubble after harvest
Suited climate	Typically grown in river deltas (e.g. Sacramento Valley, CA or Murrumbidgee, NSW) Temperature above 20°C but not more than 35-40° Strong winds can cause damage to plants
Where does it grow similar to Kaipara?	South Carolina, California, Victoria, Pakistan, India
Part eaten	Seed
Origin	China
Established in NZ	Introduced by early settlers, but no commercial production developed

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: Pixabay; public domain (USDA NRCS)

RICE

ELEVATOR PITCH: WHY KAIPARA?

Rice is one of New Zealand's largest food imports driven by growing demand and a changing ethnic mix. Kaipara has the climatic conditions required to produce rice targeted at a premium segment of the New Zealand market.

DRIVERS OF GROWTH

- Growing Asian population in New Zealand
- Growing number of Asian restaurants
- Rice as an alternative grain for people with a wheat intolerance
- Increased consumer interest in buying local foods

VALUE-ADDED OPPORTUNITIES

- Rice based alcoholic spirits (e.g. sake)
- Rice cakes
- Rice bran (health food); rice bran oil
- Rice flour
- Rice pudding and other rice based desserts
- Rice straw as a building material
- Wide range of ready meals and other processed foods
- Animal feed, either whole or husks

MARKET SITUATION

- New Zealand rice consumption is large (~10.5kg/capita+) and growing
- Market is exclusively imports
- Average import price is NZ$1,500 landed dockside
- New Zealand imported 49,183 tonnes of milled rice in 2018 and 3,480t of other types of rice
- Key suppliers are Australia (18,673t), Thailand (12,834t), India (7,642t), the United States (4,043t), Pakistan (3,081t) and Cambodia (2,172t)

CURRENT NEW ZEALAND PRODUCTION SITUATION

- Historical trials (1958+); small amounts produced by hobbyists; no commercial production at any scale identified
- Yoshimasa Sakurai, who owns a sustainable lifestyle block at Kaiwaka, is a former professor of agricultural engineering at the University of Kansai, Japan, and has began grown rice at his Gibbons Rd property since the 1990s (as of 2013)

KEY RISKS & SENSITIVITIES

- Rice is a global commodities with a known world price which will dictate the (quality adjusted) local price
- Need to be extremely efficient to compete with existing suppliers
- "Chicken-and-the-egg" problem of achieving scale to build a rice mill
- Wetland rice production produces methane
- Rats, pukekeos and other birds will eat the crop

WHAT YOU WOULD NEED TO BELIEVE

- Rice highly suited to Kaipara conditions (likely Japanese or Australian varieties) can be identified and introduced to the region (potentially through MPI requirements)
- Mechanised rice production systems used in the U.S. can be adapted to Kaipara conditions
- Kaipara growers can match or beat Australian yields
- A gross return of $16,200+/hectare ($1,500t x 10.8t/ha) would return enough to growers to convert land use
- A significant percent of New Zealand households and restaurants will be willing to pay a premium for locally produced rice
- Kaipara can achieve a minimum scale in rice production such that it can support and industry and an economic rice mill

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
49,183t $74m $1,510/t	-	Re-exports to Pacific Islands ~50t	$5-20m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	◑
Mechanically harvested	●
Value-added opportunities	●
MARKETS	
Wide spread of markets/buyers	●
Wide spread of prices	○
Origin important or called out at POS	●
COMPETITORS	
Biosecurity or other domestic barriers	○
Can we get to the world price?	◑
Attractive competitive set	○
KAIPARA, NEW ZEALAND	
High performance genetics available	◑
Required skills for success	●
Leverage regional & country reputation	●
OVERALL	◑

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

SORGHUM

PRODUCT PROFILE	
Common names	Sorghum, great millet, durra, jowari, or milo
Scientific name	Sorghum bicolor
Type of plant	Grain/seed of a cereal crop species
Cultivation cycle	Annual Sown November-December; harvested in March Can be grown irrigated or dryland (no till) Can be grown immediately after a winter pulse crop Low labour usage; mechanically sown and harvested Yields 3-4t/hectare
Suited climate	"One of the most drought resistant crops" Can be grown in dry and high rainfall areas Deep, fibrous and prolific root system Suits hot dry climates, likely more prevalent in New Zealand going forward as a result of global warming Suits heavy clay soils that hold water
Where does it grow similar to Kaipara?	Northern New South Wales, Queensland, South Korea, Central America, across Africa
Part eaten	Seed; used to feed humans (primarily in Africa, India and Central America) and animals (elsewhere)
Origin	Ethiopia/East Africa
Established in NZ	Early 20th Century (?)

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: CC BY 2.0 (K-State Research & Extension); CC BY-SA 3.0 (Thesagemarmot)

SORGHUM

ELEVATOR PITCH: WHY KAIPARA?

New Zealand has a large and growing demand for feed grains for chicken, eggs and other high productivity animal production systems. New Zealand imports sorghum, primarily for animal feed. At the same time, the climate of Kaipara is changing due to global warming. Sorghum is a grain crop that originated in Africa that will produce well in hot, dry climates.

DRIVERS OF GROWTH

- Growing need for animal feeds to support dairy, chicken, eggs and other high productivity, intensive systems, leading to increased demand for feed grains, including sorghum
- Climate change in New Zealand
- New varieties and cultivars with much improved characteristics making them more suitable for local conditions and local market requirements
- New varieties and cultivars with low-tannin levels making it more suited to animal feed usages (e.g. for poultry)
- Growing consumer interest in non-traditional "ancient grains"

VALUE-ADDED OPPORTUNITIES

- Flour
- Cakes, crackers and other baked products
- Grain based snacks
- Alcoholic beverages (spirits and "beer")
- Biofuels/ethanol
- Forage
- Syrup
- Livestock feed; can be used as a forage crop, or part of ration

MARKET SITUATION

- No identified commercial production (however 230-290t of seed sorghum is imported annually) implying significant domestic production exists (but where no production data has been identified; may be trade code error)
- Imports vary considerably year-on-year based on world price; sorghum is used as animal feed, particularly for poultry, when "the price is right"
- Imports are 10,000-170,000t when world prices are low; however, much lower imports in 2014, 2015 and 2018 when prices were higher
- Can be fed to cattle, chickens and pigs

CURRENT NEW ZEALAND PRODUCTION SITUATION

- Historical crop trials at locations across the country since at least 1911
- Requires warm temperatures to produce commercial yields (past trials have shown maize outperforming sorghum in yield across cooler regions of the country)
- Imports of seed sorghum imply New Zealand production

KEY RISKS & SENSITIVITIES

- Easily substituted with other feed grains in animal feeds; therefore local demand is highly sensitive to the current world price
- Digestibility to stock falls rapidly as the plants mature
- Disease and fungus problems (e.g. ergot)

WHAT YOU WOULD NEED TO BELIEVE

- Parts of Kaipara would have the right soil and climatic conditions for production of sorghum
- Parts of Kaipara can produce commercial yields of sorghum at competitive prices (import price plus any "buy local" or "Buy NZ" premium)
- Returns from sorghum would exceed those from other land uses

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
Low year 250-350t High year 75-175k t 300-700t	Unclear	-	$5-20m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	◑
Mechanically harvested	●
Value-added opportunities	●
MARKETS	
Wide spread of markets/buyers	●
Wide spread of prices	○
Origin important or called out at POS	◑
COMPETITORS	
Biosecurity or other domestic barriers	○
Can we get to the world price?	◑
Attractive competitive set	◑
KAIPARA, NEW ZEALAND	
High performance genetics available	◑
Required skills for success	◑
Leverage regional & country reputation	◑
OVERALL	◑

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

SOYBEANS

PRODUCT PROFILE	
Common names	Soybean, soya bean
Scientific name	Glycine max (two broad varieties: vegetable types and oil varieties)
Type of plant	Legume; edible bean
Cultivation cycle	Annual; used as rotation crop with other arable crops to control pests and fix nitrogen Requires Rhizobium inoculation Low labour; can be mechanically sown and harvested Sown in spring, 2-3 weeks after last frost Harvest is 45-65 days from sowing
Suited climate	"The most important pulse crop globally" Loose, well-drained soil rich in organic matter High "thermal time" requirements; full sun Needs heavy rainfall during summer months (30cm+)
Where does it grow similar to Kaipara?	Argentina, Uruguay, South Africa, France, Japan, Turkey, Victoria, NSW, Missouri, Arkansas, other US
Part eaten	Bean, sprouts
Origin	East Asia
Established in NZ	Pre 1900

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: CC BY-NC 4.0 (Pngimg); CC BY-SA 3.0 (Alfonso)

SOYBEANS

ELEVATOR PITCH: WHY KAIPARA?

Soybeans fix nitrogen in the soil and provide a large yield of a versatile crop with numerous uses. Kaipara has the climatic conditions and water required to produce soybeans in commercial quantities.

DRIVERS OF GROWTH

- High in protein (38-45% protein)
- Growing demand for healthy cooking oils (soybeans are 18-19% oil)
- Growth of vegan and vegetarian diets (particularly in Western countries)
- Growing demand for non-dairy products
- Growing demand for vegetarian meat substitutes such as tofu
- Growing income in Asia
- Growing global acceptance of Asian cuisines
- Growing Asian population in New Zealand
- Common use as an animal feeds; growing demand for intensively raised animal proteins (e.g. eggs, poultry, barn dairy)

VALUE-ADDED OPPORTUNITIES

- Cooking oil (85% of global crop is processed into oil and soybean meal)
- Soy “milk”; soy based beverages
- soy based “dairy” products (e.g. soy yoghurt, soy ice cream, soy cheese)
- Soy sauce, miso, soybean paste, natto and other Asian soy products
- Tofu, other soy based foods; textured vegetable protein
- Soy flour
- Soy-based infant formula
- Soy nut butter
- Used in a wide range of processed foods
- Wide range of industrial uses, including including oils, soap, cosmetics, resins, plastics, inks, crayons, solvents, and clothing
- Biodiesel

MARKET SITUATION

- New Zealand imports small amounts of soybeans for human consumption and large amounts of soy meal (a byproduct of soy oil extraction) for animal feed
- New Zealand also imports soy oil and a range of soy based products

CURRENT NEW ZEALAND PRODUCTION SITUATION

- High “thermal time requirements” mean they are a marginal crop across most of New Zealand; Northland is the key potential region (with global warming making it more attractive)
- Investigated as a commercial crop in Northland for almost 100 years
- Numerous investigations and trials across New Zealand over the last century; New Zealand yields 2.5-6.0t/ha
- Small scale production has taken place is Gisborne and Nelson
- Significant problems with weed control in past trials
- Motueka-based Soy Works growing 20ha of soybeans made into tofu is reportedly the only commercial producer in New Zealand

KEY RISKS & SENSITIVITIES

- Bulk of US harvest is solvent-extracted with hexane, and the "toasted" defatted soymeal (50% protein) is fed to animals; this is capital intensive and requires significant scale
- “Chicken-and-the-egg” problem of achieving scale to build a crushing and refining plant
- Must be cooked with "wet" heat to destroy the trypsin inhibitors

WHAT YOU WOULD NEED TO BELIEVE

- Soybeans are suited to Kaipara climatic conditions in some places
- Parts of Kaipara can produce commercial yields of soybeans at competitive prices (plus any “buy local” or “Buy NZ” premium)
- Weeds can be controlled successfully
- Returns from soybeans would exceed those from other land uses

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
Soybeans 2t/$3m Soy meal 302,160t $154m	30-50t	-	$5-20m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	◑
Mechanically harvested	●
Value-added opportunities	●
MARKETS	
Wide spread of markets/buyers	●
Wide spread of prices	○
Origin important or called out at POS	◑
COMPETITORS	
Biosecurity or other domestic barriers	◑
Can we get to the world price?	○
Attractive competitive set	◑
KAIPARA, NEW ZEALAND	
High performance genetics available	●
Required skills for success	●
Leverage regional & country reputation	◑
OVERALL	◑

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

SWEETCORN

PRODUCT PROFILE	
Common names	Sweet corn, sweetcorn, sugar corn, pole corn Sweet corn gets its name from special genes that prevent conversion of sugar to starch during growth
Scientific name	Zea mays convar. saccharata var. rugosa (other varieties exist; sweet, pop, flour, silage, or feed)
Type of plant	Arable crop
Cultivation cycle	Planted after threat of frosts has ended Mechanically sown and harvested Early, mid and late season possible; variety & mgmt. Weed control needed until plants are 60cm+ Required fertiliser and pest control applications
Suited climate	Needs warm weather; planted in spring Needs sufficient thermal time to ripen fully Shallow roots make it susceptible to winds and drought Well-drained soils that have good water-holding Soil should have a pH of 5.8-6.6 Intolerant of nutrient-deficient soils
Where does it grow similar to Kaipara?	Florida, California, Georgia, NSW, Missouri, Northland, Waikato
Part eaten	Seeds
Origin	Mexico/Central America
Established in NZ	Early settlers

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: public domain; CC BY-SA 2.0 (Espresso Addict)

SWEETCORN

ELEVATOR PITCH: WHY KAIPARA?

Kaipara can develop a niche position as a trusted supplier of early season fresh sweetcorn targeting the Auckland market.

DRIVERS OF GROWTH

- Emergence of newer, "supersweet" varieties improving taste
- Move to more uses of sweetcorn beyond traditional boiling (e.g. BBQ)
- Usage of sweetcorn across multiple cuisine styles (e.g. Japanese)

VALUE-ADDED OPPORTUNITIES

- Vacuum packed
- Canned
- Frozen corn or in a mixed vegetable assortment
- Ready meals with sweetcorn as an ingredient
- Other varieties of (non-sweet) corn have a huge range of uses
- Corn based alcoholic spirits

MARKET SITUATION

- Seasonal crop available in large quantities across New Zealand during the summer months; prices are lowest when volume is highest
- When it is in season, fresh market sweet corn is typically sold from open bulk containers or in multiples of five or ten
- Sold through supermarkets, greengrocers and occasionally roadside stalls
- Small amounts are exported in a vacuum packed form
- Crop also flows into major firms (e.g. Talleys, Heinz Watties) for processing into frozen or canned products
- Small amounts of fresh imports arrive; only from Australia
- Exports are typically 4,000-8,000t to the Pacific Islands and Australia

CURRENT NEW ZEALAND PRODUCTION SITUATION

- Large number of existing growers (179 in 2018) with an average of 22ha each producing 552t per year
- Main growing areas are Gisborne, Hawke's Bay, Marlborough and Canterbury; pockets of production in the Coromandel, Waikato and Northland supplying the early season fresh market.

KEY RISKS & SENSITIVITIES

- Very vulnerable to water stress during tasselling, silking and grain filling
- Needs to be sold quickly or processed soon after harvest (~3 days)
- Susceptible to diseases and pests

WHAT YOU WOULD NEED TO BELIEVE

- New Zealand needs more sweetcorn; sweetcorn consumption can grow
- Kaipara can create or develop a unique or defensible position in sweetcorn that allows it to thrive and survive (e.g. early or late crop)
- Parts of Kaipara would have the right soil and climatic conditions for production of sweetcorn
- Parts of Kaipara can produce commercial yields of sweetcorn at competitive prices
- Returns from sweetcorn would exceed those from other potential land use options in the Kaipara

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
Australia 144t/$0.6m	179 growers 3,871ha 98,800t $70m Dom. Proc $14m Dom fresh $9m	Fresh $0.1m Frozen $42m	$3-7m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	◑
Mechanically harvested	●
Value-added opportunities	◑
MARKETS	
Wide spread of markets/buyers	◑
Wide spread of prices	○
Origin important or called out at POS	○
COMPETITORS	
Biosecurity or other domestic barriers	●
Can we get to the world price?	○
Attractive competitive set	◑
KAIPARA, NEW ZEALAND	
High performance genetics available	●
Required skills for success	◑
Leverage regional & country reputation	○
OVERALL	◑

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

TOMATO

PRODUCT PROFILE	
Common names	Tomato
Scientific name	Solanum lycopersicum (7,500+ varieties)
Type of plant	Vine; technically a fruit; treated as vegetable
Cultivation cycle	Grown as an annual; 10 month crop cycle Can be grown year round in greenhouse conditions Greenhouse production is relatively labour intensive Grown in soil less media (e.g. sawdust) Significant technology used to maximise yields
Suited climate	Can be grown as a field crop or in greenhouses Temperate and tropical climates for field production Greenhouse production occurs almost anywhere Greenhouse production generally occurs near major populations centres for labour and market reasons
Where does it grow similar to Kaipara?	Auckland, Northland, Waikato, New South Wales, Victoria, South Carolina, North Carolina, Italy, Spain, Virginia
Part eaten	Fruit (technically a berry)
Origin	Central America
Established in NZ	Early settlers

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: CC BY-SA 2.0 (The Ewan); CC BY-SA 3.0 (Goldlocki)

TOMATO

ELEVATOR PITCH: WHY KAIPARA?

Kaipara is ideally placed to produce tomatoes targeting domestic consumption and exports. Kaipara is well positioned with a location close to the population of Auckland and the Auckland airport. Kaipara also has a relatively mild climate year round.

DRIVERS OF GROWTH

- Shift to healthier lifestyles by premium customers
- Desire for quick, convenient meals
- Increased salad consumption; tomato as an easy salad ingredient
- New varieties with better eating characteristics (improved flavour, smaller, more convenient size/shape)
- Widespread use across many cuisine styles and dishes
- Growing Asian population in New Zealand
- Perceived as a healthy, fresh vegetable with multiple uses
- Used in salads, in stir-frys, baked, in curries, as a pizza topping, etc.
- NZ drinking culture creating a need for a Bloody Mary the next day

VALUE-ADDED OPPORTUNITIES

- Sauce
- Soups and Juice
- Canned
- Frozen
- Puree

MARKET SITUATION

- Domestic fresh consumption is solid (7kg/capita) and showing low-to-no growth; value is growing as market is shifting to more premium products
- Fresh imports are only from Australia
- Fresh exports go to Japan (1,125t), Australia (597t), Canada (280t), USA (67t) and the Pacific Islands
- What is required to grow exports to Japan?
- Processed, cooked products sources globally (e.g. Italy) and have a "world price"; not an attractive market

CURRENT NEW ZEALAND PRODUCTION SITUATION

- Historically primarily low tech field production
- Industry shifting to more advanced greenhouse production for higher yields, better quality and year round production
- Arrival of new Dutch varieties has improved range and taste
- Greenhouse dominates fresh; outdoor focused on processing
- A small number of large growers now dominate domestic field/processing production (e.g. for Heinz Watties)

KEY RISKS & SENSITIVITIES

- Greenhouses are expensive to build and expensive to operate (~$2m per hectare excluding land cost)
- As a result, only the operators with the best management survive (need to achieve high yields and excellent cost management)

WHAT YOU WOULD NEED TO BELIEVE

- Kaipara growers can access the capital required to construct modern greenhouses
- Kaipara growers have the skills and capabilities required to compete with existing greenhouse operators
- Export volumes could be grown to Japan and Australia to absorb new, incremental volumes

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
529t $1.6m	Growers Out 6; GH 123 95,400t Out $9m GH $200m	2,877t $9.3m	$5-10m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	●
Mechanically harvested	◑
Value-added opportunities	●
MARKETS	
Wide spread of markets/buyers	●
Wide spread of prices	●
Origin important or called out at POS	○
COMPETITORS	
Biosecurity or other domestic barriers	●
Can we get to the world price?	○
Attractive competitive set	◑
KAIPARA, NEW ZEALAND	
High performance genetics available	●
Required skills for success	◑
Leverage regional & country reputation	○
OVERALL	◑

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

CHICKEN, MEAT

PRODUCT PROFILE	
Common names	Chicken
Scientific name	Gallus gallus domesticus *(commercial production uses either Aviagen/Ross or Cobb-Vantress genetics)*
Type of animal	Bird
Cultivation cycle	Modern breeds reach 2kg mark in just five weeks Typically grown out from chicks delivered to farm Produced under contract to Tegel, Inghams or Brink's
Suited climate	Originally a jungle bird Can live outdoors in temperate climates Raised worldwide in climate controlled barns
Where does it grow similar to Kaipara?	Kaipara, Auckland, Waikato, NSW, Victoria, Georgia (1.34b/yr), Alabama (1.08b/yr), North Carolina (823m/yr), Mississippi (723m/yr)
Part eaten	Meat, eggs, wide range of offal and parts (e.g. feet) used in some cuisines (particularly in Asia)
Origin	South/South-East Asia
Established in NZ	Early settlers; modern genetics from global breeding pools continuously introduced via quarantine

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: CC BY 2.0 (USDA); Pixabay (Sti300p)

ATTRACTIVENESS INDEX
● High ◑ Medium ○ Low

CHICKEN, MEAT

ELEVATOR PITCH: WHY KAIPARA?

