



New Zealand's Food Story

The Pukekohe Hub

Prepared for Horticulture New Zealand

August 2018

Foreword

Horticulture is one of the success stories of New Zealand's primary industries. In 2017, the industry generated \$5.68 billion in value. Export revenue has grown nearly 50% in five years, illustrating the trust the world places in New Zealand-grown food, and the country's ability to meet that demand.

But the industry cannot rest. New Zealand faces opportunities with a growing population and the need to grow fresh produce. Nowhere is this more apparent than in Auckland, and its surrounding rural land. The population is set to rise to 2.3 million by 2043, straining natural resources and infrastructure. And growers are feeling that pressure. The Pukekohe growing hub straddles the Auckland and Waikato District boundaries, and it is key to sustaining the fresh food supply to the country's largest city. The squeeze on prime growing land in the Pukekohe hub, access to water, and the tensions between the existing industry and new neighbourhoods all mean a more considered and concerted approach to planning is needed. It is the right time to start the conversation about New Zealand's sustainable food supply with a focus on a growing area experiencing change.

Our economic analysis suggests that, over the next 25 years, the Pukekohe hub could face constrained horticulture production. If left unchecked, less production could result in lost economic value, higher prices for customers, and job losses for the industry itself and the sectors it supports.

The value the Pukekohe hub provides is not just monetary. By using the Treasury's Living Standards Framework, we have outlined the Social, Human and Natural values that make this area special. At the same time, we have also described the constraints and issues the hub is experiencing.

The challenges to ensuring the Pukekohe hub remains a bulwark of New Zealand's food supply are not small. Some run up against current planning and policy settings. Success requires central and local government to work with the industry to best protect and enhance this natural asset, and sustainable business models.

In undertaking the research for this report, we spoke to a range of growers, retailers and distributors, all of whom provided valuable views on the importance of the Pukekohe growing hub.

We hope our New Zealand Food Story provides you with valuable insights into the health of the industry, and furthers the conversation on the strategic importance of the country's food security.



