

## **SUBMISSION BY JOHN BOSTOCK (BOSTOCK NEW ZEALAND) TO THE PRODUCTIVITY COMMISSION**

### **EXECUTIVE SUMMARY**

- We welcome the opportunity to respond to the New Zealand Productivity Commission's draft report "New Zealand firms: Reaching for the frontier".

Bostock New Zealand is a vertically integrated horticultural company producing and exporting a range of premium horticultural products.

- We are strongly committed to social, environmental, and financial sustainability.
- Bostock New Zealand has experienced strong growth.
  - Production in organic/conversion apples has risen from 400,000 tray carton equivalent (tce) in 2010 to an estimated 1,300,000 tce in 2021, broadly a tripling in production.
  - Full-time employment has risen from 94 to 231 in last 7 years. At our seasonal peak we employ over 800 staff seasonal and permanent.
  - We have invested \$116 million over the past decade. This includes 2 million on packhouse innovation.
  - The company has undertaken many community programs including healthy eating initiatives and training schemes, transforming people from welfare dependency to meaningful full-time work.
- This expansion, which dwarfs growth across the broader economy, has not taken place without Bostock New Zealand "reaching for the frontier". It has involved considerable capital, innovation, planning, risk – including risk management, and sound execution.
- We consider the organic apple and broader horticulture industry has a critical role to play as the New Zealand economy transitions to a more carbon neutral and environmentally friendly future. This magnitude of the adjustment for the economy during this transition could be assisted by sectors such as horticulture filling growing voids faced by others.
- This requires government support not headwinds and requires pragmatic policy to support growth opportunities.
- The future success of Bostock New Zealand and similar expanding horticultural businesses will be severely restricted by recommendations made within the New Zealand Productivity Commission's draft report "New Zealand firms: Reaching for the frontier".
- The draft report recommendations to refocus migration policy (R8.2) are counterproductive to improving the productivity of actual and future frontier firms in the Horticulture sector and does not appear to be backed up by any data we are aware of.

## OUR KEY CONCERNS ARE:

- A lack of quantitative data analysis in the Commission's report.
  - A failure to recognise the clear productivity differential between casual New Zealand workforce and Recognised Seasonal Employer (RSE) employees.
  - A failure to recognise other labour costs including retention and reliability.
  - The lack of understanding the essential role RSEs play in harvesting a range of crops and managing peak fruit flow.
  - An apparent lack of comprehension of the complexity and time required to make automation in harvest a reality.
  - The critical nature of harvesting valuable horticultural products at the exact right moment.
  - A failure to acknowledge some fundamental structural issues within the labour market in New Zealand. (see section on poverty).
- We accept that innovation and investment will be critical for the industry to prosper going forward and continue to expand. This is already occurring strongly in packing sheds which is conducive to capital deepening investment.
  - However, certainty of access to RSE workers is essential to match the harvest demands of growing businesses as infield harvest automation lags and faces numerous challenges including; harvesting marketable fruit without bruising, picking without spurs and leaves, distinguishing shades of foreground and background colour, operating in the field environment with uneven ground with different light intensities and wetness on tree and on ground. All these problems need to be overcome whilst achieving enough productivity to make automation financially viable.
  - Government support for innovation across the industry is required because it is well accepted that research and development (R&D) suffers a market failure; companies carrying out the R&D incur the full costs but do not capture the full benefits. The benefits spill-over to other firms. Few, if any, New Zealand firms in the apple industry have the necessary scale or complexity to incur high R&D costs.
  - Government support should focus on key areas of the sector (predominantly post-harvest) that will create added value for our produce and maintain New Zealand's positioning as the world's most competitive apple industry. Two key suggestions here are:
    - Research into packhouse automation and productivity gains.
    - Much greater support and clear direction for MPI, MFAT and NZTE in the areas of plant varietal importation, market access and market development.
  - Perceptions and qualitative commentary that RSE workers are merely low-cost migrants and are impacting on wage rates for New Zealanders are not backed up by our data. Our own data shows:
    - RSE workers earn more per week than nurses and primary school teachers.
    - A glaring productivity differential between RSE and local seasonal NZ workers when absenteeism and low productivity make it impossible to harvest fruit on time with NZers alone.
  - Uncertainty of access to RSE workers for harvest will reduce investment confidence and stifle Bostock New Zealand's long-term expansion projects. The key constraint for Bostock New Zealand's further expansion is harvest labour availability. From ordering a tree to full production is 7 years. Business requires confidence and certainty to invest in new varieties,