Despite past protests, Kaipara is well positioned to become one of New Zealand's leading chicken producing regions due to its moderate climate, its location close to Auckland processing plants and its ready access to ports (for grain imports)

DRIVERS OF GROWTH

- Widespread perception that poultry meat is both "lower in fat" and "more healthy" relative to red meat
- Ongoing demonisation of red meat as the "cause of all problems"
- Bland, inoffensive taste
- Approved by all major religions (unlike pork or beef)
- Low cost of production leading to low cost of meat to consumer
- Chicken meat has been New Zealanders number one source of meat protein since 2001 (approximately 20 chickens per person per year)

VALUE-ADDED OPPORTUNITIES

- Pre-cooked
- Processed meat products (e.g. "chicken bacon")
- Ready meals
- Soups (refrigerated, canned, pouch, pottle)

MARKET SITUATION

- Domestic consumption is growing consistently
- Domestic market is ~40% foodservice and ~60% retail
- Foodservice, including fast food, is a major channel
- Exports growing well off a low base
- Key export markets are biosecure Australia (where New Zealand is the only supplier), a range of Pacific Islands the United Arab Emirates and Hong Kong
- Export growth has been primarily driven by changing ownership at Tegel (two rounds of private equity then Philippines owners)

CURRENT NEW ZEALAND PRODUCTION SITUATION

- Average bird weight is 1.9kg (small relative to many peers)
- Four large processors (Tegel, Inghams, Brink's & Turk's)
- Contract farms are typically located close to processing plants
- All NZ meat poultry is raised in barns or free-range
- While commercial chicken farms exist across almost all regions, they are highly concentrated in Auckland, Waikato and Canterbury near major firms processing sites
- NZ is free of the three major poultry diseases – Avian Influenza, Infectious Bursal Disease, Newcastle Disease
- Neither eggs nor chicken meat can be imported into NZ
- NZ chicken feed is 38% corn, 36% wheat and 26% soy and feed mills are controlled by major processors

KEY RISKS & SENSITIVITIES

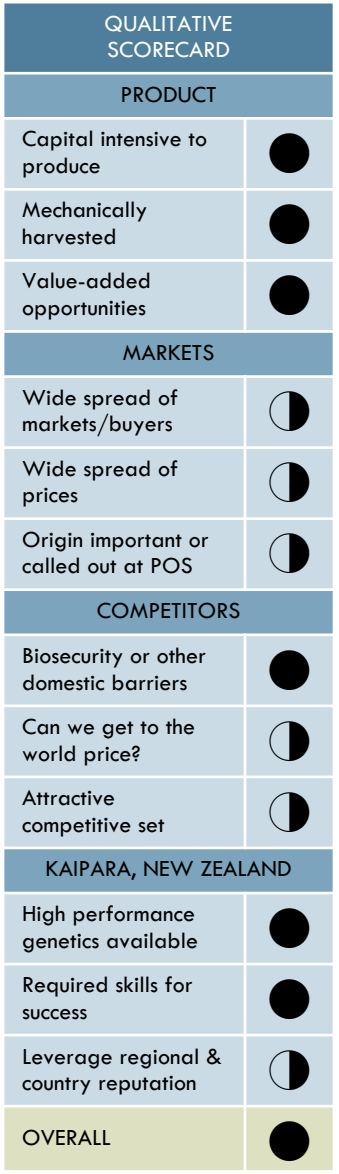
- Changing rules on bird housing requirements increasing cost
- Potential for disease to arrive (cf. honey, oysters, kiwifruit, etc.)
- Competition from Silicon Valley-type plant-based pseudo meat like substances made in factories

WHAT YOU WOULD NEED TO BELIEVE

- Kaipara can compete with other parts of New Zealand in terms of the total cost of egg production across the value chain
- Distribution and logistics costs into and out of Kaipara for chicks and feed are not excessive relative to other regions and areas
- Increasing meat chicken production will not trigger local protests (cf. "Dargaville locals storm Kaipara Council over new chicken farm" 1/3/2018); alternatively public concerns can be addressed

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
Processed 157t	211,700t	17,867t	$30-50m

QUALITATIVE SCORECARD



CHICKEN, EGGS

PRODUCT PROFILE	
Common names	Eggs, chicken eggs
Scientific name	Gallus gallus domesticus *(commercial production uses Hyline or Shaver hens)*
Type of animal	Bird
Cultivation cycle	Delivery of point-of-lay pullets (18 weeks)
Suited climate	Originally a jungle bird Can live outdoors in temperate climates Raised worldwide in climate controlled barns
Where does it grow similar to Kaipara?	Auckland, Waikato, NSW, across the USA South, France, Italy, Southern China, Japan, worldwide
Part eaten	All except shell
Origin	South/South-East Asia
Established in NZ	Early settlers; modern genetics from global breeding pools continuously introduced via quarantine

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: CC BY 2.0 (Marco Verch); CC BY-SA 2.0 (Bill Boaden)

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

CHICKEN, EGGS

ELEVATOR PITCH: WHY KAIPARA?

Kaipara is well positioned to become one of New Zealand's leading egg producing regions due to its moderate climate, its location close to Auckland and its ready access to ports (for grain imports)

DRIVERS OF GROWTH

- Return to perception that eggs are healthy ("an egg a day is ok")
- Consumer seeking high protein diets
- Market polarisation into premium (free range) and discount with declining or missing middle (happening across numerous categories not just eggs)
- Changing ethnic markup of New Zealand; growth of ethnic groups that are large egg consumers

VALUE-ADDED OPPORTUNITIES

- Liquid (ready to pour)
- Powdered/instant
- Precooked
- Breakfast ready meals
- Used as an ingredient in a wide range of food products

MARKET SITUATION

- New Zealanders eat 226 eggs per person per year
- Market is primarily whole "table eggs" (15% broken/processed)
- Supermarkets account for 50% of sales
- Fresh egg imports are prevented by biosecurity
- Minor exports, primarily to other biosecure Pacific Islands regions
- High-volume consumers are Māori, Pacific and Asian
  - 70% of these ethnic groups purchase two or more dozen eggs a month
  - Of those, 39% purchase more than four dozen a month
  - 54% of these ethnic groups purchase eggs in trays of 30. Purchase of trays is considered an indicator of price sensitivity

CURRENT NEW ZEALAND PRODUCTION SITUATION

- Around 166 commercial egg farms (across all regions)
- About 3.8m hens laying 1.1b eggs annually (2017)
- Average of 23,000 hens per farm and 6.7m eggs/farm/year
- Organic eggs make up around 1%
- Conventional cages, which account for 44.7% of egg production (December 2018) are to be replaced by 2022
- Remaining eggs are being farmed in colony cage systems (24.7%), barns and free-range (30.6%)
- NZ is free of the three major poultry diseases – Avian Influenza, Infectious Bursal Disease, Newcastle Disease
- Neither eggs (other than quarantined genetics) nor chicken meat can be imported into NZ for biosecurity reasons

KEY RISKS & SENSITIVITIES

- Changing rules on bird housing requirements increasing cost
- Potential for disease to arrive (cf. honey, oysters, kiwifruit, etc.)
- Competition from Silicon Valley-type plant-based pseudo egg like substances made in factories

WHAT YOU WOULD NEED TO BELIEVE

- Kaipara can compete with other parts of New Zealand in terms of the total cost of egg production across the value chain
- Distribution and logistics costs into and out of Kaipara for chicks and feed are not excessive relative to other regions and areas
- Increasing egg production will not trigger local protests (cf. "Dargaville locals storm Kaipara Council over new chicken farm" 1/3/2018)

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
Only quarantined breeding stock	$290m	$16.5m	$30-50m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	●
Mechanically harvested	●
Value-added opportunities	◑
MARKETS	
Wide spread of markets/buyers	●
Wide spread of prices	◑
Origin important or called out at POS	○
COMPETITORS	
Biosecurity or other domestic barriers	●
Can we get to the world price?	○
Attractive competitive set	◑
KAIPARA, NEW ZEALAND	
High performance genetics available	●
Required skills for success	●
Leverage regional & country reputation	○
OVERALL	◑

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

DUCKS

PRODUCT PROFILE	
Common names	Duck (multiple varieties exist); Pekin duck (meat bird used in New Zealand industry)
Scientific name	Pekin duck (Anas platyrhynchos domestica)
Type of animal	Bird
Cultivation cycle	Birds grow rapidly and reach their adult weight at around seven to eight weeks; when fully mature, weighs between 3.6kgs – 5kgs
Suited climate	Pekin duck (temperate to tropical environments)
Where does it grow similar to Kaipara?	Northland, Auckland, Waikato, Southern China, NSW
Part eaten	Meat, offal, parts, eggs
Origin	Ducks exist worldwide; Pekin ducks originally domesticated in China 3000+ years ago
Established in NZ	Early settlers; modern genetics from global breeding pools has been introduced, but local breeding sector is not at same scale as chicken eggs or meat birds

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: Pixabay (Spencer Wing); CC BY 2.0 (sfmine79)

DUCKS

ELEVATOR PITCH: WHY KAIPARA?

Kaipara is well positioned to become one of New Zealand's leading duck producing regions due to its moderate climate, its location close to Auckland's Asian population and its ready access to ports (for grain imports)

DRIVERS OF GROWTH

- Duck is a rich, strongly flavoured meat
- Growth of Asian restaurants in New Zealand introducing duck to more consumers; some Chinese restaurants specialise in duck
- Where once it was a 'restaurant only' dish, people are now more inclined to cook it at home
- Changing ethnic make-up of New Zealand; growth of ethnic groups that are large duck consumers (particularly Chinese & Vietnamese)

VALUE-ADDED OPPORTUNITIES

- Eggs
- Breeding stock
- Duck based ready meals
- Soups
- Processed meat products
- Dried as "duck jerky"

MARKET SITUATION

- Very minor meat in New Zealand currently
- Solid growth off a low base
- Key consumers weighted to Asian ethnic groups
- Primarily sold through foodservice channels (85-90%)
- Primarily sold into ethnic restaurants (80%+ of foodservice volumes)

CURRENT NEW ZEALAND PRODUCTION SITUATION

- Ducks are raised in barns for biosecurity reasons to avoid contact with other waterfowl, which are significant carriers of avian diseases
- Industry is currently much smaller than chicken and composed of mostly smaller, specialist producers targeting foodservice
- Annual production is 369,000 birds producing 664t of meat
- NZ is free of the three major poultry diseases – Avian Influenza, Infectious Bursal Disease, Newcastle Disease
- Neither eggs (other than quarantined genetics) nor chicken meat can be imported into NZ for biosecurity reasons

KEY RISKS & SENSITIVITIES

- Potential for further changes to rules on bird housing requirements increasing cost, risk or uncertainty
- Potential for disease to arrive (cf. honey, oysters, kiwifruit, etc.)

WHAT YOU WOULD NEED TO BELIEVE

- Kaipara can compete with other parts of New Zealand in terms of the total cost of duck production across the value chain
- Distribution and logistics costs into and out of Kaipara for chicks and feed are not excessive relative to other regions and areas
- Increasing duck production will not trigger local protests (cf. "Dargaville locals storm Kaipara Council over new chicken farm" 1/3/2018)

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
-	$5-10m est.	-	$1-2m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	●
Mechanically harvested	◑
Value-added opportunities	◑
MARKETS	
Wide spread of markets/buyers	◑
Wide spread of prices	○
Origin important or called out at POS	○
COMPETITORS	
Biosecurity or other domestic barriers	●
Can we get to the world price?	○
Attractive competitive set	●
KAIPARA, NEW ZEALAND	
High performance genetics available	◑
Required skills for success	●
Leverage regional & country reputation	◑
OVERALL	◑

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

GOAT, DAIRY

PRODUCT PROFILE	
Common names	Goat, domestic goat
Scientific name	Capra aegagrus hircus
Type of animal	Domesticated mammal
Cultivation cycle	Daily milking while in milk
Suited climate	Can live outdoors in a range of climates Raised worldwide in climate controlled barns
Where does it grow similar to Kaipara?	Northland, Auckland, Waikato, Bay of Plenty, France, Italy, Spain, Netherlands, Germany
Part eaten	Milk, meat, offal, parts
Origin	Domesticated in Middle East 8-9,000 year ago
Established in NZ	Introduced by early settlers New milking genetics introduced through biosecurity more recently

Source: various published articles; Wikipedia; Coriolis analysis; photo credit: fair use/complete product or brand; CC BY 2.0 (Rhino White)

GOAT, DAIRY

ELEVATOR PITCH: WHY KAIPARA?

Kaipara has proven capability in bovine dairy that can be extended to goat dairy. Given its great location and mild climate, Kaipara should target being the second largest goat dairy region in New Zealand after Waikato.

DRIVERS OF GROWTH

- Desire by some consumers for more premium, authentic products (for example, "authentic" feta)
- Growing middle class in Asia, particularly China
- One child policy in China
- Growing diagnosis of allergies across modern world
- Increasing awareness of lactose and lactose intolerance
- Growing demand for alternative types of infant formula
- Perception that goats and goat farming is more environmentally friendly (particularly relative to cows)
- Changing government rules, regulations and policies regarding farming and agricultural-related emissions

VALUE-ADDED OPPORTUNITIES

- Breeding stock
- Organic
- Fluid milk
- Specialty cheese (e.g. Feta-style)
- Infant formula and other dairy nutritionals
- Yoghurt

MARKET SITUATION

- Domestic market is small and is primarily cheese
- Domestic goat cheese competes with imports from Europe
- Sheep and goat milk are produced globally, though predominantly in Europe and dryer parts of Eurasia

CURRENT NEW ZEALAND PRODUCTION SITUATION

- New Zealand has around 70,000 milking goats
- Production is primarily/predominantly in barns (rather than free range)
- Domestic production is 85% powders and 15% cheese and other dairy
- Industry growth has been driven by Dairy Goat Co-Op (DGC) founded in 1984 in Hamilton (when the industry had 10,000-15,000 head
- DGC invested for more than twenty years in the development and pioneering of goat-based infant formula
- In 2011 Food Waikato opened an open access spray dryer in Hamilton accelerating industry growth
- As a result, the New Zealand dairy goat industry is primarily clustered in and around Hamilton in the Waikato
- Significant further growth is possible; peer group countries suggest that goat milk should account for 2-3% of total milk volumes, which implies 12x further growth for the industry in New Zealand

KEY RISKS & SENSITIVITIES

- Changing regulations regarding infant formula in the Chinese market
- Industry is highly dependent on China and Chinese market access
- Changing consumer tastes (also an opportunity)
- Changing public opinion in New Zealand towards barns
- Disease and other animal health issues
- On-site feed production using heavy machinery may be challenging in some locations prone to waterlogged soils

WHAT YOU WOULD NEED TO BELIEVE

- Transportation costs to Hamilton is not a major barrier to industry growth; alternatively regional cheese producers need more goat milk
- Year round feed can be sourced in the district at a competitive price

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
N/A	Production 50,000t (raw milk)	N/A	$5-20m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	●
Mechanically harvested	●
Value-added opportunities	●
MARKETS	
Wide spread of markets/buyers	◑
Wide spread of prices	◑
Origin important or called out at POS	●
COMPETITORS	
Biosecurity or other domestic barriers	●
Can we get to the world price?	●
Attractive competitive set	●
KAIPARA, NEW ZEALAND	
High performance genetics available	◑
Required skills for success	●
Leverage regional & country reputation	●
OVERALL	●

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

PIGS

PRODUCT PROFILE	
Common names	Pig, domestic pig, swine
Scientific name	Sus scrofa domesticus or only Sus domesticus
Type of animal	Highly domesticated land mammal
Cultivation cycle	Life span of a porker is anywhere from 150 to 230 days from birth to the abattoir Birth to weaning 21-42 days Weaned pens 30-60 days Porker pens until they reach market weight
Suited climate	Can live outdoors in temperate climates Raised worldwide in climate controlled barns
Where does it grow similar to Kaipara?	Auckland, Northland, Waikato, Southern China, Italy, across the USA South
Part eaten	Meat, offal, parts (e.g. pigs feet)
Origin	Domesticated from wild species in Near East and China
Established in NZ	Introduced by early settlers Quarantined genetics introduced through biosecurity

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: Pixabay (Cegoh); CC BY-SA 3.0 (JimChampion)

PIGS

ELEVATOR PITCH: WHY KAIPARA?

Kaipara is will positioned to supply Auckland's growing ethnic population with high quality fresh pork. Kaipara has a climate ideally suited to modern, high productivity pig production systems, including the capability to produce much of the required feed in the region.

DRIVERS OF GROWTH

- Good feed conversion (2-3 times better than cows)
- Global breeding pool more than a billion animals
- High productivity, vertically integrated production systems
- Low cost of production leading to low cost of meat to consumer
- Growing demand for processed meats (e.g. salami, shaved ham) particularly in foodservice (e.g. growth of Subway)
- Growing Asian population with strong pork eating heritage
- Growing number of Asian restaurants (which are over-weighted to pork dishes)

VALUE-ADDED OPPORTUNITIES

- Case ready pork
- Pork sausage (which includes casings that are made from the intestines)
- processed meat products (e.g. bacon, gammon, ham, salami)
- Snacks (pork rinds)
- Head cheese, black pudding, and other specialised
- Ready meals (refrigerated or frozen)

MARKET SITUATION

- Domestic industry is focused on fresh meat
- People worldwide keep about two billion pigs
- At least half the world's pigs live in China
- 90% of production occurs in three regions: China (60%), European Union (20%) and United States (10%)

CURRENT NEW ZEALAND PRODUCTION SITUATION

- In 2017 357,084 domestic pigs produced 46,741 tonnes of meat
- Domestic production is 55% barn, 43% free farmed and 2% free range systems
- Imports are now around 50% of the total market
- Domestic industry is under pressure from lower cost imports from countries with higher scale and high productivity production systems
- NZ is free of a number of major pig diseases
- Importation of breeding stock (other than quarantined genetics) and fresh meat are highly restricted for biosecurity reasons
- Frozen meat can be imported from select countries free of certain diseases; frozen meat is used extensively in domestic production of bacon, ham and smallgoods
- Highly processed products can be imported (e.g. salami)

KEY RISKS & SENSITIVITIES

- Continued changing rules on pig housing requirements increasing cost and decreasing competitiveness of local production vs. imports
- Potential for disease to arrive (cf. honey, oysters, kiwifruit, etc.)
- Potential for fresh meat imports
- 23.4% of world population cannot consume

WHAT YOU WOULD NEED TO BELIEVE

- Kaipara producers can quickly become competitive with other key producing regions, particularly Canterbury
- Increasing regional pig production will not trigger local protests (cf. "Dargaville locals storm Kaipara Council over new chicken farm" 1/3/2018); alternatively public concerns can be addressed

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
Frozen $205m Fresh $3m	$220-250m (est.)	$9m	$20-30m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	●
Mechanically harvested	◑
Value-added opportunities	●
MARKETS	
Wide spread of markets/buyers	●
Wide spread of prices	◑
Origin important or called out at POS	◑
COMPETITORS	
Biosecurity or other domestic barriers	◑
Can we get to the world price?	○
Attractive competitive set	○
KAIPARA, NEW ZEALAND	
High performance genetics available	●
Required skills for success	●
Leverage regional & country reputation	◑
OVERALL	◑

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

MUSSELS

PRODUCT PROFILE	
Common names	New Zealand Greenshell™ Mussels; numerous other types of mussels exist globally, which can be classified broadly as green and blue
Scientific name	Perna canaliculus (NZ species)
Type of animal	Shellfish
Cultivation cycle	Grown on a suspended rope/long-line system Grow on a series of dropper ropes hanging from a sturdy 'backbone' rope that is held up by a row of buoys
Suited climate	Sheltered bays in temperate waters
Where does it grow similar to Kaipara?	New Zealand
Part eaten	Whole internal organism; in parts in soups; as a flavour in a dishes; in sauces
Origin	New Zealand native
Established in NZ	Native; aquaculture took off in 1970's

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: Pixabay (PaulNI; CC BY-SA 3.0 (QFSE Media)

MUSSELS

ELEVATOR PITCH: WHY KAIPARA?

Aquaculture in Kaipara is underdeveloped relative other regions of New Zealand. Kaipara has large amounts of coastline, much of which is protected or sheltered. Kaipara has the skills, climate and resources to succeed in mussel aquaculture.

DRIVERS OF GROWTH

- Reputation for health giving properties
- Numerous health benefits, including reducing inflammation and improve the condition of joint cartilage
- source of a number of essential minerals, such as selenium, iodine and iron
- High omega-3 content
- Contain a number of other bioactive components such as taurine, glycogen, chondroitin sulphate, polyphenols and carotenoids

VALUE-ADDED OPPORTUNITIES

- Shelled
- Processed, flavoured refrigerated pottle
- Soups
- Nutraceuticals in a range of forms
- Oils & other extracts

MARKET SITUATION

- "Mussel exports continue their steady growth with value up 22% to $329.4m and volume up 13% to 33,114 MT as of YE Oct 2019"
- "USA remains the dominant market making up 28% of total mussel export revenue ($93.1m) with frozen half shell spearheading this position with sales of $69.7m (a 57% increase over the previous 12-month period) and the October price setting a new record high of $10.20/kg"
- "Despite total mussel exports to China dropping 10% in value to $36.2m, this market still takes second place and once again frozen half shell mussels are the main product format ($27.9m in sales and the October average price sitting at $9.99/kg)"
- Strongly growing exports of mussel nutraceuticals and extracts

CURRENT NEW ZEALAND PRODUCTION SITUATION

- Mussel production occurs across regions, but is concentrated in the northern parts of the South Island
- Annual production has been relatively stable between 80,000-100,000t for the past fifteen years
- However, while volumes are stable, value has been growing
- Productions systems are mature and proven
- SPATnz is pioneering the selective breeding of New Zealand Greenshell mussels at a world-first purpose built hatchery in Nelson
- SPATnz is advancing New Zealand's aquaculture industry through a Primary Growth Partnership programme between Sanford New Zealand and the Ministry for Primary Industries.