Andrew Gibbs

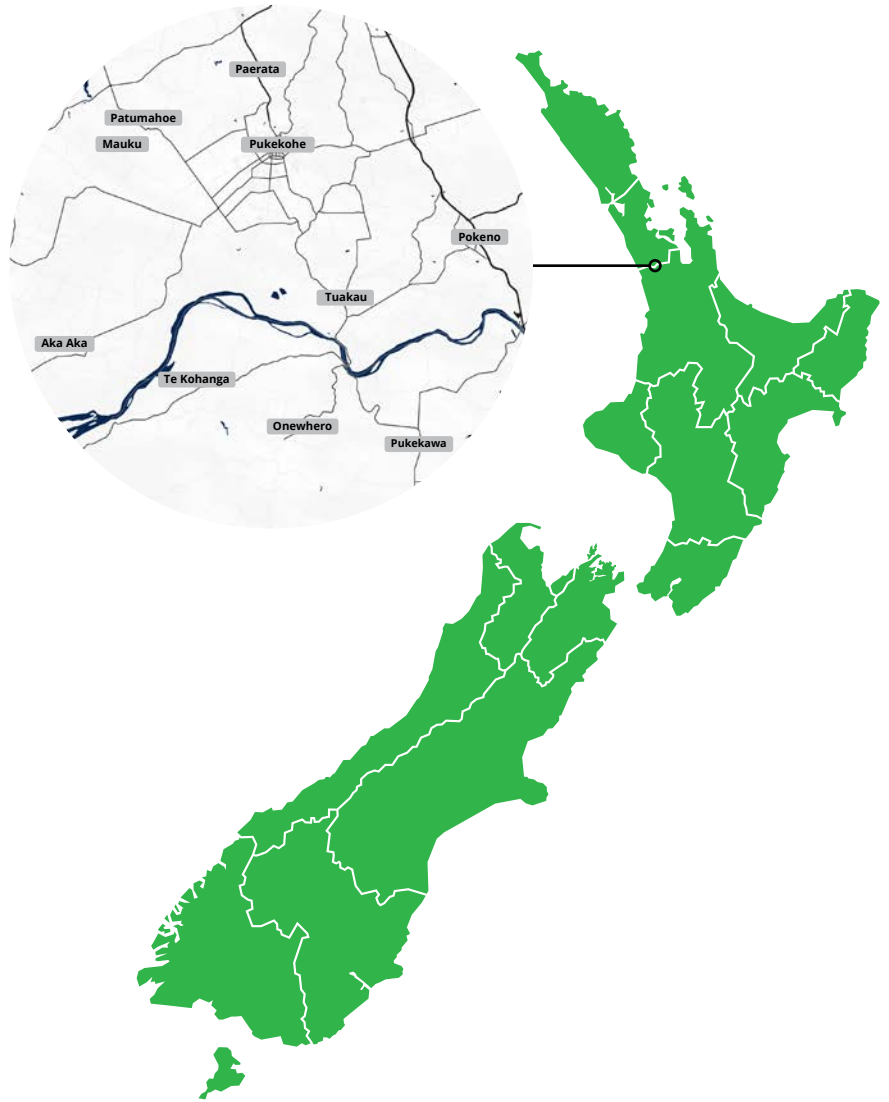
Partner
Deloitte



Horticulture's place in New Zealand

New Zealanders are lucky to have most of their fresh vegetables grown locally – and they love them, spending over \$1.3 billion on vegetables and \$970 million on fruit each year. This demand is only set to continue as the population grows and consumer preferences change.

While demand is unrelenting, the horticulture industry's ability to serve New Zealanders is stretched. Urban growth from 1996 to 2012 saw a 10% increase in the size of towns and cities. Between 2002 and 2016 there has been a 30% reduction in vegetable-growing land across New Zealand. Significant and often swift land-use change is putting pressure on our growing hubs – like Pukekohe, Manawatū, Hawke's Bay and Central Otago – to keep up with New Zealanders' appetite for fruit and vegetables.



Horticulture in the Pukekohe hub

The Pukekohe hub encompasses Paerata and Patumahoe to the north, Aka Aka to the west, Pokeno to the east, and borders on Onewhero and Pukekawa to the south. It comprises 4,359 hectares of some of New Zealand's most fertile and productive soils. A lot of growing occurs outside the hub, and produce is transported into the area for processing. The hub's temperate, forgiving climate, and proximity to key transport routes, means it's ideally placed to provide year-round vegetables to our biggest and fastest-growing city, Auckland.

It is a small area – just 0.01% of the size of Auckland. And while Pukekohe accounts for just 3.8% of the country's land under fruit and vegetable production, it contributes to 26% of the nation's value of production of vegetables, and a lesser proportion of fruit.

The hub largely focuses on vegetable growing and processing for the domestic market, particularly potatoes, carrots, leafy greens, brassicas (broccoli, cauliflower and cabbage), tomatoes and onions – of which its Longkeeper onion variety is world-famous. Kiwifruit are also grown, largely for export.

While urban sprawl in rural towns with close proximity to major cities is not unusual, the impact on the Pukekohe hub is. The loss of productive land to urbanisation in the hub is not just a land-use change issue, but one of food security.

The bulk of the Pukekohe hub's produce goes to Auckland. The city is expected to be home to 2.3 million people by 2043 – up 37% on 2018. This, coupled with changing consumer preferences for sustainable

produce and plant-based diets, means the hub is well-placed to meet growing demand. Yet there is less land available for cultivation, and a widening disconnect between New Zealanders and their food sources. With further growth in supply potentially constrained, and demand rising, the country runs the real risk of not being able to provide its own population with adequate and affordable fruit and vegetables, unless New Zealanders understand the value and contribution made by growing areas, such as the Pukekohe hub, and manage them effectively.

The Pukekohe growing hub

A national asset of opportunity

Pukekohe's hub contributes \$261m to GDP



Fruit and vegetables grown in the hub provide nutritional benefits and food at an affordable price

Intergenerational family-owned businesses and a multi-cultural workforce instil a sense of civic pride

Yet the hub is under threat:

Auckland's population is expected to grow almost **37%** in the next 25 years



Population growth and changing consumer preferences mean demand for fruit and vegetables will increase

Pukekohe town's population is expected to grow to 50,000 by 2043



Urban encroachment means productive land is being used for other purposes

When town meets country, tensions can arise (reverse sensitivities)

Growers are struggling with the cost of land, intensive growing, competition for water, and sourcing labour



Some growers are diversifying their operations away from Pukekohe to areas like the Matamata - Piako district



The right balance must be struck:



Auckland and the Waikato need to make the most of this productive land to contribute to New Zealand's food security



The tensions of land use, water access and maintaining cohesive communities need to be managed

Or the hub faces an alternate future where growth is constrained, domestic food supply is diminished, and the industry loses up to \$1.1 billion over the next 25 years

The four capitals of wellbeing need to be balanced for the benefit of New Zealand

Understanding value through the Living Standards Framework's four capitals

The Treasury is beginning to measure value through its Living Standards Framework (LSF). The LSF draws on the concept of fostering holistic wellbeing through reporting on the growth and distribution of four interdependent capitals: social; financial; human; and natural capital. The Government has indicated it will use Treasury's LSF to develop the world's first wellbeing Budget in 2019 to better measure the country's success.

Deloitte spoke to a range of growers, distributors and retailers to understand benefits and issues in the hub, and used the four capitals of the LSF to provide a comprehensive picture of the wider value contributed – and constraints experienced – by the industry. Capitals are not weighted, nor are trade-offs between capitals proposed – but looking at the value of the hub through this holistic lens can assist future decision-makers to drive an informed debate.



Social capital

- ✔ Contributes to social stability
- ✔ Creates and contributes significantly to vibrant businesses and communities
- ✔ Intergenerational employment and legacy businesses
- ✘ Increasing constraints due to reverse sensitivities



Natural capital

- ✔ Unique climate and soils
- ✔ Advantage of year-round supply of certain vegetables
- ✘ Absence of economically sustainable rotational crops
- ✘ Urban encroachment has a wider impact on the hub's other natural resources
- ✘ Competition for water



Human capital

- ✔ Vital source of direct and indirect employment at 3,090 FTEs
- ✔ Contributes to physical health – 62% of New Zealanders eat 3-plus vegetables each day
- ✘ Succession planning is a key concern
- ✘ Hard to source skilled and unskilled labour
- ✘ Industry is not seen as a viable career path



Financial capital

- ✔ Strong economic contribution, estimated at \$261 million
- ✔ The hub is a key part of horticulture's wider supply chain
- ✘ Future growth within the hub is potentially constrained
- ✘ Low margins and return on capital is a continuing challenge

Case Study: RC Hari & Sons – The unique nature of Pukekohe is worth protecting

RC Hari began cropping in the Pukekohe area in the late 1930s, mainly potatoes, beetroot and other root crops. He was also a founding member of the Pukekohe Indian Hockey Club. 73 years later, RC Hari's grandson, Kiran Hari, is following in his forebear's footsteps in more ways than one. He's heavily involved in hockey at the Pukekohe Indian Sports Club, as well as being one of four directors at the family business – along with his father and uncle, and his cousin, Pravin.

With the family's roots in the area going back nearly 100 years, the cousins feel deeply about the contribution horticulture makes to Pukekohe's communities. But, with pressure for living space seeing developments spread from Auckland proper into the area, they worry the industry – and the jobs it creates – will suffer.

"A National Policy Statement to protect elite soils and productive land would be good," says Pravin Hari. "There needs to

be a rural zone, as farming on land very close to town can be difficult for both growers and their neighbours."