KEY RISKS & SENSITIVITIES

- Large numbers of lifestyle and NIMBY residents on East Coast of Kaipara, which is the sub-region most suited to aquaculture
- Sediment, runoff and other water quality challenges
- Global warming/climate change impacting shore and harbours

WHAT YOU WOULD NEED TO BELIEVE

- The conditions in the Northern parts of the Kaipara Harbour are well suited to mussel aquaculture
- Kaipara is as good or better than other potential locations in NZ
- Increasing regional aquaculture production will not trigger local protests (cf. "Dargaville locals storm Kaipara Council over new chicken farm" 1/3/2018); alternatively public concerns can be addressed

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
-	$35m	$218.1m 38,143t	$5-10m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	◑
Mechanically harvested	●
Value-added opportunities	◑
MARKETS	
Wide spread of markets/buyers	◑
Wide spread of prices	○
Origin important or called out at POS	●
COMPETITORS	
Biosecurity or other domestic barriers	●
Can we get to the world price?	●
Attractive competitive set	◑
KAIPARA, NEW ZEALAND	
High performance genetics available	◑
Required skills for success	●
Leverage regional & country reputation	●
OVERALL	◑

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

OYSTERS (PACIFIC)

PRODUCT PROFILE	
Common names	Oysters; a wide range of "oysters" exist; not all are "true oysters"; European flat oyster, eastern oyster, Olympia oyster, Pacific oyster, and the Sydney rock oyster
Scientific name	Pacific oyster (Crassostrea gigas)
Type of animal	Shellfish
Cultivation cycle	Grown out from wild collected spat or hatchery 12-18 months to grow to 70-100g live weight Predominantly grown on sticks, trays and netting bags on intertidal farms (typically farm is 4ha)
Suited climate	Temperate waters in sheltered locations
Where does it grow similar to Kaipara?	Northland, Auckland, Coromandel, Japan, China, Victoria, NSW
Part eaten	Whole internal organism; in parts in soups; as a flavour in a wide range of dishes; in sauces
Origin	Worldwide; Pacific Oyster is native to East Asia
Established in NZ	Stowaway that snuck through biosecurity on part of the Auckland Harbour Bridge in 1950's

Source: various published articles; Wikipedia; Coriolis analysis. Photo credit: CC0 public domain (oysters); CC BY-ND 2.0 (Tony Foster)

OYSTERS (PACIFIC)

ELEVATOR PITCH: WHY KAIPARA?

Aquaculture in Kaipara is underdeveloped relative to other regions of New Zealand. Kaipara has large amounts of coastline, much of which is protected or sheltered. Kaipara has the skills, climate and resources to succeed in oyster aquaculture.

DRIVERS OF GROWTH

- Reputation as an aphrodisiac
- Rich in rare amino acids that trigger increased levels of sex hormones (D-aspartic acid (D-Asp) and N-methyl-D-aspartate (NMDA))
- High in zinc
- Positioning as a gourmet or luxury items
- Growth of high end foodservice channel

VALUE-ADDED OPPORTUNITIES

- Fresh
- Canned
- Soups
- Sauces

MARKET SITUATION

- Domestic consumption per capita is flat at best
- Foodservice is the primary channel, taking 70-80%+ of volume
- More than half of production is exported
- Biosecure Australia, where per capita is also flat and where New Zealand was the only supplier allowed into the market was historically the key market for oyster exports
- Key markets are now Australia $7.1m, Hong Kong $3.0m, China $2.4m, Japan $2.4m and French Polynesia $2.0m; markets small beyond these and primarily Pacific islands
- Export markets take a mixture of frozen and live/chilled products
- "Pricing for both frozen and live product formats are continuing to trend upwards, both up 10% compared to the previous equivalent 12-month period – average price for frozen oysters is $12.53/doz and live is $14.48/doz" *Aquaculture NZ*
- New Zealand is *"the world's leading supplier of raw consumption oysters into the Japanese market.*

CURRENT NEW ZEALAND PRODUCTION SITUATION

- Oyster production occurs across regions, but is concentrated primarily in the warmer waters of the North Island
- Annual production volumes are around 2,000t
- Production has been relatively stable long term, ranging from 1,200-3,500t/year over the past twenty years
- Domestic production was impacted by disease, but has now recovered somewhat from lows in 2012-2014
- Kaipara Oysters (in the Kaipara Harbour) has a *"76-hectare farm, the largest oyster farm in the country"* that *"when fully developed, we will be New Zealand's largest farm, capable of producing more than 24 million oysters per year. This would increase New Zealand's total current annual production by more than 40%"*

KEY RISKS & SENSITIVITIES

- Disease and other oyster health challenges
- Other suppliers gaining access to biosecure Australian market
- Large numbers of lifestyle and NIMBY residents on East Coast of Kaipara, which is the sub-region most suited to aquaculture
- Sediment, runoff and other water quality challenges
- Global warming/climate change impacting shore and harbours

WHAT YOU WOULD NEED TO BELIEVE

- The conditions in the Northern parts of the Kaipara Harbour are well suited to oyster aquaculture
- Kaipara is as good or better than other potential locations in NZ
- Increasing regional aquaculture production will not trigger local protests (cf. "Dargaville locals storm Kaipara Council over new chicken farm" 1/3/2018); alternatively public concerns can be addressed

NZ MARKET SIZE			POTENTIAL SIZE-OF-THE-PRIZE
IMPORTS	DOMESTIC	EXPORTS	
-	$8.0m	$23.8m	$3-5m

QUALITATIVE SCORECARD

PRODUCT	
Capital intensive to produce	◑
Mechanically harvested	●
Value-added opportunities	○
MARKETS	
Wide spread of markets/buyers	◑
Wide spread of prices	○
Origin important or called out at POS	●
COMPETITORS	
Biosecurity or other domestic barriers	●
Can we get to the world price?	○
Attractive competitive set	◑
KAIPARA, NEW ZEALAND	
High performance genetics available	○
Required skills for success	●
Leverage regional & country reputation	●
OVERALL	◑

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

TABLE OF CONTENTS

DEVELOPING A COMPELLING STORY

ASSESSING THE OPPORTUNITIES

While Kaipara has a wide range of plant-based diversification options, a number of products stood out qualitatively in Stage II

		AVOCADO	BANANAS	BEETROOT	BLUEBERRIES	CAPSICUM	CARROTS	CUCUMBERS	HEMP	HOPS	OLIVES	PEANUTS	PINEAPPLES	POTATOES	RICE	SORGHUM	SOYBEANS	SWEETCORN	TOMATO
PRODUCT	Capital intensive to produce	●	◑	◑	◑	●	◑	●	◑	◑	◑	◑	○	◑	◑	◑	◑	◑	●
	Mechanically harvested	○	○	●	◑	○	●	◑	●	○	●	●	◑	●	●	●	●	●	◑
	Value-added opportunities	◑	○	●	◑	◑	◑	○	●	◑	●	●	○	●	●	●	●	◑	●
MARKETS	Wide spread of markets/buyers	◑	●	●	◑	●	●	●	◑	●	●	◑	◑	◑	●	●	●	◑	●
	Wide spread of prices	◑	○	○	◑	○	◑	◑	◑	●	●	◑	○	◑	○	○	○	○	●
	Origin important or called out at POS	◑	●	○	◑	○	◑	○	◑	●	●	◑	◑	◑	●	◑	◑	○	○
COMPETITORS	Biosecurity or other domestic barriers	●	◑	●	●	◑	◑	●	○	○	○	○	○	●	○	○	◑	●	●
	Can we get to the world price?	◑	○	○	◑	◑	●	○	◑	●	○	◑	○	●	◑	◑	○	○	○
	Attractive competitive set	◑	○	◑	○	○	◑	◑	◑	●	○	●	○	○	○	◑	◑	◑	◑
KAIPARA, NEW ZEALAND	High performance genetics available	●	○	●	●	●	●	●	◑	●	●	◑	○	●	◑	◑	●	●	●
	Required skills for success	●	◑	●	●	◑	●	◑	●	●	●	●	◑	●	●	◑	●	◑	◑
	Leverage regional & country reputation	◑	●	○	◑	◑	○	○	◑	●	●	●	◑	◑	●	◑	◑	○	○
OVERALL		●	○	◑	◑	◑	◑	◑	◑	●	◑	●	○	◑	◑	◑	◑	◑	◑

ATTRACTIVENESS INDEX

● High ◑ Medium ○ Low

While Kaipara has a range of animal-based diversification options, a number of products stood out qualitatively in Stage II

		MEAT CHICKEN	CHICKEN EGGS	DUCKS	GOAT, DAIRY	PIGS	MUSSELS	OYSTERS
PRODUCT	Capital intensive to produce	●	●	●	●	●	◑	◑
	Mechanically harvested	●	●	◑	●	◑	●	●
	Value-added opportunities	●	◑	◑	●	●	◑	○
MARKETS	Wide spread of markets/buyers	◑	●	◑	◑	●	◑	◑
	Wide spread of prices	◑	◑	○	◑	◑	○	○
	Origin important or called out at POS	◑	○	○	●	◑	●	●
COMPETITORS	Biosecurity or other domestic barriers	●	●	●	●	◑	●	●
	Can we get to the world price?	◑	○	○	●	○	●	○
	Attractive competitive set	◑	◑	●	●	○	◑	◑
KAIPARA, NEW ZEALAND	High performance genetics available	●	●	◑	◑	●	◑	○
	Required skills for success	●	●	●	●	●	●	●
	Leverage regional & country reputation	◑	○	◑	●	◑	●	●
OVERALL		●	◑	◑	●	◑	◑	◑

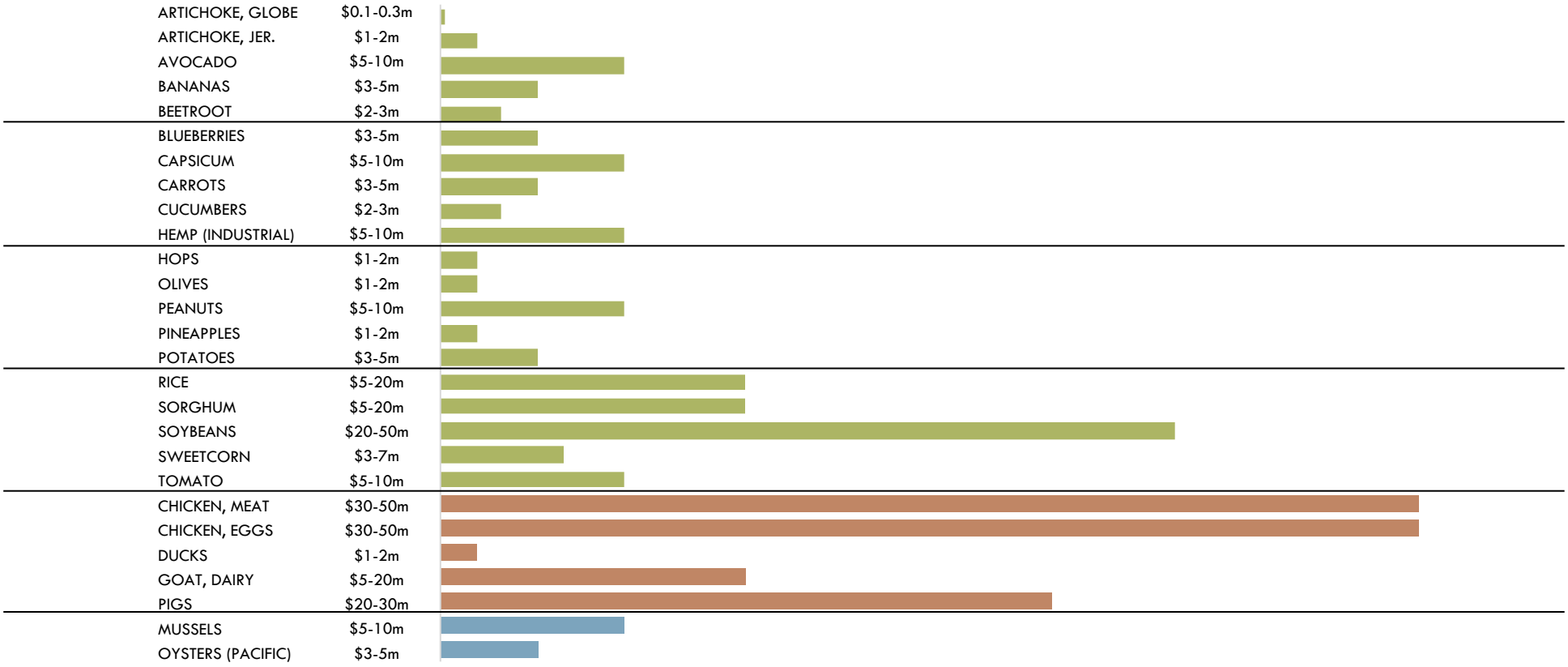
*There are just fewer economic animal systems used at any scale in farming**

* *Beyond this, you are into guinea pigs and gooey duck*

Stage II products varied in their estimated potential "size-of-the-prize" over the next five to ten years

ESTIMATED POTENTIAL MEDIUM TERM (5-10 YEAR) SIZE-OF-THE-PRIZE FOR KAIPARA

New farmgate revenue; NZ$m



Bringing together the qualitative and quantitative results highlights a range of opportunities for Kaipara

RESULT FROM QUALITATIVE SCORECARD

	UNDER $2m	$2-10m	Over $10m
BEST ●	Hops	Peanuts	Avocados Chicken meat Goat dairy
BETTER ◑	Ducks Jerusalem Artichokes Olives	Beetroot Blueberries Capsicum Carrots Cucumbers Mussels Oysters Potatoes Sweetcorn Tomato	Chicken eggs Hemp (Industrial) Pigs Rice Sorghum Soybeans
GOOD ○	Globe Artichokes Pineapples	Bananas	

POTENTIAL MEDIUM TERM (~5-10 YEARS) SIZE-OF-THE-PRICE

As a result, five products emerged into Stage III of the process; in addition, sorghum was added by the advisory group

AVOCADOS

HOPS

DAIRY GOATS

CHICKEN MEAT

SORGHUM

Peanuts are an attractive crop for the Kaipara district

Why peanuts? What is happening?

"Peanut butter is a high protein, low calorie product that possess high nutritional value. It is healthy alternative to dairy butter and used as bread spread. Major market presence of peanut butter is in western countries.. as the product is relatively new to the Asian region. Peanut butter is used in various applications in the form of spread and is used as the substitute for dairy butter. However, in comparison to other spreads peanut butter is a low calorie product with high protein content. Consumption of peanut butter includes various benefits associated with it such as it helps to reduce the weight and also possess optimum nutrition value."

fmi Future Market Insights

"The demand for plant based ingredients which also includes of peanut flour is increasing due to consumers demand for healthier food products and cleaner label requirements. Peanut flour is gluten-free and has been considered to be beneficial for heart health. It is used as an alternative flour to make gluten free breads and other bakery products, it is also used as a thickener, flavoring agent, topping for meat and seafood and as an ingredient in smoothies to increase the protein content."

TRANSPARENCY MARKET RESEARCH In-depth Analysis. Accurate Results

"The global peanut butter market is presently worth US$ 3.3 Billion with its demand growing at a CAGR of around 6% during 2010-2017. A variety of flavours, new blends, rising disposable income of consumers and growing preferences for nutritious products are the major factors driving the growth of the global peanut butter market."

Quora

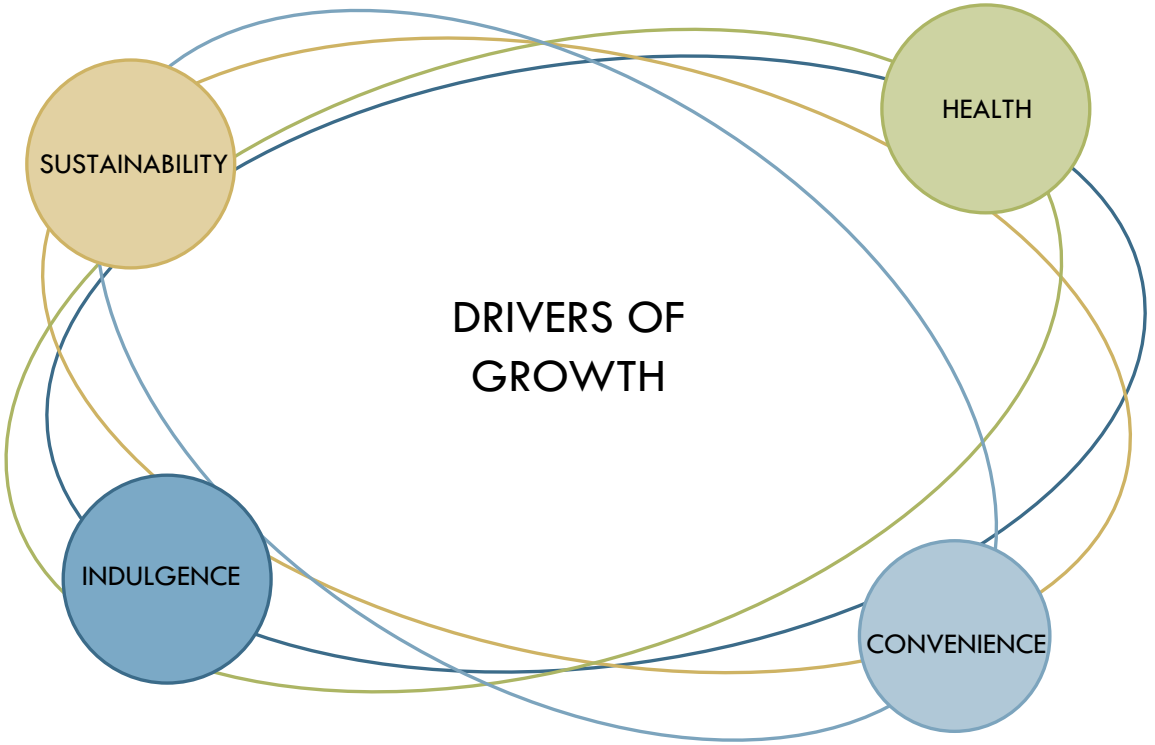
"The increase in demand for low-calorie healthy food boosts the growth of peanut butter market. The change of lifestyle along with the intake of easy availability of readymade food also gives rise to the growth of the market. Its demand is gaining momentum owing to its low-calorie count and high nutritional value. Some other factors that contribute to the growth of peanut butter market are increase of disposable income, evolving taste, innovation in food and beverage and introduction of fresh blends and flavors."

WISE GUY REPORTS

Source: articles; interviews; Coriolis analysis

What is driving success?

Increasingly concerned consumers
Growth of veganism and vegetarianism
Growth in plant based diets



Gluten free
High in protein
Perceived as natural and healthy

Rich salty flavour
Widespread use in many Asian cuisines

Growth in snacking
Rich, salty flavour
Ready to eat packaging

Source: Coriolis analysis

What can you do with them?

Whole Roasted

Snack nuts

Muesli bars

Peanut butter

Ready meal ingredient

Peanut oil

Peanut flour

Confectionery

Source: various company websites; Coriolis analysis. Photo credit: fair use/fair dealing; low resolution; complete product/brand for illustrative purposes

Why do it in Kaipara district? Why would it work in Kaipara?

WHY DO WE THINK WE CAN PRODUCE IT?

Suited to Kaipara climate

- Successfully produced by climatic peers
- Long history of crop production in the region
- Complementary to existing kumara production system
- Extensive research and development activities in the United States and Australia releasing new varieties of peanuts

WHY DO WE THINK MARKETS WANT IT?

Growing demand in desirable markets

- Peanuts are 25% protein
- Increasing demand for plant based proteins in New Zealand and globally
- New Zealand peanut processors are seeking "New Zealand" supply to fit with their branding and positioning

WHY DO WE THINK WE CAN SELL IT?