The cousins don't want to sell their land. "We believe there is long-term gain from being part of this industry. We just want it to be sustainable, in terms of natural,

physical and human assets, so these factors can be rolled together and businesses can run at a profit.

"Once you lose a grower, it can be very hard to get them back."



Kiran (left) and Pravin Hari

Natural capital

The hub's place as a growing mecca is not assured, with population growth seeing prime growing land built over with houses or subdivided into lifestyle blocks. A great deal of the water supply is underground. Once ground is covered over with concrete for housing, the water table is not replenished, as rain runs off into drains instead of soaking into the soil. Bore water sustains Pukekohe over long, dry summers – but the winter rain needs to be captured first to sustain that underground supply.

Urban encroachment has happened gradually in Pukekohe, creating two major issues for land use:

- A drive to produce more on less land, and the need to work that productive land harder, due to the absence of economically sustainable rotational crops
- Competition for water, given the conflicting interests of domestic and commercial consumption

Financial capital

The estimated current economic contribution of the Pukekohe hub's horticulture industry is \$261 million. This small growing hub, 0.01% of the size of Auckland, contributes a respectable 0.3% to Auckland's regional economy. This economic contribution is both direct and indirect:

- The hub's horticulture industry directly contributes approximately \$86 million each year to the regional economy
- The hub's indirect contribution, reflecting expenditure on things such as agriculture support services, water, machinery, feed, fertiliser and seed, is \$175 million each year

The indirect economic contribution emphasises the array of economic spillover effects rippling through industries linked to horticulture.

Human capital

Health and wellbeing are essential to people's ability to function and thrive. There is a well-established link between an increased intake of fruit and vegetables and improved health outcomes.

The Ministry of Health recommends New Zealand adults eat at least three servings of vegetables and two of fruit each day. According to the New Zealand Health Survey, 62% of all adults meet the minimum vegetable intake requirement, although less than half of Asian and Pasifika adults

“When you live in Pukekohe you can't really see the urban creep because it's a bit at a time – but it's really obvious now.”

Bharat Jivan
Jivan Produce

meet it. 54% of adults meet the minimum fruit intake requirement. The industry's contribution to human capital goes beyond diet and nutrition.

Horticulture directly contributes 1,458 full time equivalent (FTEs) to the region. During 2017, the hub accounted for nearly a quarter of the total 6,700 FTEs employed in indoor and outdoor vegetable growing in New Zealand, reflecting its importance to the country's food supply.

Taking into account employment within intermediate industries, it contributes 1,632 FTEs to the region. Including both direct and indirect employment, the hub creates 3,090 FTEs.

Despite this, the industry is challenged by a dwindling supply of skilled and unskilled labour, and fewer people interested in working in horticulture, possibly because it is not promoted as a viable career path. There is a risk skills and talent will be lost to other industries. This, plus the rising cost of land, and the increasing urban disconnect, creates a potential succession planning risk to New Zealand's food security. This is exacerbated by the technical nature of the industry and efficiencies required to make a return on investment.

Social capital

The contributions of the hub's legacy horticulture businesses to the area's social fabric is palpable. These businesses have supported intergenerational employment, created in-demand employment in some areas and enhanced the social stability of the Pukekohe hub. Pravin and Kiran Hari of RC Hari & Sons say, “Pukekohe [town] has been a farming town for a long time. We went to Pukekohe High and most of our classmates' families were connected to horticulture in some way.”

The workforce within the hub's horticulture industry is more multicultural now,

reflecting the changing demographics of New Zealand. The hub supports service businesses and communities that might not have been there if not for the industry. Growers have strong relationships with their local suppliers. And the industry contributes significantly to local fundraising, sponsorship, and events such as school calf club days. Growers also donate produce to tangi and other functions at local marae.

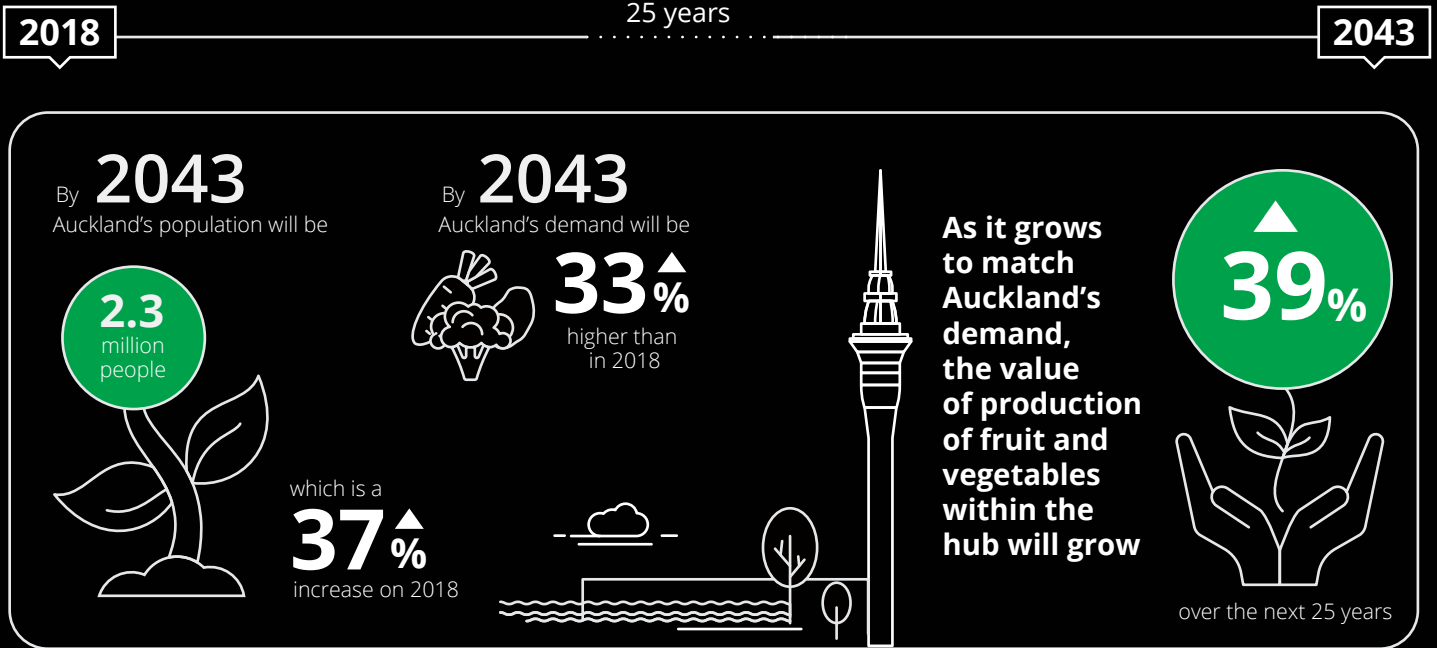
“It's not just about the dollar value of services,” says John Sutherland of Sutherland Produce. “It's about the relationship with people.”

However, the intensification of urban sprawl within the hub is causing concern among some growers, who feel growth is weakening the area's social fabric and diluting the small-town community feel. Rapid social change in growth areas such as the Pukekohe hub can create disharmony between newly arrived groups and established communities. In the hub's context, less social cohesion and connection could make cropping on current rural-zoned land more difficult to manage. For example, the burgeoning population means there are more neighbours to consult and inform when undertaking activities like spreading fertiliser – and not all of those neighbours are tolerant of this.