Our Unique Value Proposition

- Clear fit with "Brand Kaipara"
- Leverage New Zealand's reputation as safe and secure producer
- Excellent proximity to East & South-East Asian markets
- Isolated location with excellent biosecurity credentials

Source: Coriolis analysis; photo credit: CC BY-SA 4.0 (Texnix) Dollar Photo; CC BY-ND 2.0 (Jason Milich)

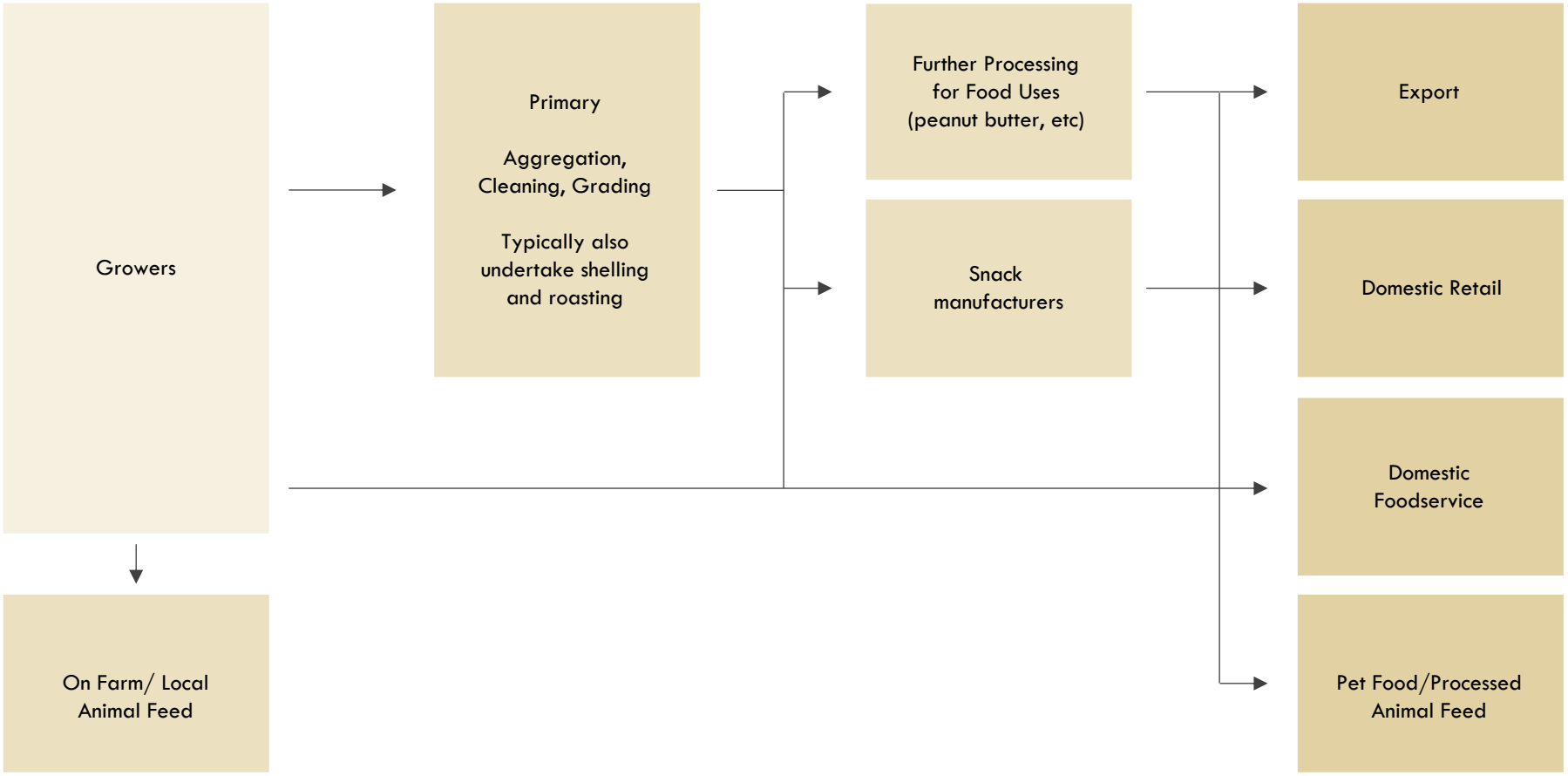
Who are the high potential customers and commercial partners?

Firm	PIC'S	MOTHER EARTH	KRAFT HEINZ*	WHITTAKER'S
Relevant product categories	Peanut butter Peanut oil	Snack nuts Peanut butter Confectionery Muesli bars	Peanut butter	Chocolate bars

Firm	GRIFFIN'S FOOD	SANITARIUM	NUT BROTHERS	FIX & FOGG
Relevant product categories	Snack nuts Muesli bars Biscuits	Breakfast cereal Peanut butter Soy/Nut milks	Peanut butter	Peanut butter

** Heinz-Watties owns Eta Peanut Butter, not Griffins (Griffin's sells Eta snack nuts); Source: company website; company annual report; various published articles and reports; Coriolis analysis*

How is the supply chain organised?



Source: Coriolis analysis

What is the market situation?

	IMPORTS			
DOMESTIC PRODUCTION Garden/Hobby scale No Commercial Production	UNROASTED SHELLED 4,684t $13.8m	ROASTED SHELLED 5,018t $14.2m	MIXED NUTS & SIMILAR* 1,818t $5.6m	PEANUT BUTTER 2,896t $9.2m

14,416t**
$42.8m

** Only mixed nuts including peanuts; ** will include some small amount of non-peanuts (in the mixed nuts); Source: Statistic New Zealand; Coriolis classification and analysis*

What is the size of the opportunity?

CONCEPTUAL/DIRECTIONAL

PRODUCTION

POTENTIAL AREA PLANTED		YIELD T/HA		INSHELL PRODUCTION TONNES		SHELLED YIELD		SHELLED PEANUTS PRODUCED
4,500ha	X	4.5t/ha	=	20,250t	X	35%	=	7,088
Required to supply 50% of the current domestic market		*Matching U.S. average (Australia achieves 3-3.4t/ha)*				*Generic industry ratio; impacted by a range of factors (e.g. variety, rainfall)*		

MARKET

SHELLED PEANUTS PRODUCED		LANDED PRICE CIF RAW SHELLED		INDUSTRY VALUE		SHARE OF VALUE TO FARMERS		FARMGATE REVENUE
7,088	X	$2,937/t	=	$20.8m	X	66%	=	$13.7m
Assumes Kaipara can achieve 50% of the current domestic market		*Uses Statistics NZ 2019 data for HS120242*		*This includes shelling, roasting and other primary processing*		*Estimate based on other crops and U.S. data; a co-op would take a larger share*		*Or $3,053/ha for a mechanically harvested crop*

Source: Coriolis analysis

How could we do it?

STRAWMAN FOR DISCUSSION

VISION:
Kaipara builds a vibrant peanut sector leading to an at-scale further processing industry supplying New Zealand & export markets

1

Promote benefits of growing peanuts to farmers in the region

Investigate available variety and yield research; determine genetics with best potential in region

2

Build market, initially targeting New Zealand produced peanut products likely to call out "Kaipara" or "New Zealand" on the package

Develop supply chains into these key buyers

3

Investigate potential partners for joint venture processing facility in region

Source: Coriolis analysis

Avocados are an attractive crop for the Kaipara district

PEANUTS

HOPS

DAIRY GOATS

CHICKEN MEAT

SORGHUM

Photo credit: Dollar Photo

Why avocados? What is happening?

"Avocado is becoming more popular in the Chinese market. More and more consumers are discovering this fruit, but still more promotion is needed… The price is fluctuating, with many Chilean and Mexican avocados on the market. This year has been the first with New Zealand exporting large volumes to China. The first shipment arrived in October. The price for New Zealand avocados was immediately much higher than that of Mexican and Chilean fruit, as a better quality was expected and hence a higher price was demanded. More and more supermarkets and fruit stores are selling ready-to-eat avocados, as they are popular among consumers. More restaurants are also using avocados in their dishes, which is a good way to further promote them in the country. In addition to the import of avocados, China is also working hard to try growing avocados itself…" Dec, 2019

Fresh Plaza

"At the end of the 2009 avocado season, approximately 693,000 tonnes of avocados were exported around the world. Now in 2019, the number of avocados exported this year is 2,140,000 tonnes. The majority of this increase can be accounted to the increasing demand for avocados around the world and worldwide understanding of the benefits the avocado provides. Some of this increase is due to logistical transport technological advances and world trade deals such as the New Zealand and South Korea free trade agreement, which is reducing tariffs to zero by 2024 and ANZTEC, another New Zealand trade agreement with Taiwan…"

New Zealand Avocado

"The global consumption of avocado was USD 9.29 billion in 2018, with a CAGR of 5.03%. Avocados contain vitamins A, B, C, E, and K, including 25 essential nutrients. It also contains phytochemicals, like beta-sitosterol and antioxidants, like lycopene and beta-carotene. The essential nutrients are increasing the demand for the fruit, globally, and therefore acts as a major driving force behind the growth of the avocado market."

Mordor Intelligence

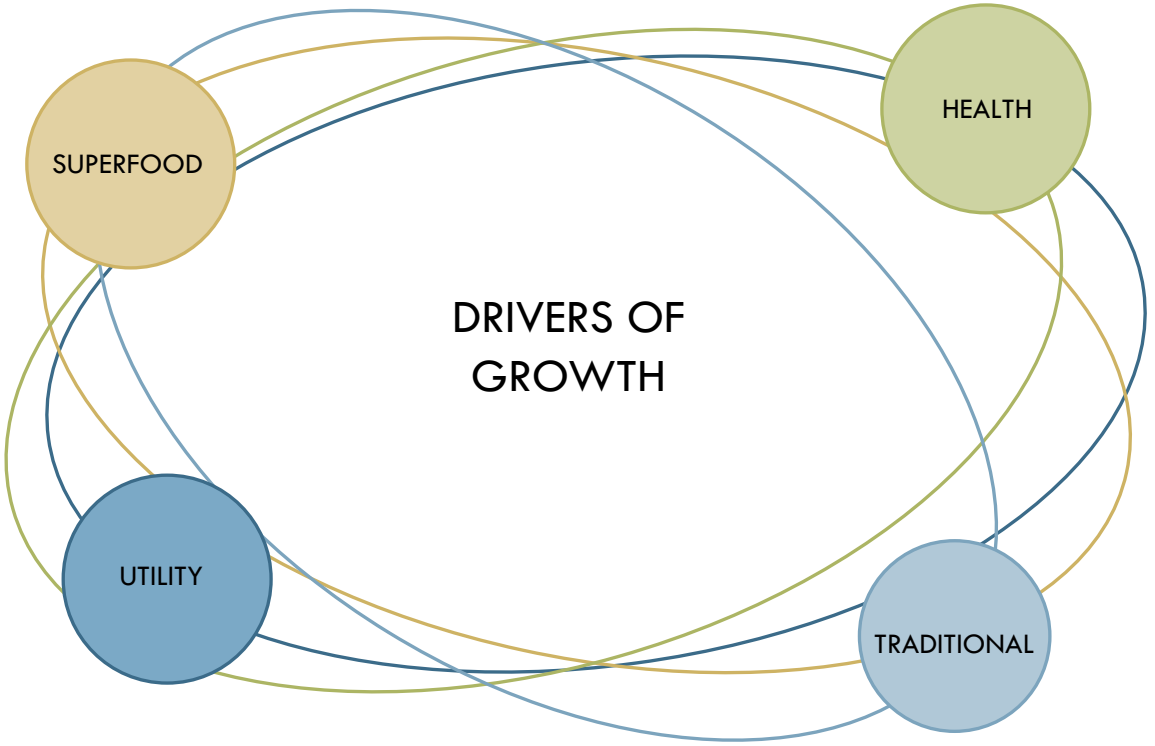
"Other than being highly nutritious, avocados have several health benefits. The monounsaturated fat found in avocados is the same as the one found in nuts and olive oil. Studies have found that people who consume more avocados weigh less that the people who don't eat them. Avocado can also help with other serious health issues like lowering cholesterol levels, reducing high blood pressure, and preventing diabetes. "

worldatlas

Source: articles; interviews; Coriolis analysis

What is driving success?

On trend as a superfood
Increasing demand globally



High in "healthy" monosaturated fat
Demand for natural oils
Avocados contain vitamins A, B, C, E, and K, including 25 essential nutrients

Diverse & versatile uses: raw, cooked, smoothies
Oil used in food (flavour) & cooking (high heat), cosmetics & medical

Long history of use in South America
Valued as a food and oil

Source: Coriolis analysis

What can you do with them?

Whole

Ripening rates - multi-pack

Frozen sliced

Avocado oil

Avocado spread

Guacamole

Dressing

Skin care

Source: various company websites; Coriolis analysis. Photo credit: fair use/fair dealing; low resolution; complete product/brand for illustrative purposes or purchased (whole avocado)

Why do it in Kaipara district? Why would it work in Kaipara?

WHY DO WE THINK WE CAN PRODUCE IT?

Suited to Kaipara climate

- Successfully produced in region
- Long history of tree crop production in the region
- Warmer climate reduces impact of biennial bearing
- Extensive research and development activities and marketing activities in New Zealand

WHY DO WE THINK MARKETS WANT IT?

Growing demand in desirable markets

- Avocados are healthy (monosaturated fats, high nutrient content)
- Increasing demand for healthy, natural foods
- New Zealand avocado industry require scale to increase efficiencies and meet market demand

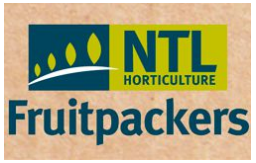
WHY DO WE THINK WE CAN SELL IT?

Our Unique Value Proposition

- Clear fit with "Brand Kaipara"
- Leverage New Zealand's reputation as safe and secure producer
- Excellent proximity to East & South-East Asian markets
- Isolated location with excellent biosecurity credentials

Source: Coriolis analysis; photo credit: Dollar Photo Dollar Photo; CC BY-ND 2.0 (Jason Milich)

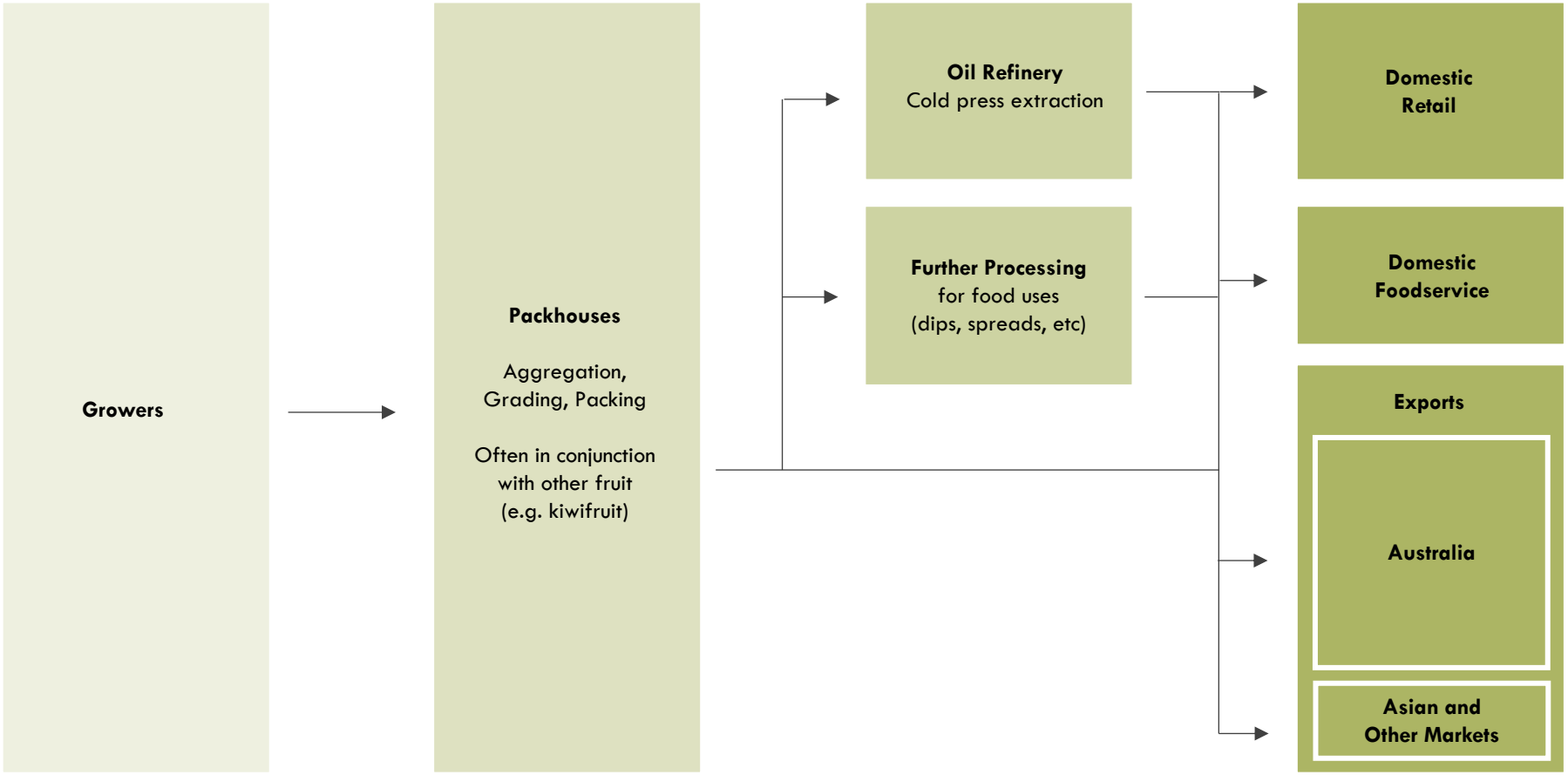
Who are the high potential customers and commercial partners?

			
Firm	SEEKA	NTL FRUITPACKERS	EASTPACK
Relevant product categories	Whole avocados	Whole avocados	Whole avocados

			
Firm	SANITARIUM	J&P TURNERS	HEINZ
Relevant product categories	Dips	Oils	Dressings

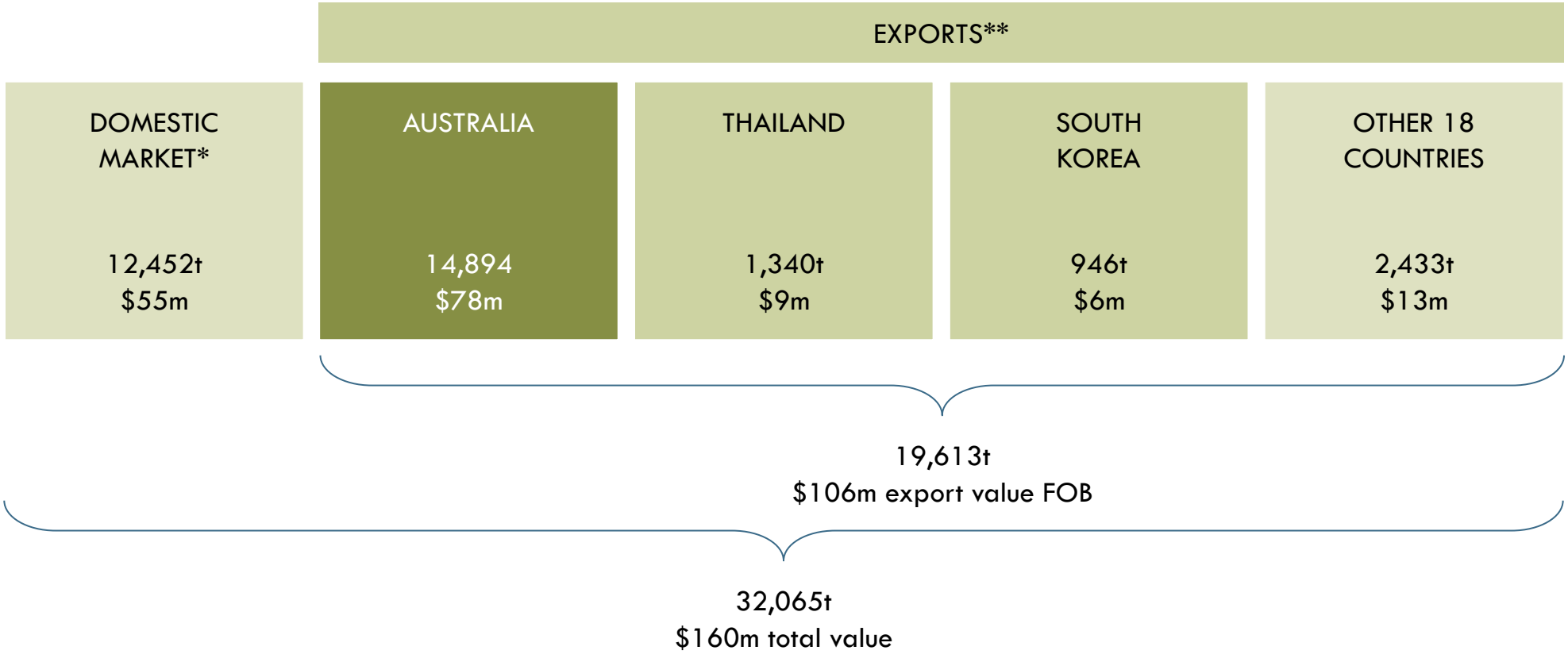
Source: company website; company annual report; various published articles and reports; Coriolis analysis

How is the supply chain organised?



Source: Coriolis analysis

What is the market situation?