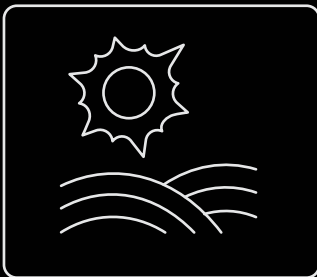
The Pukekohe hub

Economic impact

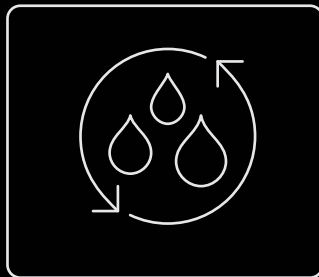


But there are constraints stopping the hub reaching its potential

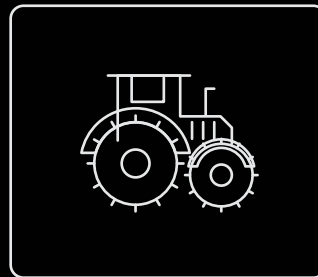
Competition for land



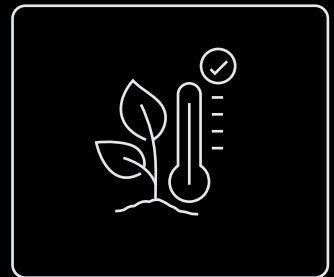
Water access



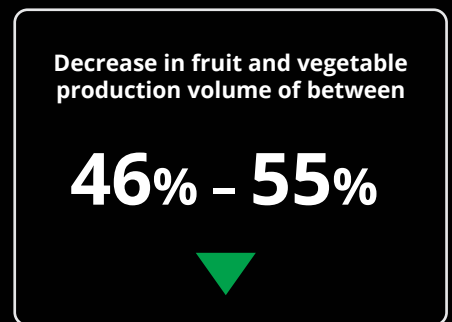
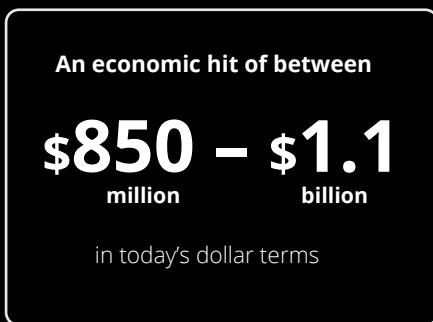
Labour and technology



Crop protection and nutrition



If growers' ability to respond to production is constrained, it is estimated that Auckland's economy will face over the next 25 years:



Economic impact of constraining horticulture production in the Pukekohe hub

To understand the economic impact of longer-term trends being experienced by the Pukekohe hub, we undertook economic modelling based on two future scenarios: a base case scenario and a constrained 'counterfactual' scenario. Each scenario is modelled over 25 years, out to 2043.

The bulk of the hub's produce goes to Auckland. Each scenario is modelled over Auckland and the Waikato District. The impact is broadly referred to as the impact on Auckland's economy, though it is likely some of the economic losses will be felt in the Waikato District.

Under both the counterfactual and base case scenarios, demand for fruit and vegetables, and Auckland's population, are projected to grow significantly. The need for growers to meet nutritional needs, and contribute to economic prosperity, remains.

Base case scenario

If the hub can manage future land challenges and other threats to production effectively, it will match Auckland's expected cumulative annual demand growth of 1.2% for fruit and vegetables through to 2043. By 2043, demand will be 33% higher than it is in 2018 – slightly below population growth, as not everyone will consume the same amount of fruit and vegetables.

Under the base case, the horticulture industry operates under production constraints, but they are managed effectively. As it grows to match Auckland's demand, the value of fruit and vegetable production in the hub will grow 39% over 25 years.

Constrained (counterfactual) scenario

On the other hand, an inability to manage future constraints effectively will lead to higher consumer prices and reduced economic activity.

In the counterfactual, production is constrained versus the base case, as the



industry is unable to afford new farms, and access to existing land is threatened. Land scarcity and access challenges could arise in future, due to urban encroachment, water access issues, a biosecurity risk, changes in land use regulation, or a combination of these. The impact of land scarcity could be amplified by a lack of skilled labour or sluggish productivity growth.

In circumstances where land use is restricted, labour is scarce, and access to the right technology, and crop protection and nutrition is tightened, Auckland's economy faces, over the next 25 years:

- An economic hit, in today's dollar terms, of \$850 million compared to the base case
- The loss of up to 3,500 FTEs, with a third coming from horticulture alone
- Ancillary industries shrinking, with 305 FTE losses in construction and 667 in trade
- Fruit and vegetable output 46% lower in volume than forecast under the base case

Consumers in Auckland will bear the brunt of the counterfactual scenario's impact. Prices for fruit and vegetables are forecast to be higher each year relative to the base case – we estimate consumers would face prices 43% higher than they otherwise would have by 2043.

Two variations of the counterfactual scenario have also been considered in the form of sensitivities as follows:

- Flexible – Where growers have the ability to change their practices and input mix in response to land access and other constraints on production
- Rigid – Where land scarcity is further constrained by land use restrictions

Deloitte considers the rigid variation is more likely to occur. This is because growers' ability to respond could be limited by environmental constraints, external regulations – like new taxes or land-use restrictions – or limited access to capital that could support alternative growing methods.

If growers' ability to respond to production constraints is limited, it is estimated Auckland's economy faces over the next 25 years:

- An economic hit, in today's dollar terms, of \$1.1 billion compared to the base case
- The loss of up to 4,500 FTEs
- Fruit and vegetable output 55% lower in volume than forecast under base case

Consumers in Auckland would face prices 58% higher than they otherwise would be under the base case.

Overall, Deloitte would expect the impact to be within the range between the counterfactual and rigid scenarios.

Starting the conversation on food security

The value of Pukekohe's horticulture production hub and its current constraints were dramatic enough to prompt Environment Minister David Parker to direct officials to begin working on a National Policy Statement (NPS) for Versatile Land and High Class Soils in April 2018. He described the purpose of the policy as balancing both urban growth and primary production: "We have to ensure we have enough land to build the houses people need, but we must protect our most productive areas, too."

The growers Deloitte spoke to generally agreed New Zealand needs to be smarter about its long-term planning, food security and domestic supply.

The natural tension between urbanisation and productive land means there are big challenges ahead for horticulture. The Pukekohe hub has something most other regions don't: exceedingly fertile productive soils; a temperate climate; easy and direct access to transport routes; and immediacy to our largest city. This means the hub's ecosystem can meet a hungrier Auckland in the future and provide significant value to the regional economy – and New Zealand as a whole – but only if the challenges to production, including access to appropriate land,

are managed in the most effective and efficient way.

Collaboration is needed between central and local government and growers. Leaders in horticulture need to drive change, and make New Zealanders aware the issues facing growers are not all the same as those affecting other primary producers.

There is little point encouraging healthy eating if fruit and vegetables are not readily available, and at reasonable prices. Fruit and vegetable consumption gets right to the heart of the wellbeing of New Zealanders. Social factors might influence consumer choice, environmental factors can dictate access and quality, and prices can influence how much or how little people purchase.

The key is to mitigate the effects of constraints on the hub, while enhancing the value the hub adds to the four capitals of wellbeing. With demand growing, the response from the value chain has to be productivity increases within environmental limits.

Deloitte would like to see the food security conversation for the Pukekohe hub focusing on:

Fruit and vegetable consumption gets right to the heart of the wellbeing of New Zealanders. Social factors might influence consumer choice, environmental factors can dictate access and quality, and prices can influence how much or how little people purchase.