** year ending June 2019; ** year ending Dec 2019; Source: Avocados New Zealand; Statistic New Zealand; Coriolis classification and analysis*

What is the size of the opportunity for Kaipara?

CONCEPTUAL/DIRECTIONAL

PRODUCTION

NEW HECTARES		TONNES PER HECTARE		NEW TONNES PRODUCED IN KAIPARA		ORCHARD GATE RETURN (OGR) PER TONNE		NEW REGIONAL FARMGATE REVENUE
500ha	x	7.5	=	3,750	x	$3,405/t	=	$13m

Proposed target; almost matching the size of current avocado area in Far North ANZ region (534ha)*

*Assumes mix of growing and mature trees; Matching 2019 yield in Far North ANZ region**

Assumes domestic and export markets can absorb this new volume

Uses industry total OGR of $107m divided by total industry tonnes; assumes no future changes to market prices

MARKET

NEW REGIONAL FARMGATE REVENUE		POST FARMGATE VALUE ADDED		INDUSTRY VALUE TO KAIPARA
$13m	x	$4m	=	$17m

Assumes packhouse activities occur in region

* Avocados New Zealand region; Source: Avocados New Zealand Annual Report 2018/19; Coriolis analysis

How could we do it?

STRAWMAN FOR DISCUSSION

VISION:
Kaipara grows into a major avocado producing area of New Zealand, operating at-scale, with a reputation for producing high quality fruit targeting export markets

1

Promote Kaipara as location with strong potential for growth in avocado production

Ensure widespread access to full Kaipara Kai package of work (NIWA, P&F, Landcare, WWLA)

Ensure timely access to best genetics; evaluate potential for bulk buying

2

Leverage existing local post harvest skills and capabilities

Evaluate existing packhouse options

Explore options for shared large regional packhouse

3

Investigate opportunities for local further processing

Source: Coriolis analysis

Hops are an attractive crop for the Kaipara district

PEANUTS

AVOCADOS

DAIRY GOATS

CHICKEN MEAT

SORGHUM

Photo credit: Pixabay

Why hops? What is happening?

"Global Craft Beer Market is projected to reach USD 96.2 Billion by 2024 and grow at a significant CAGR of 13.8% during the forecast period, 2019–2024. Craft beer is individually brewed batches of beer by small, independent breweries. Craft beer is generally made with ingredients such as malt, yeast, enzymes, and hop, and are available in a wide range of flavors. Craft beer is a rich source of silicon, which plays a role in increasing bone mineral density and prevents osteoporosis, risk of diabetes and Alzheimer."

MARKET RESEARCH FUTURE®

"Hops have an enormous impact on beer flavor, even though they are only used in comparatively small amounts. Hops have preservative effects as well as giving beer its characteristic bitterness and aroma. Obtaining an intense hop aroma no longer necessitates high bitterness, because of the wide range of hop products now available. Recent research has revealed possible health attributes in hops, which may influence the importance of hops as a raw material, not only for brewing but also for other areas, such as "nutraceuticals" and functional foods."

ScienceDirect

"Born from the frustration of mass-produced beer made from cheap ingredients, entrepreneurs went head-to-head with global brewery giants to showcase local and independent craftsmanship. Suddenly, drinking beer became less about the alcoholic content and more about the quality and experience. Craft beer allowed for constantly changing flavors, recipes, and stories. With sales accounting for 24% of U.S. beer market worth over $114 billion, the global craft beer movement has been historic."

VISUAL CAPITALIST

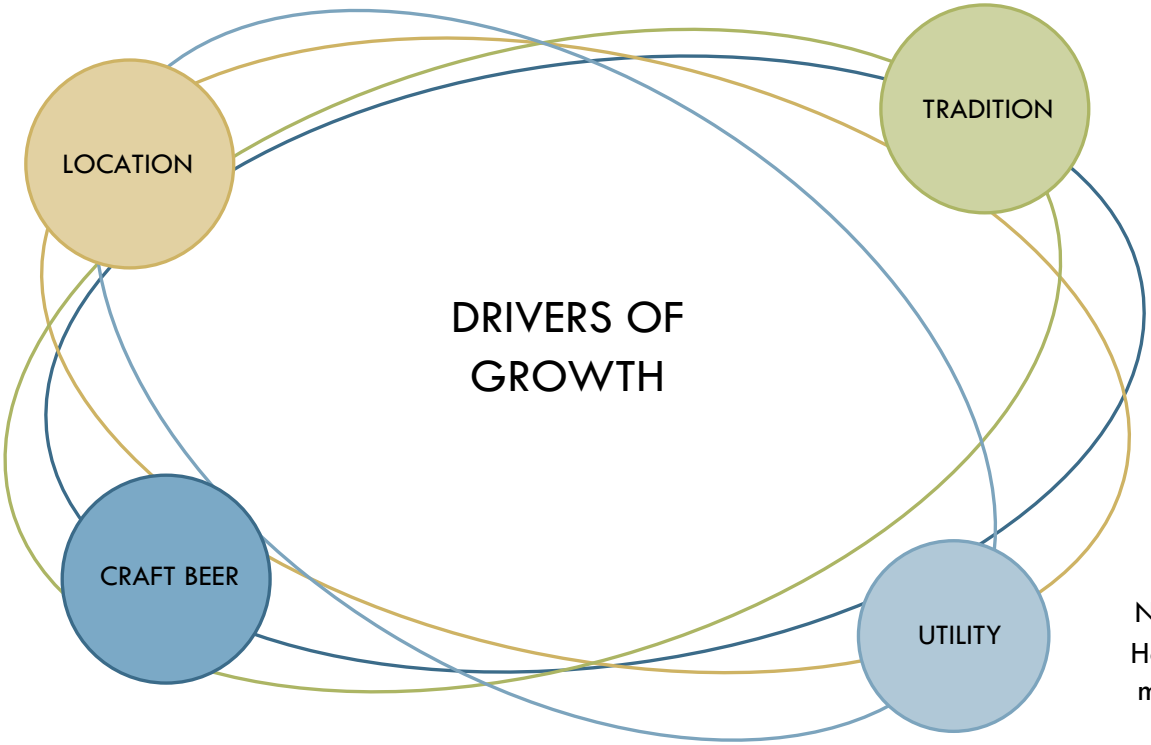
"Hops is considered an anxiolytic primarily for its calming effect. The combination of its competence in promoting relaxation and its general safety for consumption make it appealing for use in managing anxiety. Its sedative effects seem to be particularly potent when combined with the valerian herb... shown to carry mild sedation-inducing characteristics, although the mechanism behind the process is still unclear. Extracts of the seed cone have been used to limit restlessness coming from digestional, cerebral, and pulmonary complications. It has comparably been used to ease stress and excess tension."

Supplements in Review

Source: articles; interviews; Coriolis analysis

What is driving success?

Absence of many pests and diseases suffered in other hops regions



Hops used in beer production in EU since the 13th Century

Growth of Craft beer
Unique flavours

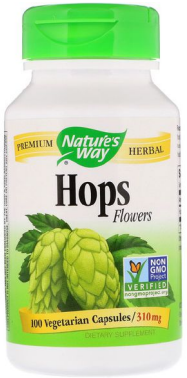
Natural sleep agent
Hormonal balance in menopausal women

Source: Coriolis analysis

What can you do with them?

Beer

Beer Kit



Supplements

Tea

Source: various company websites; Coriolis analysis. Photo credit: fair use/fair dealing; low resolution; complete product/brand for illustrative purposes

Why do it in Kaipara district? Why would it work in Kaipara?

WHY DO WE THINK WE CAN PRODUCE IT?

Suited to Kaipara climate

- Successfully produced by climatic peers
- Long history of crop production in the region
- Extensive research and development activities in New Zealand (P&F) releasing new varieties of hops

WHY DO WE THINK MARKETS WANT IT?

Growing demand in desirable markets

- Growth of craft beer industry domestically and globally
- Demand for unique flavours using hops
- Demand for natural health solutions (sleep, hormonal balance)

WHY DO WE THINK WE CAN SELL IT?

Our Unique Value Proposition

- Clear fit with "Brand Kaipara"
- Leverage New Zealand's reputation as safe and secure producer "Pure New Zealand"
- Isolated location with excellent biosecurity credentials

Source: Coriolis analysis; photo credit: Pixabay; Dollar Photo; CC BY-ND 2.0 (Jason Milich)

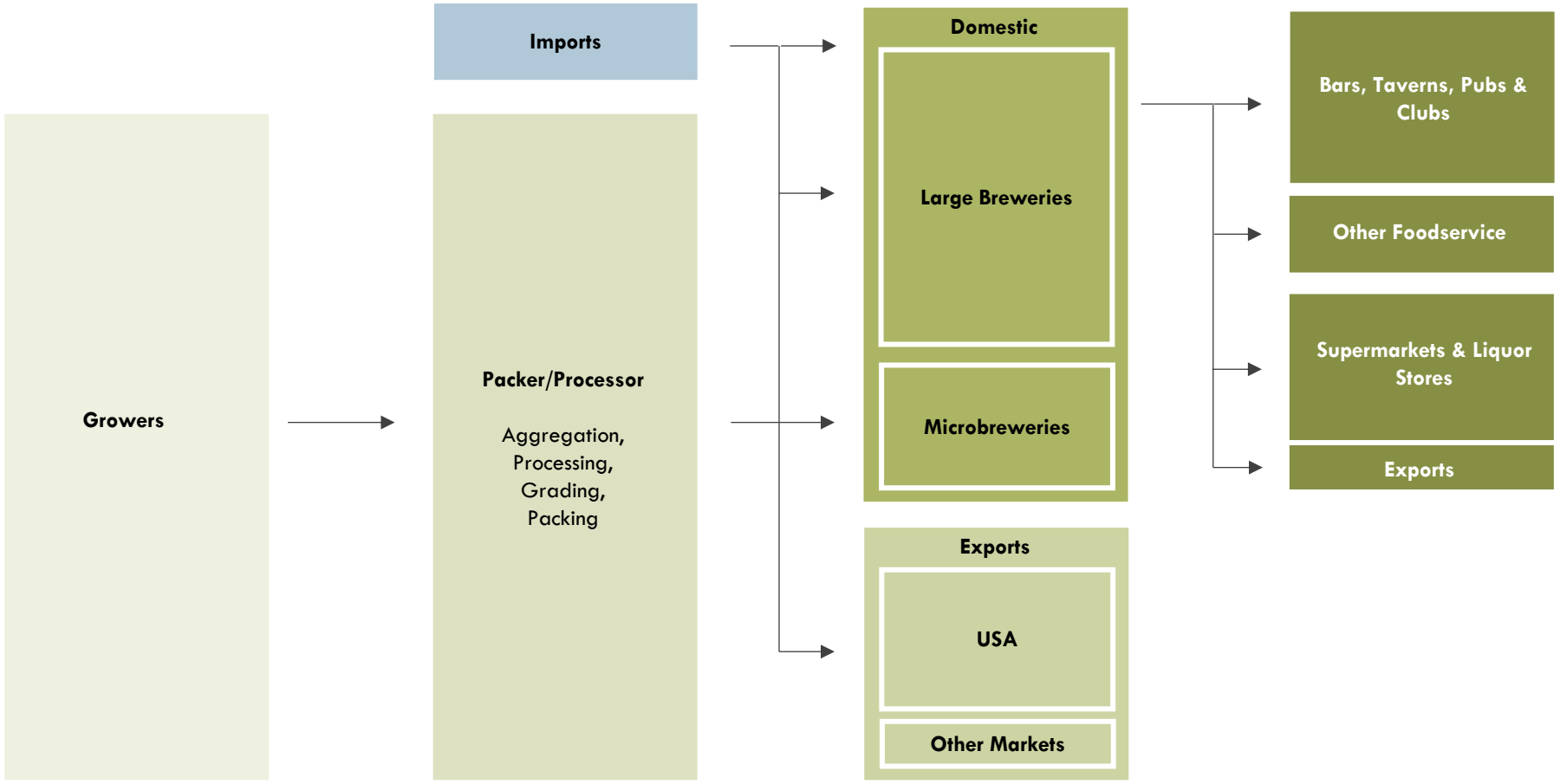
Who are the high potential customers and commercial partners?

EXAMPLES: NOT A COMPLETE LIST

NORTHLAND/AUCKLAND MICRO		NATIONAL CRAFT/MICRO		LARGE & INTERNATIONAL	
MCLEOD'S BREWERY	SCHIPPER'S BEER	MCCASHIN'S BREWERY	MOA BREWING CO.	DB BREWERIES	KIRIN
THE SAWMILL BREWING	PHAT HOUSE BREWING	GOOD GEORGE	GARAGE PROJECT	ASAHI	CARLTON & UNITED
KAINUI BREW CO.	HAURAKI BEVERAGE CO	8 WIRED BREWING	GLENORCHY BREW CO	ABINBEV	CHINA RESOURCES

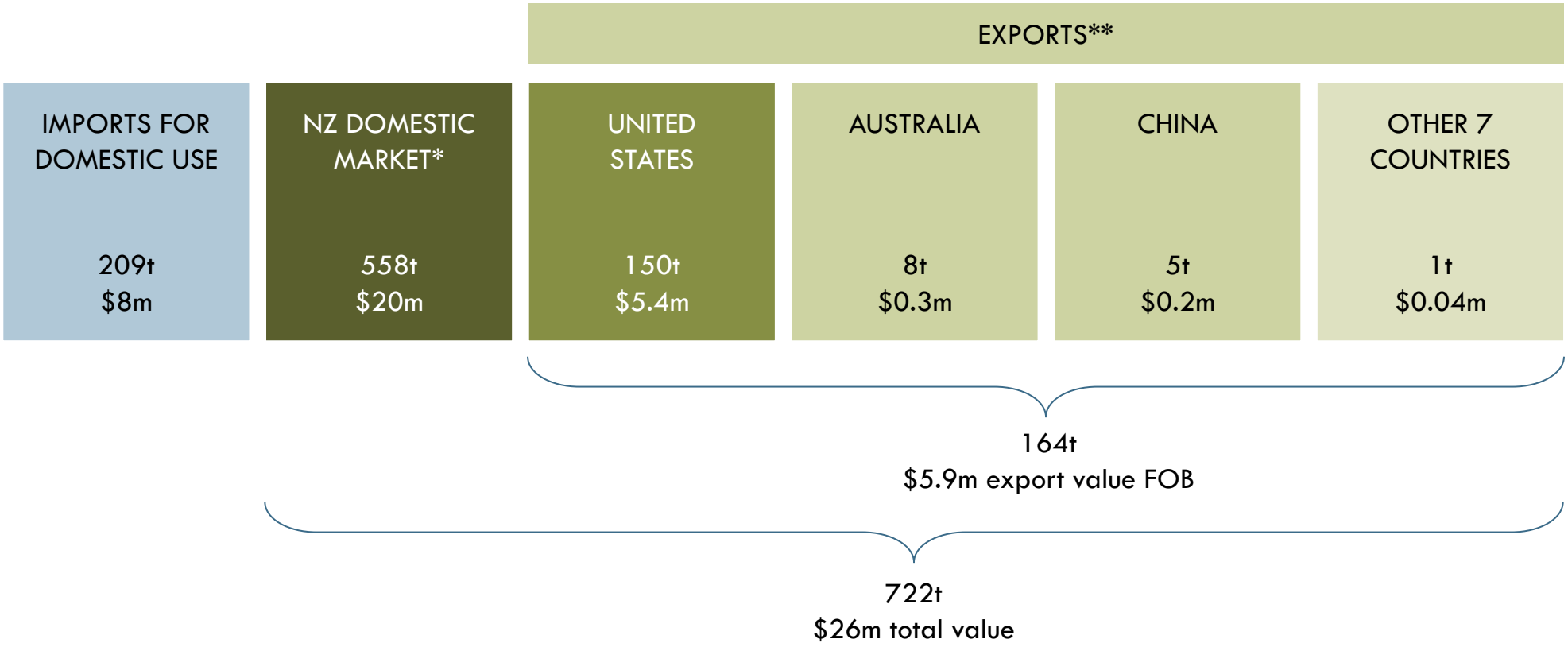
Source: company website; company annual report; various published articles and reports; Coriolis analysis

How is the supply chain organised?



Source: Coriolis analysis

What is the market situation?



** year ending June 2019; ** year ending Dec 2019; Source: Plant & Food Research Fresh Facts 2018; UN Comtrade database; Statistic New Zealand; Coriolis classification and analysis*

What is the size of the opportunity for Kaipara?

CONCEPTUAL/DIRECTIONAL

PRODUCTION

NEW HECTARES		TONNES PER HECTARE		NEW TONNES PRODUCED IN KAIPARA		MARKET VALUE PER TONNE		NEW REGIONAL REVENUE
50ha	X	1.38 t/ha	=	~70t	X	$35,750/t	=	$2.5m

Assumes Kaipara can achieve 10% of domestic production

Assumes Kaipara can match national average

Assumes domestic and export markets can absorb this new volume

Assumes FOB export price is representative of total market price for NZ grown hops

MARKET

NEW REGIONAL REVENUE		SHARE TO GROWERS		FARMGATE VALUE TO KAIPARA
$2.5m	X	70-80%	=	$2m

Assumes packhouse activities occur in region

* *Avocados New Zealand region; Source: Statistics NZ; Coriolis analysis*

How could we do it?

STRAWMAN FOR DISCUSSION

VISION:
Kaipara builds a hop industry with a worldwide reputation for delivering high quality products with a unique flavour to brewers across New Zealand, the United States and Europe

1

Promote Kaipara as location with strong potential for premium hop production

Ensure widespread access to full Kaipara Kai package of work (NIWA, P&F, Landcare, WWLA)

Investigate available variety and yield research; determine genetics with best potential in district; validate performance

2

Potentially seek to attract existing Nelson growers to Kaipara

Leverage existing local post harvest skills and capabilities

Evaluate existing packhouse options

Explore options for shared regional packing/processing facility

3

Build market in stages

Initially targeting small local/regional microbreweries

Expand to supplying larger domestic brewers as volumes increase

Finally, expand into exports focusing on premium craft brewers

Source: Coriolis analysis

Dairy Goats are an attractive and viable animal for the Kaipara district

PEANUTS

AVOCADOS

HOPS

CHICKEN MEAT

SORGHUM

Photo credit: CC BY 2.0 (Rhino White)

Why dairy goats? What is happening?

"Goat milk is easily digestible than most other animal forms of milk. Some evidence suggests that it may treat inflammation and strengthen bones better than cow milk…The milk is also naturally homogenized and offers certain therapeutic values in human nutrition. Interestingly, goat milk happens to contain more calcium and vitamins A and B6 than cow milk…Goat milk is a good source of magnesium, a mineral beneficial for the heart."

STYLECRAZE

"For many, cow milk is completely out of the question. It's difficult to digest, high in allergens and loaded with lactose that can wreak havoc on your gastrointestinal tract. Enter goat milk, a nutrient-rich alternative that's tasty, easy on the gut and far less inflammatory than regular cow's milk. For these reasons, many dairy-involved diets like the Paleo, low-carb and ketosis diet recommend goat milk. Not only is it chock-full of vitamins and minerals that your body needs, but it's also incredibly versatile. You can easily use goat milk to make healthy cheese, soap, smoothies, skin care products, desserts and more. It's a great way to add a simple, nutritious twist to your favorite tried-and-true recipes."

Dr. Axe

"Besides many beneficial effects of goat milk, the advantages of breeding goats, such as the lower cost of animals, the need for less feed and water, and often not requiring the specialized housing that larger livestock need, are reasons to promote the improvement of goat milk production worldwide."

ScienceDirect

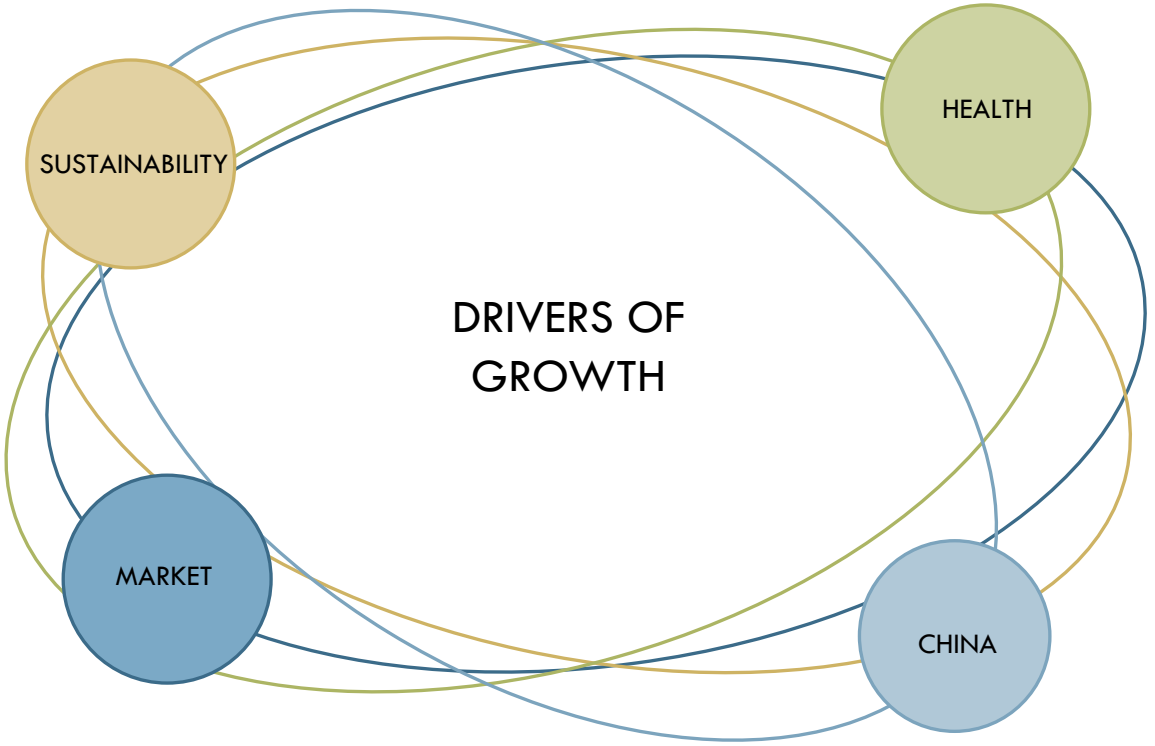
"The global goat milk market is estimated to reach revenues of around $15 billion by 2024, growing at a CAGR of more than 7% during 2018-2024…The global goat milk market by product is segmented into goat cheese, milk powder, packaged milk, UHT milk, and others. Goat cheese dominated approximately half of the total market share in 2017, growing at a CAGR of more than 5% during the forecast period. The rapidly changing food habits and increasing health issues such as obesity and high level of cholesterol are driving the growth of this segment in the global market. The vendors are tapping the recent trend of flavored milk and launch new products to maximize profits and tap the opportunities in the global market."

Market Research.com

Source: articles; interviews; Coriolis analysis

What is driving success?

"Light" on the land
Less water than cows
Less land required than cows
Complementary animal on farm



High Vitamin A
Easily digestible
Immune stimulation
Protein similar to humans

Strong demand in Asian and ethnic markets
New Zealand strong reputation for quality

Demand for infant formula in China
Pure NZ branding

Source: Coriolis analysis

What can you do with them?

Fresh Milk

UHT Milk

Kefir

Cheese

Ice cream

Powder milk

Infant Formula

Cosmetic Ingredient

Source: various company websites; Coriolis analysis. Photo credit: fair use/fair dealing; low resolution; complete product/brand for illustrative purposes

Why do it in Kaipara district? Why would it work in Kaipara?

WHY DO WE THINK WE CAN PRODUCE IT?

Suited to Kaipara climate

- Successful industry in the North Island
- Long history of animal production in the region
- Complementary to existing farming operations
- Extensive research and development activities

WHY DO WE THINK MARKETS WANT IT?

Growing demand in desirable markets

- Goat milk in high demand in key markets
- Increasing demand for alternative milk in New Zealand and globally
- New Zealand and Global processors are seeking "New Zealand" supply to fit with their branding and positioning

WHY DO WE THINK WE CAN SELL IT?

Our Unique Value Proposition

- Clear fit with "Brand Kaipara"
- Leverage New Zealand's reputation as safe and secure producer
- Excellent proximity to East & South-East Asian markets
- Isolated location with excellent biosecurity credentials

Source: Coriolis analysis; photo credit: CC BY 2.0 (Rhino White); Dollar Photo; CC BY-ND 2.0 (Jason Milich)

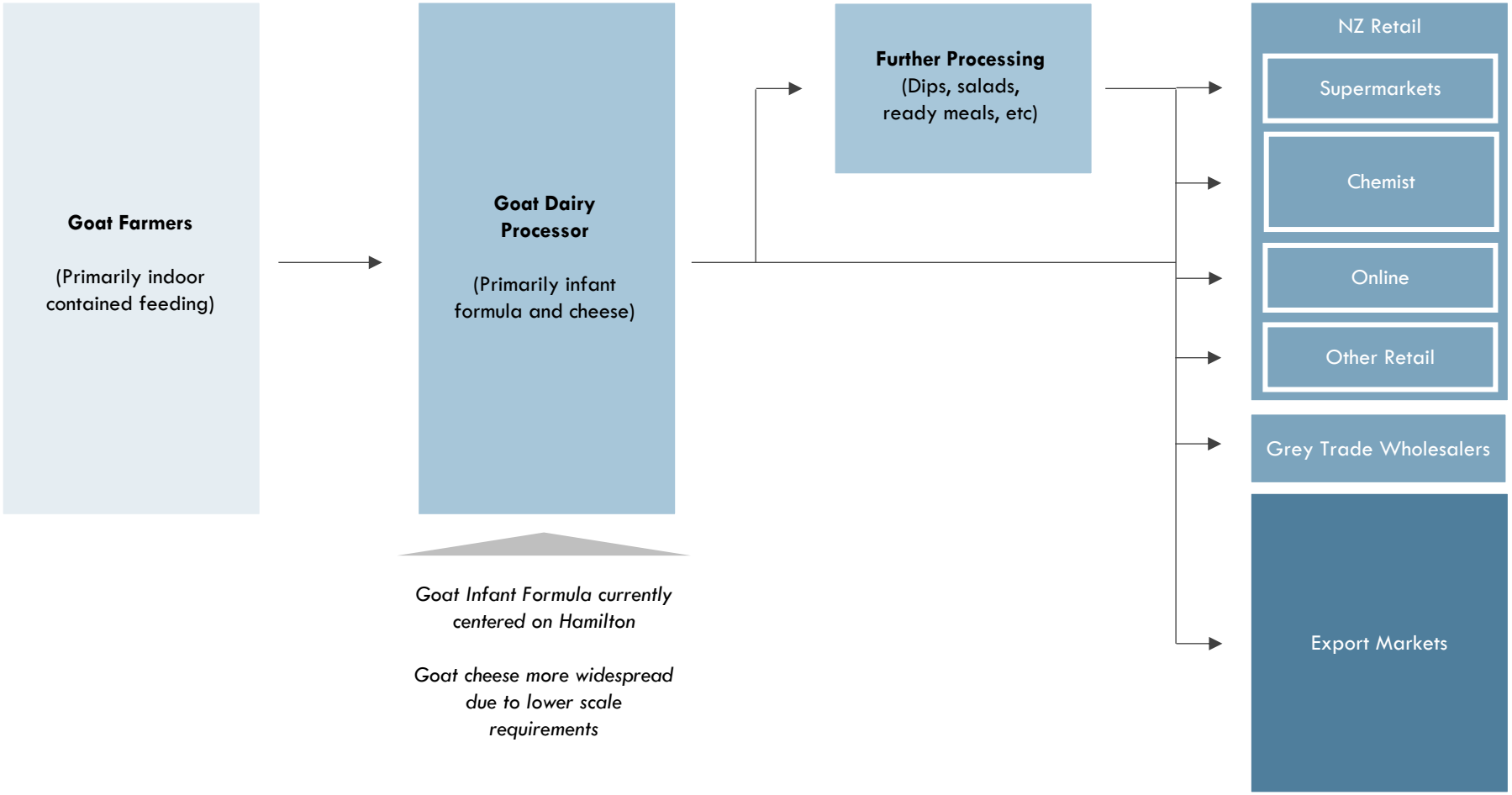
Who are the high potential customers and commercial partners?

Firm	DAIRY GOAT CO-OP	NZ DAIRY COLLABORATIVE	FRESCO NUTRITION	SANITARIUM
Relevant product categories	Powdered milk Powdered infant formula	Powdered milk Powdered infant formula	Powdered milk Powdered infant formula	UHT Milk

Firm	REAL FOODS	GRINNING GECKO	NATURALLY ORGANIC	ECO STORE
Relevant product categories	Milk	Cheese	Fresh milk	Soaps

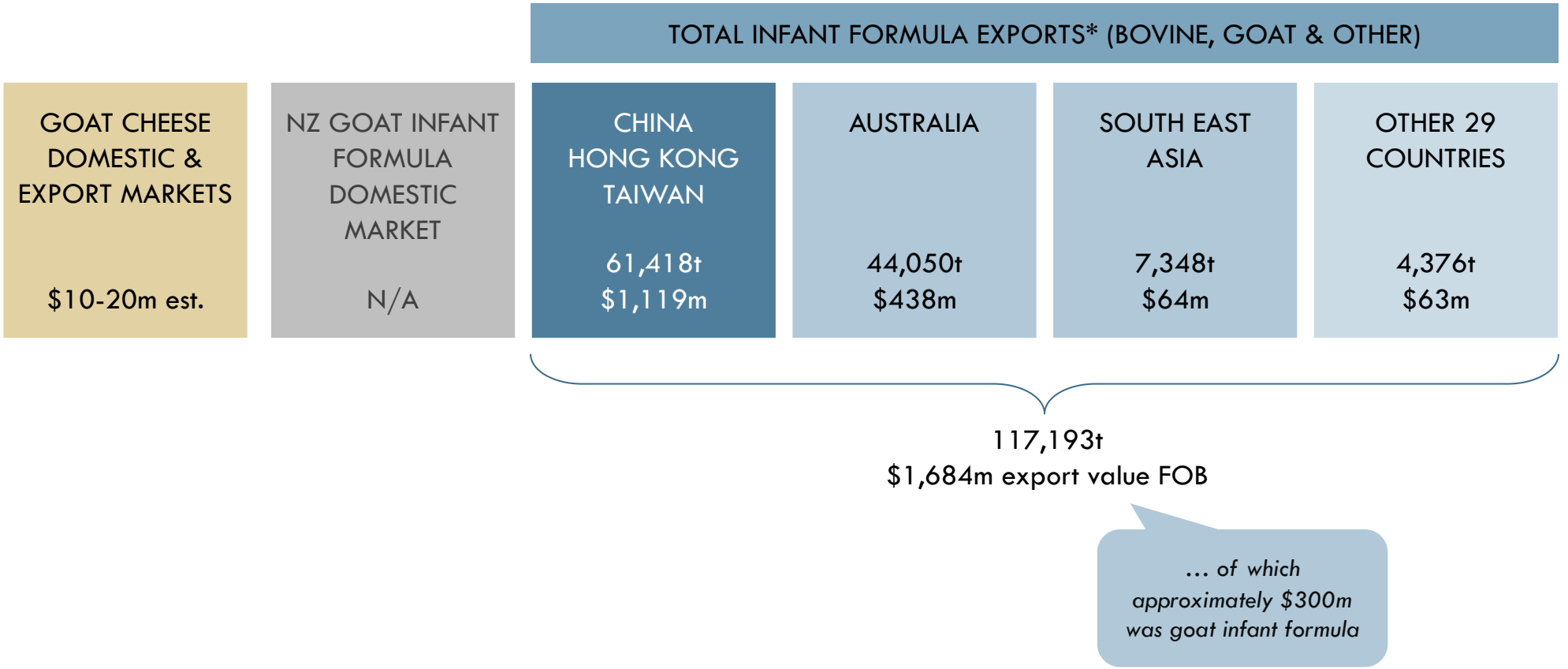
Source: company website; company annual report; various published articles and reports; Coriolis analysis

How is the supply chain organised?



Source: Coriolis analysis

What is the market situation



** New Zealand infant formula exports are not classified by species; Source: Statistics NZ; Coriolis analysis*

What is the size of the opportunity?

CONCEPTUAL/DIRECTIONAL

PRODUCTION

NEW DAIRY GOATS	X	DAIRY MILK SOLIDS PER GOAT	=	NEW TONNES PRODUCED IN KAIPARA	X	MARKET VALUE PER KG MILK SOLIDS	=	NEW REGIONAL FARMGATE REVENUE
10,000 head in milk		120 kg/head		1,200,000 kg		$18 kg		$22m

Assumes Kaipara can achieve 10% of domestic production

Assumes Kaipara can match national average

Assumes domestic and export markets can absorb this new volume

Assumes average of recent years

MARKET

NEW REGIONAL FARMGATE REVENUE	X	ADDITIONAL POTENTIAL REGIONAL VALUE	=	POTENTIAL VALUE TO KAIPARA
$22m		$18m		$40m

Would accrue if processing activities occurred in region

Source: Coriolis analysis

How could we do it?

STRAWMAN FOR DISCUSSION

VISION: Kaipara emerges as the second major dairy goat cluster in New Zealand (after Waikato), utilising locally produced feed, local farmers and world class processing facilities to deliver goat milk products to export markets across Asia

1

Promote Kaipara as location with strong potential in goat milk farming

Ensure widespread access to full Kaipara Kai package of work (NIWA, P&F, Landcare, WWLA)

Identify current and potential leaders and pioneers in the district to drive growth

2

Leverage existing bovine dairy capabilities in the district

Leverage existing bovine dairy post harvest skills and capabilities in the district

Develop cost sharing collaborative activities across feed, training and logistics

3

Encourage smaller producers to focus on locally produced goat milk cheeses and similar products

Initially supply existing major goat milk processors (e.g. DGNZ)

Develop business case to utilise FoodWaikato spray dryer to produce Kaipara Infant Formula

Source: Coriolis analysis

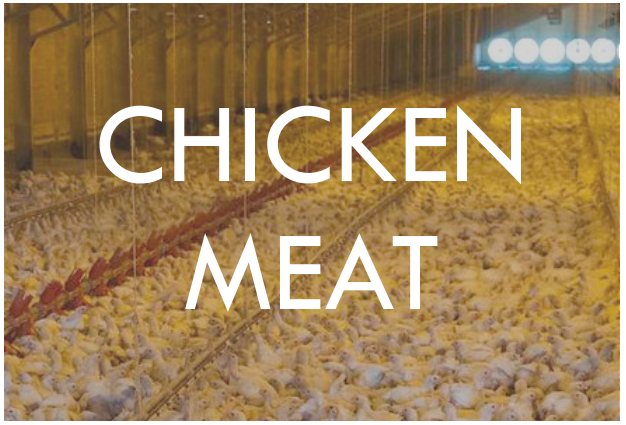
Chicken meat is an attractive sector for the Kaipara district

PEANUTS

AVOCADOS

HOPS

DAIRY GOATS



SORGHUM

Photo credit: Pixabay (Sti300p)

Why chicken meat? What is happening?

"In the OECD a club of mostly rich countries, pork and beef consumption has remained unchanged since 1990. Chicken consumption has grown by 70%... Humans gobble so many chickens that the birds now count for 23bn of the 30bn land animals living on farms… Chicken is cheap and delicious. A pound of poultry in America now costs $1.92, a fall of $1.71 since 1960 (after adjusting for inflation). Meanwhile the price of beef has fallen by $1.17 a pound to $5.80."

The Economist

"Broiler meat refers to the type of chicken that is produced for the sole purpose of meat. The global chicken meat industry consists of many different production levels including feed mills, hatcheries, growing farms, and processing plants. In 2017 there were 22.85 billion chickens worldwide, up from 14.38 billion chickens in 2000."

statista

"Chicken breast is a staple in the diets of many healthy eaters and exercisers. It's a great source of lean protein. Chicken breasts are a good source of protein and are low in fat and low in sodium. Chicken breasts provide zero grams of carbohydrate, so they are a low-carb food. The estimated glycemic load of chicken breast (skinless, boneless, and raw) is zero. Since chicken breasts are so versatile they are easy to incorporate into a healthy diet.

verywell fit

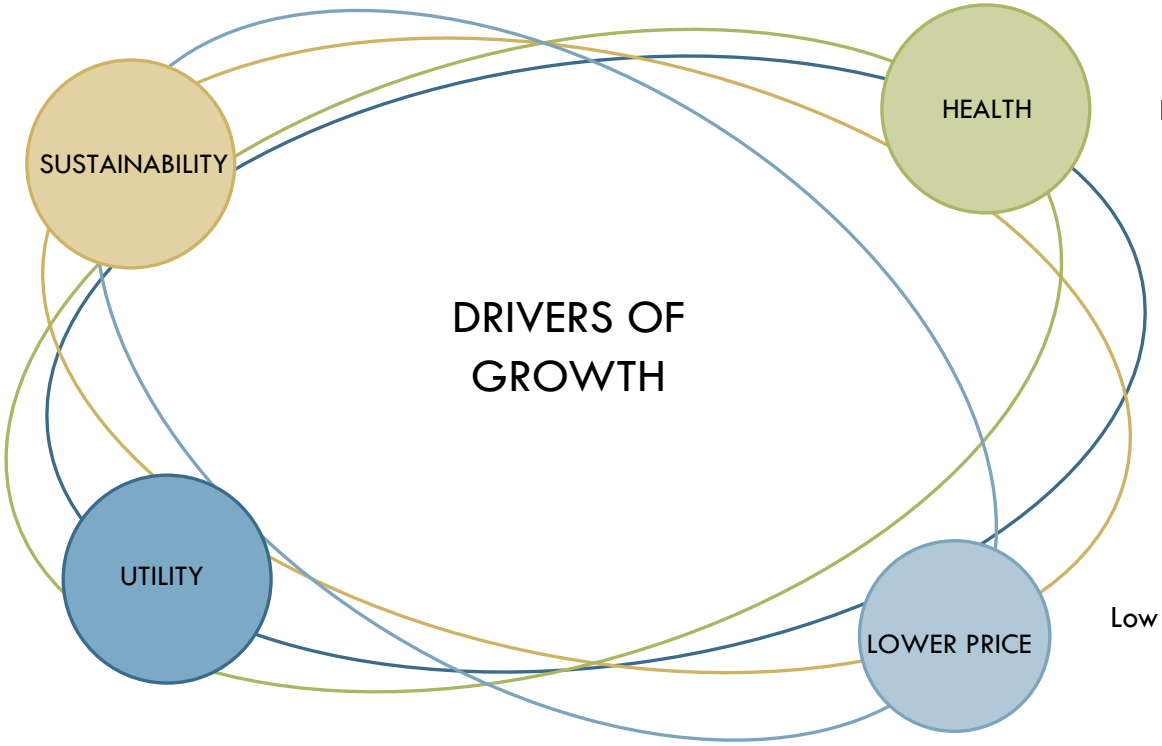
"Rising health consciousness has driven many consumers to replace red meat with leaner sources of protein, such as chicken, which has boosted poultry consumption. Rising demand for free-range and organic poultry products, supported by growing disposable incomes, has also driven industry growth over the period, as these products command higher prices."

IBISWorld

Source: articles; interviews; Coriolis analysis

What is driving success?

Lower environmental impact than other meats
Increase demand for free-range and organic



Leaner protein
Perceived as natural and healthy

Versatile meat
Numerous meals

Low cost meat protein

Source: Coriolis analysis

What can you do with them?

Whole

Sections

Processed primary (nuggets, tenders, sausages, burgers)

Smoked free range

Ready made

Soups & Broths

Ready meal

Pate

Source: various company websites; Coriolis analysis. Photo credit: fair use/fair dealing; low resolution; complete product/brand for illustrative purposes

Why do it in Kaipara district? Why would it work in Kaipara?

WHY DO WE THINK WE CAN PRODUCE IT?

Suited to Kaipara climate

- Successfully produced throughout New Zealand
- Long history of chicken production in the region
- Land and labour force available
- Large professional national companies with strong capabilities in the sector

WHY DO WE THINK MARKETS WANT IT?

Growing demand in desirable markets

- Key source of animal protein
- Growing demand domestically and globally for chicken (especially antibiotic-free and GM free)
- New Zealand chicken processors are seeking supply to fit with the sector growth

WHY DO WE THINK WE CAN SELL IT?