01 Consideration of productive land

Adequate and careful planning on land use, including balancing the needs of housing and horticulture

02 Sustainable productivity increases

Using innovative technologies to manage the intensification of cropping within environmental limits

03 Uptake of new cultivars

Investment in the development of new varieties to manage changing conditions, diseases, consumer preferences and productive capacity

04 Attracting skilled labour

Communicating and creating visible opportunities to attract talent and skilled labour into the industry

05 Sustainable margins

Creating a more commercial, demand-driven supply chain with less wastage to improve value and ensure a fair return on capital

06 Secured access to resources

Balancing of domestic and horticulture demands on water through efficient and considered water allocation systems



Case Study: Sutherland Produce – Talent will grow the next generation

In the archives of Sutherland Produce's Bombay offices rests some of Sarah Webster's early work – the logo she designed for her father's vegetable business, created in pastels and crayons when she was 16. Little did she know that after starting her career as a graphic designer she would come full circle back to her family farm on Mill Road as Sutherland Produce's marketing lead and operations administrator. And, even more remarkably, both her sisters did, too.

Kylie Faulkner and Laura Wood, like Sarah, never felt any pressure to join the family business – cropping was their father's dream, not theirs. But after stints in the tourism industry and professional services respectively, they came back to Bombay – Kylie as head of compliance and Laura as financial controller.

Kylie knows their future success will be defined by the quality of the team they build around them. "This is a demanding

job so people need passion. The industry is crying out for engineers, mechanics and scientists. We've been trying to hire a crop manager for two years now, but there's a real shortage of people with the right skills."

While the sisters agree there is no easy solution, they believe it's important to get children interested and engaged with

produce and growing. "We want today's children to understand where food comes from, and the importance of a healthy diet," says Kylie. "We take seedlings into schools to help teach them, and we offer job opportunities in the school holidays to older ones, too".



Kylie Faulkner (left), Laura Wood, Sarah Webster

Next steps and further questions

As the future constraints to production hit home, businesses and government will need to take bold steps. Given the challenges the hub's horticulture production faces, are businesses, growers, local and central government, and industry organisations asking the right questions?

- What needs to be considered to protect and capitalise on the natural growing ability, strategic location, land availability and future growth opportunities of the Pukekohe hub?
- How financially sustainable is the industry, and what can industry participants do to foster innovation and encourage demand-driven supply to improve the value chain?
- How can government and industry work together to actively develop a food security strategy that considers the needs of a growing population and availability of natural resources?

- What can the industry, government and education providers do to ensure we are growing tomorrow's growers?
- How can we ensure that we have efficient water allocation and consents to grow horticulture for the future generation?

Deloitte is agnostic on the way to transition to these changes, but all paths have some challenges. Time and further analysis will help the industry develop the best approach. The challenge the industry is seeking to address – meeting growing demand, and the increasing costs and other pressures of meeting this demand – remains compelling. A new way of thinking is required, and New Zealanders cannot rely on the way they have always done things to find the answers the country needs now.





**Find out more
- access the full report**

This is a summary of Deloitte's New Zealand's Food Story: The Pukekohe Hub report. To access the full report, go to:

www.deloitte.com/nz/pukekohe-hub

www.hortnz.co.nz

The full report includes in-depth research and commentary on the benefits and constraints within the hub, along with our comprehensive modelling methodologies.

The Deloitte Access Economics – Regional General Equilibrium Model (DAE-RGEM) is a large scale, dynamic, multi-region, multi-commodity computable general equilibrium model of the world economy with bottom-up modelling of New Zealand regions. The model allows policy analysis in a single, robust, integrated economic framework. This model projects changes in macroeconomic aggregates such as GDP, employment, export volumes, investment and private consumption. At the sectoral level, detailed results such as output, exports, imports and employment are also produced.

The model is based upon a set of key underlying relationships between the various components of the model, each which represent a different group of agents in the economy. These relationships are solved simultaneously, and so there is no logical start or end point for describing how the model actually works. However, they can be viewed as a system of interconnected markets with appropriate specifications of demand, supply and the market clearing conditions that determine the equilibrium prices and quantity produced, consumed and traded.

Deloitte would like to thank all those who contributed to this report, including those who generously gave their time to be interviewed, or who provided feedback over the course of its development.



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