Our Unique Value Proposition

- Clear fit with "Brand Kaipara"
- Leverage New Zealand's reputation as safe and secure producer
- Excellent proximity to Auckland processors
- Isolated location with excellent biosecurity credentials

Source: Coriolis analysis; photo credit: Pixabay (Sti300p); Dollar Photo; CC BY-ND 2.0 (Jason Milich)

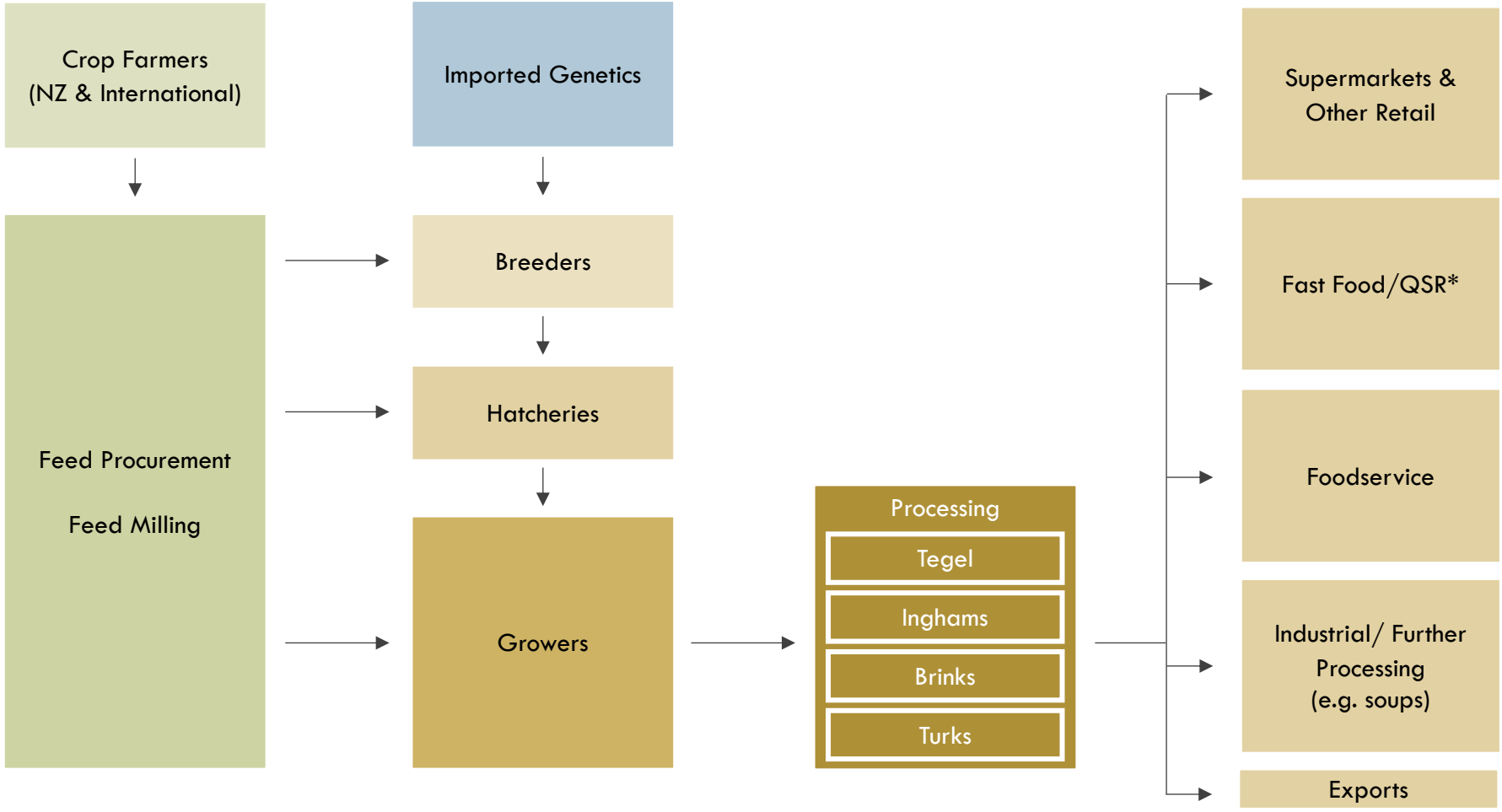
Who are the high potential customers and commercial partners?

				
Firm	TEGEL FOODS	INGHAM'S ENTERPRISES	VAN DEN BRINK POULTRY	TURK'S POULTRY FARM
Relevant product categories	Chicken fresh Chicken frozen Chicken meals Organic chicken	Chicken fresh Chicken frozen Chicken meals Organic chicken	Chicken fresh Chicken frozen Chicken meals Organic chicken	Chicken fresh Chicken frozen Chicken meals

				
Firm	KARFT HEINZ	MARKWELL FOODS	PREMIER BEEHIVE NZ	ROMANO'S FOOD GROUP
Relevant product categories	Soups & Broths Meals Noodles	Processed Chicken (nuggets, schnitzel, burgers)	Shredded cooked Sliced cooked	Pizza

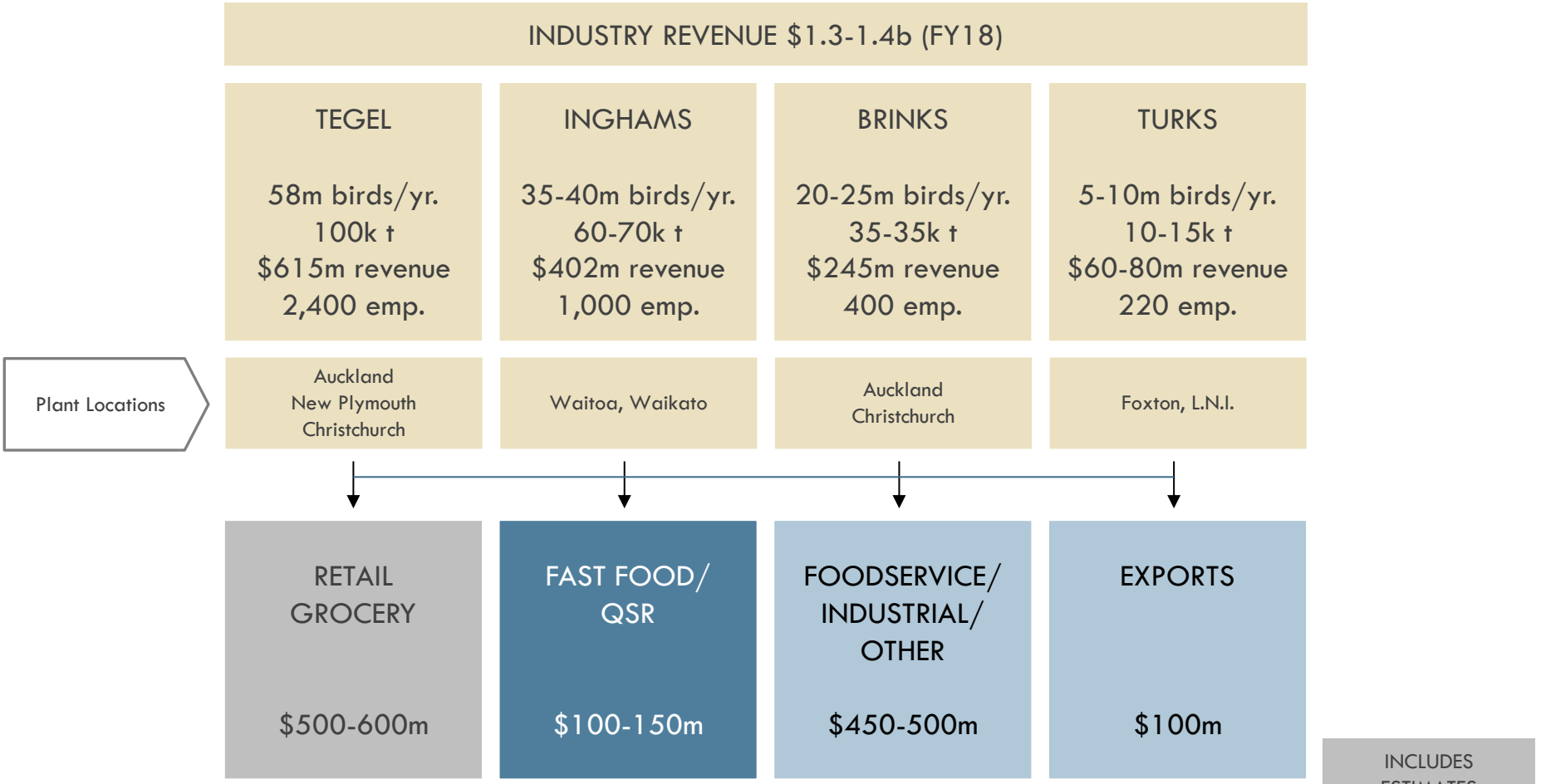
Source: company website; company annual report; various published articles and reports; Coriolis analysis

How is the supply chain organised?



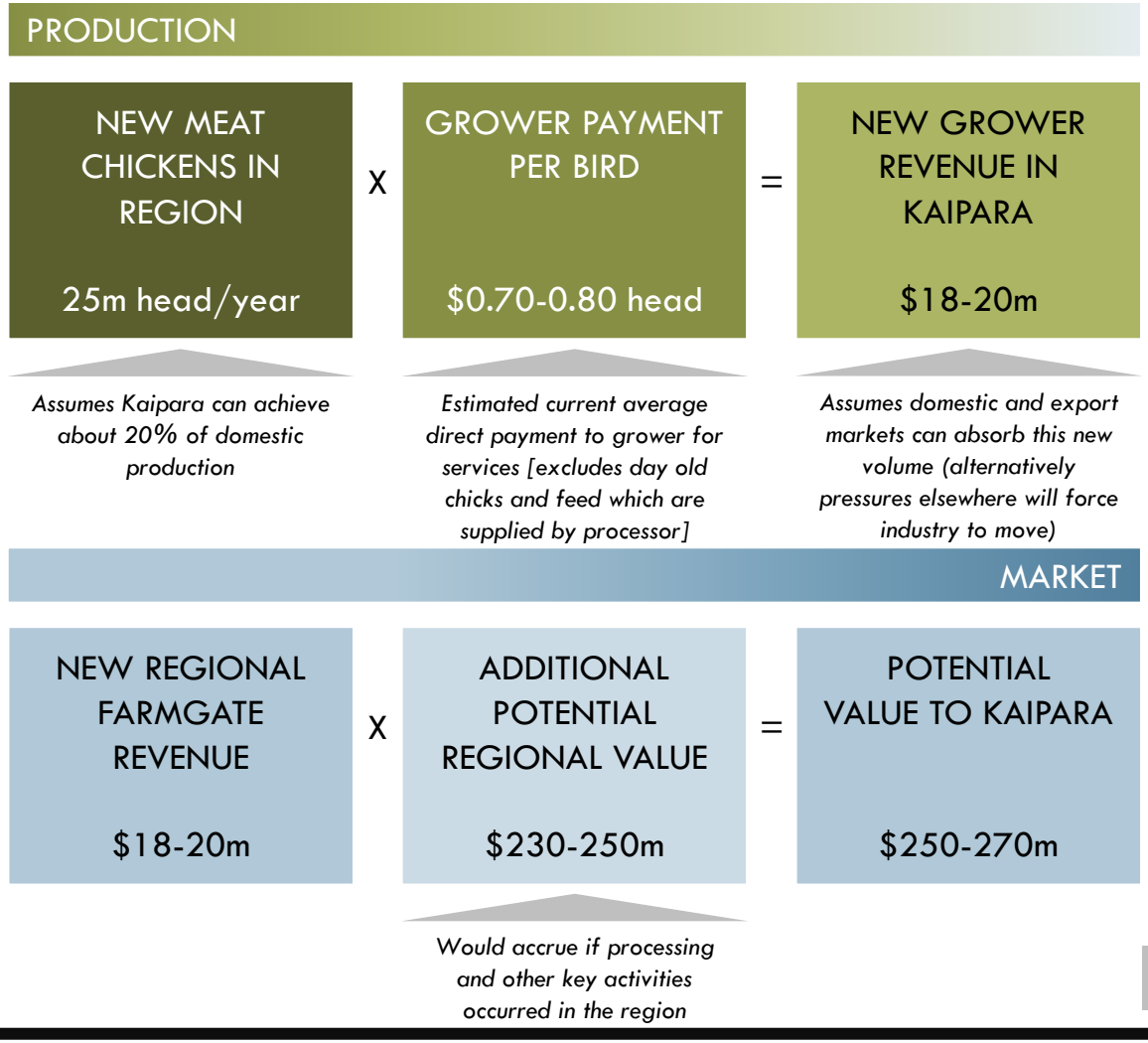
** Quick Service Restaurants (an industry term); Source: Coriolis analysis*

What is the market situation



Source: "Investor's Guide to the New Zealand Food & Beverage Industry"; UN FAO; Tegel Annual Report; Coriolis analysis

What is the size of the opportunity?



CONCEPTUAL/DIRECTIONAL

Source: Coriolis analysis

How could we do it?

STRAWMAN FOR DISCUSSION

VISION:
Kaipara emerges as one of the largest chicken producing regions in New Zealand, with a large number of low impact farming operations spread across remote areas of the district

1

Promote Kaipara as location with strong potential for "right sized," low impact chicken farming

Ensure widespread access to full Kaipara Kai package of work (NIWA, P&F, Landcare, WWLA)

Identify current and potential leaders and pioneers in the district to drive growth

2

Develop a clear plan to address local concerns about the impacts of chicken farming (i.e. low impact "out-of-the-way" locations)

Embrace shift to free range

Leverage existing high productivity farming capabilities in the district (e.g. eggs)

Build bridges into four largest poultry processors to identify firm(s) with best fit

3

Encourage smaller producers to focus on premium, free range, locally produced chicken

Initially supply existing major processor(s) in Auckland (i.e. Tegel and Brink's)

Ultimately seek to develop a business case for a processing plant in the area (400-1,000 jobs)

Source: Coriolis analysis

Sorghum is an attractive sector for the Kaipara district

PEANUTS

AVOCADOS

HOPS

DAIRY GOATS

CHICKEN MEAT

Photo credit: Pixabay (Sti300p)

Why sorghum? What is happening?

"Growing demand for sorghum as an alternative sweetener for various alcoholic beverages is a major factor driving the global sorghum market worldwide. As a result of being a versatile crop, sorghum is also used expanding markets such as floral arrangements, fencing, building material, pet food and others… Manufacturers are offering innovative sorghum-based products to the consumers in order to remain in the competition in the market. Many sorghum producers are providing healthier product offerings based on the increasing demand for sorghum as a better substitute in a variety of food products. Sorghum's versatility gives it the elasticity to reach beyond traditional markets. Hence, the global sorghum market is expected to observe robust growth over the forecast period."

TRANSPARENCY MARKET RESEARCH
In-depth Analysis. Accurate Results

"Global Sorghum Market is Expected to Grow at a CAGR of 4.2% Over the Forecast Period from 2017 to 2025: Growing demand for forage sorghum in livestock feed is driving the market growth… The global sorghum market is anticipated to witness a rapid growth on account of increase in demand for forage sorghum in livestock feed especially in Asia Pacific and Latin America."

Credence Research

"Some farmers reacted to drought conditions and low corn prices by planting sorghum instead… Grain sorghum or milo can be readily substituted for corn in cattle rations… It can also be used for dairy and swine. The energy content of milo is usually about 85% of that for corn grain, which is usually reflected in price… The seed coat of milo is essentially indigestible, so the crop needs to be ground or rolled for feeding. In general, grinding milo finer results in improved feed efficiency compared to coarser particle sizes. Grain sorghum residue is very similar to corn stalks and makes an excellent resource for fall grazing cows. Forage sorghum works best as a silage crop."

DakotaFarmer

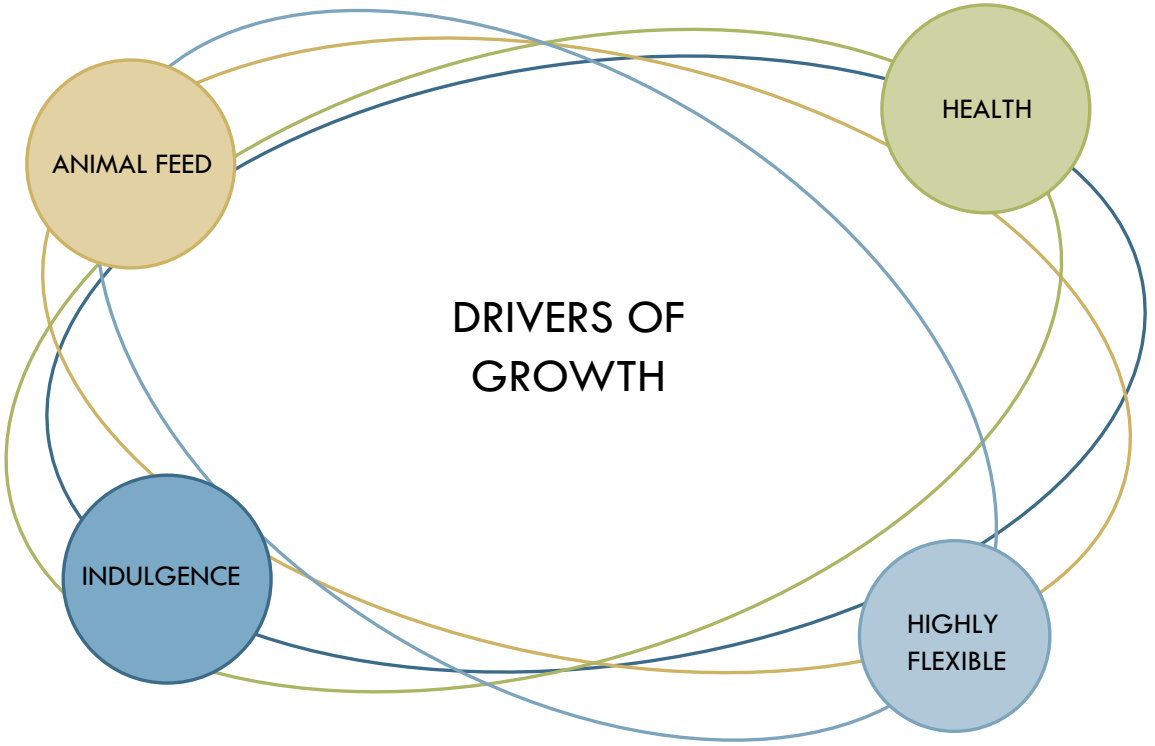
"The global sorghum market was valued at about US$8.2 billion in 2016 and is expected to cross US$11 billion by 2026… It can be used for hay production, grazing pasture and silage, and green-chop… Biomass sorghum is used for producing bioenergy, whereas Sweet is used for creating sorghum syrup, which is also used as a healthy alternative to the sweeteners used in alcoholic beverages, and for the ethanol and biofuel production."

RD REPORTS AND DATA

Source: articles; interviews; Coriolis analysis

What is driving success?

Growing global demand for animal feeds in high productivity systems



Superfood
"Ancient Grain"
Gluten Free

Sweet sorghum used in alcoholic beverages

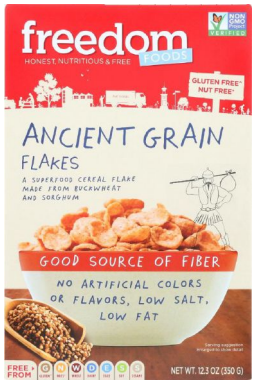
Bioenergy
Building Materials
Flower arranging

Source: Coriolis analysis

What can you do with them?

Flour

Popped Snacks



Breakfast Cereal

Canned Meals

Gluten Free Beer

Syrup Maltose/Malt Extract

Baijiu Chinese Alcoholic Spirits

Supplement

Source: various company websites; Coriolis analysis. Photo credit: fair use/fair dealing; low resolution; complete product/brand for illustrative purposes

Why do it in Kaipara district? Why would it work in Kaipara?

WHY DO WE THINK WE CAN PRODUCE IT?

Suited to Kaipara climate

- Highly drought tolerant; growing production across climatic peers
- Highly mechanised production systems and equipment
- Diversified range of sub-varieties (e.g. sweet); ongoing extensive research and development activities around new, high performance varieties

WHY DO WE THINK MARKETS WANT IT?

Growing demand in desirable markets

- New Zealand has large and growing demand for animal feeds
- Increasing demand for plant based proteins in New Zealand and globally
- Flexible crop with a huge range of uses

WHY DO WE THINK WE CAN SELL IT?

Our Unique Value Proposition

- Clear fit with changing Kaipara climate
- Kaipara is well located to supply growing domestic demand for feed grains; potential for use in the region
- Numerous processors would prefer safe, local supply rather than the challenges that come with some imports (e.g. Palm Kernel Expeller (PKE) from Indonesia)

Source: Coriolis analysis; photo credit: CC BY-SA 4.0 (Texnix) Dollar Photo; CC BY-ND 2.0 (Jason Milich)

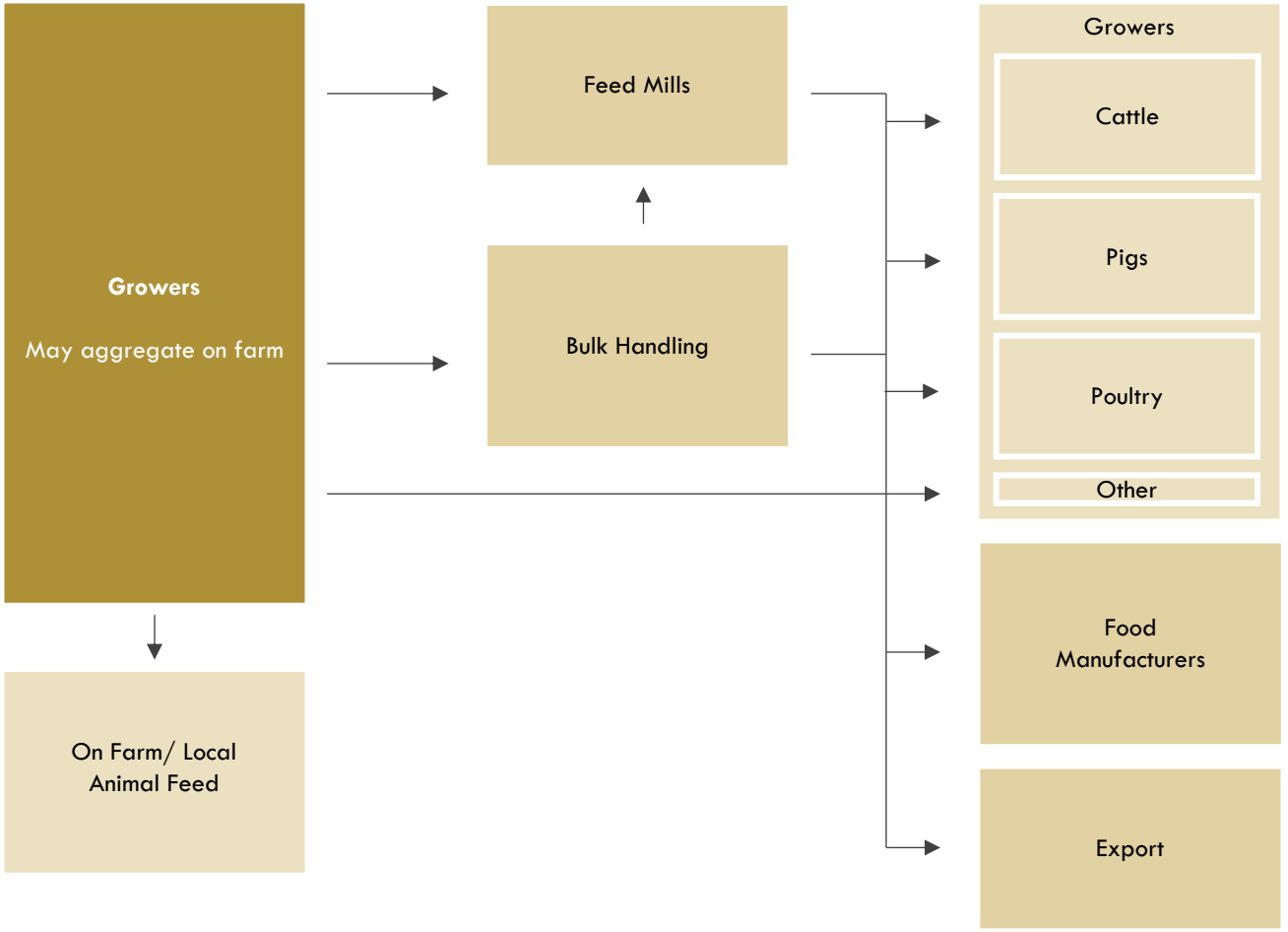
Who are the high potential customers and commercial partners?

EXAMPLES: NOT A COMPLETE LIST

FEED MILL OPERATORS			INTEGRATED PROCESSORS
MainFeeds	NRM FEED TO SUCCEED	Takanini Feeds they love it!	Tegel
MAINFEEDS	NRM	TARANAKI FEEDS	TEGEL
McMillan Equine Feeds	Reliance Feeds	Weston Milling	Ingham's Heart of the Table
MCMILLAN	RELIANCE	WESTON MILLING	INGHAMS
df Agrifeeds Balanced Nutrition Better Returns	MILLIGANS	Sharpes Stock Feeds	Brink's NZ Chicken
AGRIFEEDS	MILLIGANS	SHARPES	BRINKS

** Heinz-Watties owns Eta Peanut Butter, not Griffins (Griffin's sells Eta snack nuts); Source: company website; company annual report; various published articles and reports; Coriolis analysis*

How is the supply chain organised?



Source: Coriolis analysis

What is the market situation

TOTAL ADDRESSABLE MARKET

3.8-4.0m tonnes
$1.3-1.4b

MAJOR DOMESTIC GRAINS

Wheat	Maize	Oats	Barley
371,027t	17,347t	24,286t	379,704t

MAJOR IMPORTED WASTE STREAMS FOR ANIMAL FEED

Palm Kernel Expeller (PKE)	Soya-bean Oilcake	Brewing Dregs
$442m 1,965,352t $225/t	$154m 302,159t $510/t	$106m 323,020t $328/t

MAJOR IMPORTED GRAINS

Wheat*	Maize**
$152m 401,757t $379/t	$18m 47,044t $393/t

** Other than durum, excluding seed; ** excluding seed; Source: Coriolis analysis*

What is the size of the opportunity?

CONCEPTUAL/DIRECTIONAL

PRODUCTION

NEW HECTARES		TONNES PER HECTARE	=	NEW TONNES PRODUCED IN KAIPARA	X	MARKET VALUE PER TONNE	=	NEW REGIONAL REVENUE
10,000ha	X	5 t/ha	=	50,000t	X	NZ$355/t	=	$18m
Assumes a significant part of the land identified by NIWA, Plant & Food and Landcare can be used for grain production		*Assumes Kaipara can match a large Texas or Kansas operator*		*Assumes domestic and export markets can absorb this new volume*		*Assumes effective CIF landed world price for sorghum*		*Assumes grain is kept in on farm storage then sold direct to customers (total is before NZ distribution costs) Equivalent to $1,800/hectare*

Source: Coriolis analysis

How could we do it?

STRAWMAN FOR DISCUSSION

VISION: Kaipara embraces the potential for transformational land use and transitions large areas of existing farmland to drought tolerant sorghum and becomes a major supplier of animal feed to New Zealand feed mills and animal systems

1

Promote benefits of growing sorghum to farmers in the region

Ensure widespread access to full Kaipara Kai package of work (NIWA, P&F, Landcare, WWLA)

Identify current and potential leaders and pioneers in the district to drive growth

Investigate available variety and yield research; determine genetics with best potential in region

2

Build relationships into key domestic feed millers

Develop high efficiency logistics systems and supply chains

Investigate options and potential partners for joint venture facilities in the district

- Bulk handling
- Feed milling

3

Where possible, use locally produced animal feed in the district

Build market, initially targeting New Zealand produced animal feeds

Develop efficient supply chains into these key buyers

Source: Coriolis analysis

TABLE OF CONTENTS

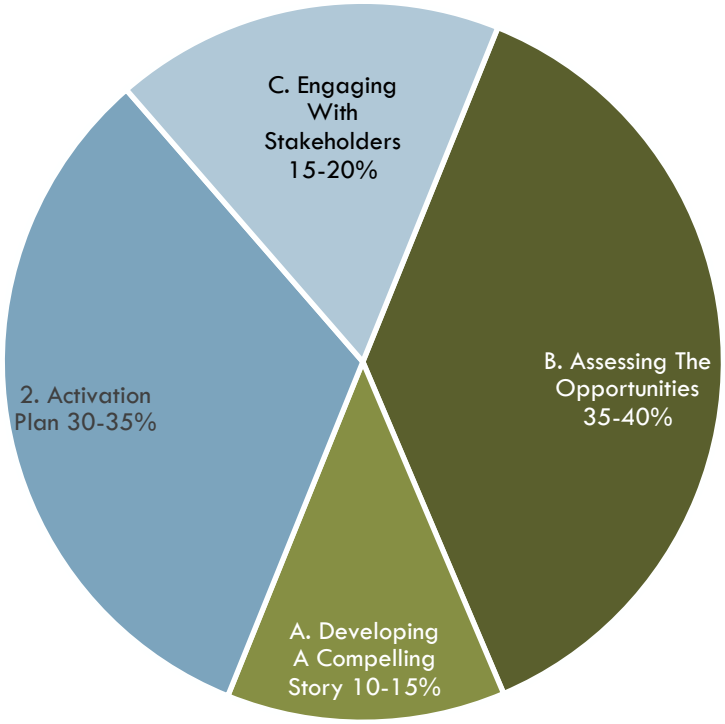
DEVELOPING A COMPELLING STORY

ASSESSING THE OPPORTUNITIES

The project worked to the following time and resource allocation (as guided by the Steering Group)

APPROXIMATE TIME & RESOURCE ALLOCATION BY TASK

2 ACTIVATION PLAN BUILDING PATHWAYS TO SUCCESS



1 KAIPARA KAI FEASIBILITY STUDY

This project worked in three workstreams designed to deliver on the project specifications

"PUBLIC/MARKET FACING" FEASIBILITY STUDY		"GOVERNMENT/STAKEHOLDER" FACING (2) ACTIVATION PLAN: BUILDING A PATHWAY TO SUCCESS
A. DEVELOPING THE COMPELLING STORY	B. ASSESSING THE OPPORTUNITY	
6.2 Creates a compelling economic story for Kaipara's future 7.2 Increase Kaipara's identity as significant food producer 6.1 Provides Councils funding provider the Ministry of Business Innovation & Employment evidence to support further investment in Kaipara where it is needed. 6.5 Provides Kaipara landowners and investors from other parts of New Zealand an appropriate level of information to give them confidence to consider Kaipara for their business. 3.5 To give business investors confidence and answer they 'why' they would invest in Kaipara. This base level of information from the Kai Feasibility Study combined with technical information about land, water and climate will from the basis for decision making. 3.1 & 4.1 What is Kaipara's Kai potential? What does Kaipara's Kai potential look like? 3.3 & 4.3 How does this fit into the NZ landscape (tech, innovation, industry groups, export) for food production? How does Kaipara fit into the New Zealand landscape for Kai production? 7.6 Identify complementary activity around NZ - what is best opportunity for Kaipara 5.7 Environment scan - what's happening across New Zealand, how does Kaipara complement this? 5.11 What does Kaipara's Kai future look like? – social, cultural, economic and environmental benefits. 5.4 Future scenarios that identify gaps and opportunities. 5.6 Infrastructure inventory – what exists, what is needed to support Kaipara's opportunity? 7.5 Support case for water storage long term and get interim solutions	1.1 The opportunity under the Kai project is to develop Kaipara into a food bowl for New Zealand and for international markets. 5.1 What food production is working well and what are the opportunities to build value around that food? 5.3 What are new avenues for growth? 1.2 The Feasibility Study will explore land opportunities in horticulture and livestock, as well as aquaculture opportunity in Kaipara waterways. 2.1 Extend previous topo-climate study to other parts of Kaipara District – extending previous application and geographic area 2.2 Explore new crop types, aqua culture opportunities and options to adapt to climate change 4.4 What opportunities exist for Kaipara to support market demand, domestically and internationally? 4.5 What opportunities exist related to technology and innovation? 4.6 Identify any other opportunities for Kaipara that are not listed here. 5.10 Commercial assessment – whole of life view by identified food opportunity including risks. 2.3 Conduct commercial and financial analysis (e.g. encourage private sector investment and facilitate food clusters of different foods) 2.4 Develop a guide to assist locals through the process of moving to higher-value activities. 5.2 & 7.7 What is the Cluster and smart specialisation potential for Kai in Kaipara? 5.8 What is the Circular economy opportunity, e.g. what happens to waste product?	1.3 The Feasibility Study will inform the basis of an Activation Plan providing a recommended approach to realising Kaipara Kai opportunities. 3.2 & 4.2 What is the pathway to reaching Kaipara's Kai potential? 5.5 What are Kaipara's food production constraints, e.g. channel to market, attracting and retaining staff, support with appropriate diversification options etc. 7.4 Identify early adopters 5.9 Who are Kaipara's potential partners, investors? 3.4 Who could Kaipara partner and collaborate with for the benefit of Kaipara, NZ and international markets? 4.7 The objectives should be measured against the KKS strategic outcomes and be commercially, socially, culturally and economically viable. 6.3 Supports social and cultural outcomes sought by invigorating Kaipara communities 6.4 Restores and protects Kaipara's land and water and is sustainable supporting New Zealand's environmental goals. 7.1 Build momentum in transforming Kaipara and increasing the horticulture economy creating jobs and a more sustainable communities 7.3 Increase value of land
Informing	*Informing*	*Informing*
C. ENGAGING WITH STAKEHOLDERS		

The workstreams and outputs were designed around the wide range of targeted audiences for Kaipara Kai

"GOVERNMENT /STAKEHOLDER" FACING (ACTIVATION)

B ASSESSING THE OPPORTUNITIES

2 ACTIVATION PLAN BUILDING PATHWAYS TO SUCCESS

"PUBLIC/MARKET" FACING (FEASIBILITY)

1 KAIPARA KAI FEASIBILITY STUDY

LINKAGES

LAND USE

WATER USE

NIWA Taihoro Nukurangi

Plant & Food RESEARCH RANGAHAU AHUMARA KAI

Manaaki Whenua Landcare Research

WILLIAMSON WATER & LAND ADVISORY

KAIPARA DISTRICT Kaipara te Oranganui • Two Oceans Two Harbours

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT HIKINA WHAKATUTUKI

Other Key Stakeholders

Other Government

Residents

Regional Farmers

Firms not in the Region

Investors

Regional Firms

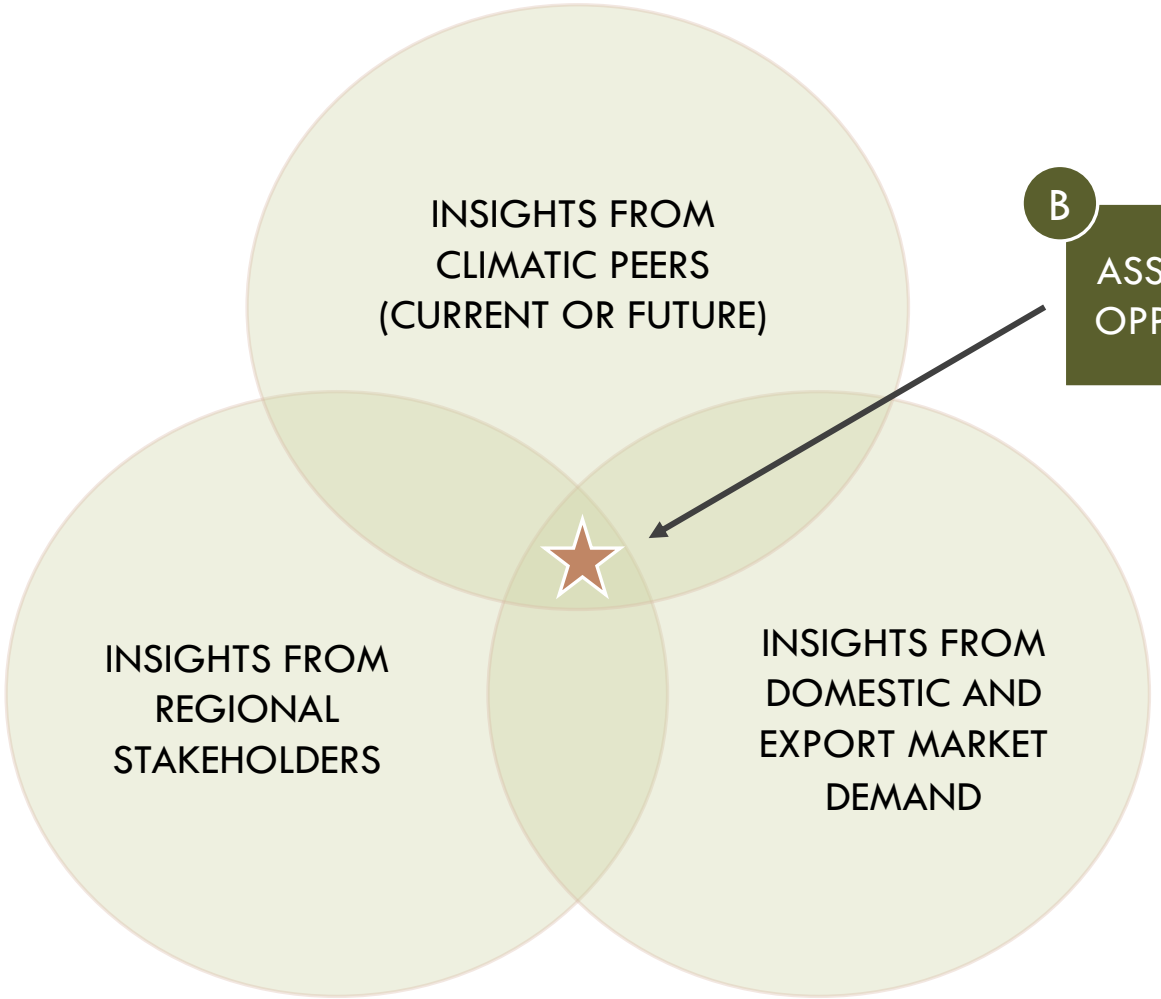
Other Stakeholders

Regional Maori Groups

Farmers in Other Regions

Other Government

As a priority, the project initially focused on opportunities for new agricultural systems in the region to feed into a related project



B

ASSESSING THE OPPORTUNITIES

AQUA-CULTURE

ANIMAL SYSTEMS

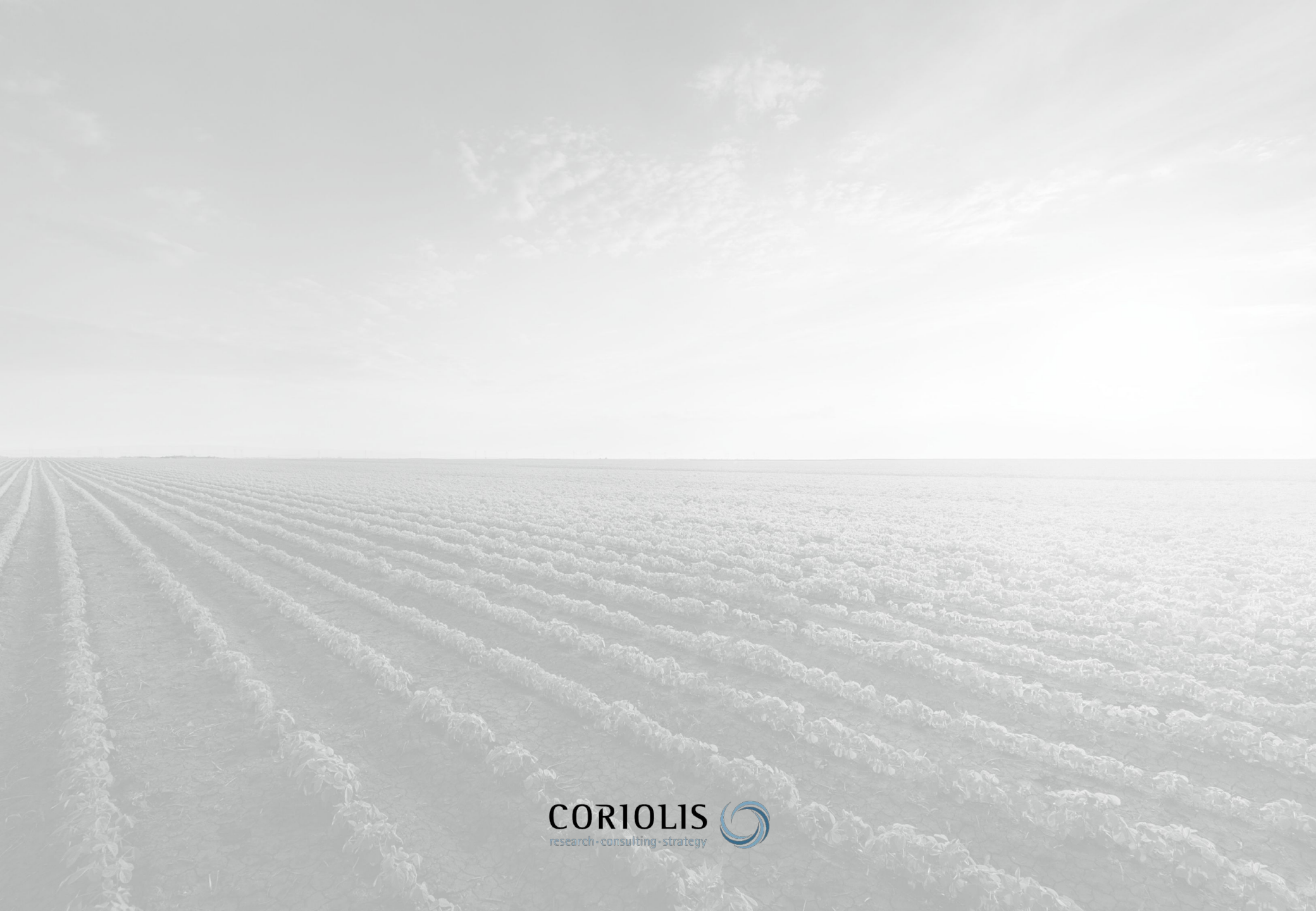
PLANT SYSTEMS

NIWA Taihoro Nukurangi | Plant & Food RESEARCH RANGAHAU AHUMARA KAI | Manaaki Whenua Landcare Research

RELATED LAND USE PROJECT

ACCRONYMS

CAGR	Compound Annual Growth Rate
CRI	Crown Research Institute
Est.	Estimated
F&B	Food and Beverage
FOB	Free on Board
GDP	Gross Domestic Product
KG	Kilogram
KDC	Kaipara District Council
KKS	Kaipara Kick Start
M	Million
MBIE	Ministry of Business Innovation and Employment
MPI	Ministry of Primary Industries
NIWA	National Institute of Water and Atmospheric Research
NSW	New South Wales
P&F	Plant and Food Research
PKE	Palm Kernel Expeller
SFF	Silver Fern Farms
SNZ	Statistics New Zealand Tonne
T	Tonne
US	United States (of America)
WWLA	Williamson Water and Land Advisory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