new planting systems and new technology. There is no plan how to address differing demands of horticultural businesses. We cannot plant more trees or build a new packhouse without knowing we have harvest labour.

- We strongly suspect similar outcomes across the industry putting potentially thousands of new full-time jobs at risk. The draft report's recommendations of limiting RSEs threaten tens of thousands of jobs directly and indirectly in horticultural communities.
- We also noted the positive social outcomes the RSE scheme has had on our communities and wellbeing including great relationships between our Pacific people and local NZ communities. Our growth has created more full-time work for New Zealanders. The RSE program is the best form of aid not costing the NZ government money. The average savings of an RSE for a season at Bostock New Zealand is more than a Pacific island worker can save in a lifetime as wages in the islands are barely above subsistence. The minimum wage in The RSE scheme is an essential factor allowing NZ businesses to harvest crops on time.
- Key areas our sector can deliver more rapid productivity gains are intellectual property (IP), varietal development, new planting systems, IT, automation in the field, better more direct route to markets, improved market access to new and existing markets.
- For these gains to be unlocked we believe the following needs to take place:
  - Certainty and a long-term plan for RSEs to come to NZ for harvesting horticultural crops including a plan for expanding businesses.
  - MPI, NZTE and MFAT to be given more resources with clear goals and market focus.
  - Additional Government support in research and development for post-harvest automation in packhouses and cool stores.

## INTRODUCTION AND BACKGROUND

Bostock New Zealand is a vertically integrated horticultural company specializing in producing and marketing premium products to high paying customers around the world.

The products include organic apples, organic wine, organic and conventional juice, organic and conventional range of squashes, organic and conventional onions, maize, grain, organic free-range chickens, and organic apple cider vinegar.

Bostock New Zealand is disappointed the New Zealand Productivity Commission's draft report "New Zealand firms: Reaching for the frontier" failed to fairly consult the horticulture industry and presented little data to back up claims.

During a zoom conference call, on 21/12/2020 with Jo Smith and Geoff Lewis opportunities for productivity gains and the simplistic nature of the report's prescription for raising productivity were discussed. I explained how the reduction/removal of RSEs for harvest in the short or medium term would be disastrous for the fruit industry. We discussed the idea of removing harvest labour forcing the industry to innovate as a high-risk theory likely to decimate the world's most competitive apple industry (World Apple Review 2018).

This submission will deliver a case study of Bostock New Zealand to provide context of a successful rapidly expanding horticultural company. It includes:

- Company and regional labour trends to counter the Commission's report section 8.3 *Migration policy settings are inhibiting productivity improvements.*
- Illustrations of current limitations to automate harvest and the impact uncertainty of harvest labour access will have on future sector growth.

- The identification of key areas where innovation and Government support should be focussed to deliver immediate productivity gains and elevate New Zealand's premium positioning.

## BOSTOCK NEW ZEALAND OVERVIEW

Bostock New Zealand aims to be a truly sustainable company- environmentally, socially, and financially. Our vision is growing healthy, premium produce in partnership with nature, preserving and enhancing our environment for future generations. Bostock New Zealand has held BioGro organic certification for over 25 years.

## COMPANY GROWTH

Over the last 10 years, Bostock New Zealand has gone from \$80 million up to total turnover of \$204m for the consolidated Bostock Group in the 2020 financial year (CAGR of 10%). Apple Orchard land area has risen from 366 ha in 2011 to 572 ha in 2021.

We are an entity that is investing strongly in the future (**Figures 1-5**). Specifically:

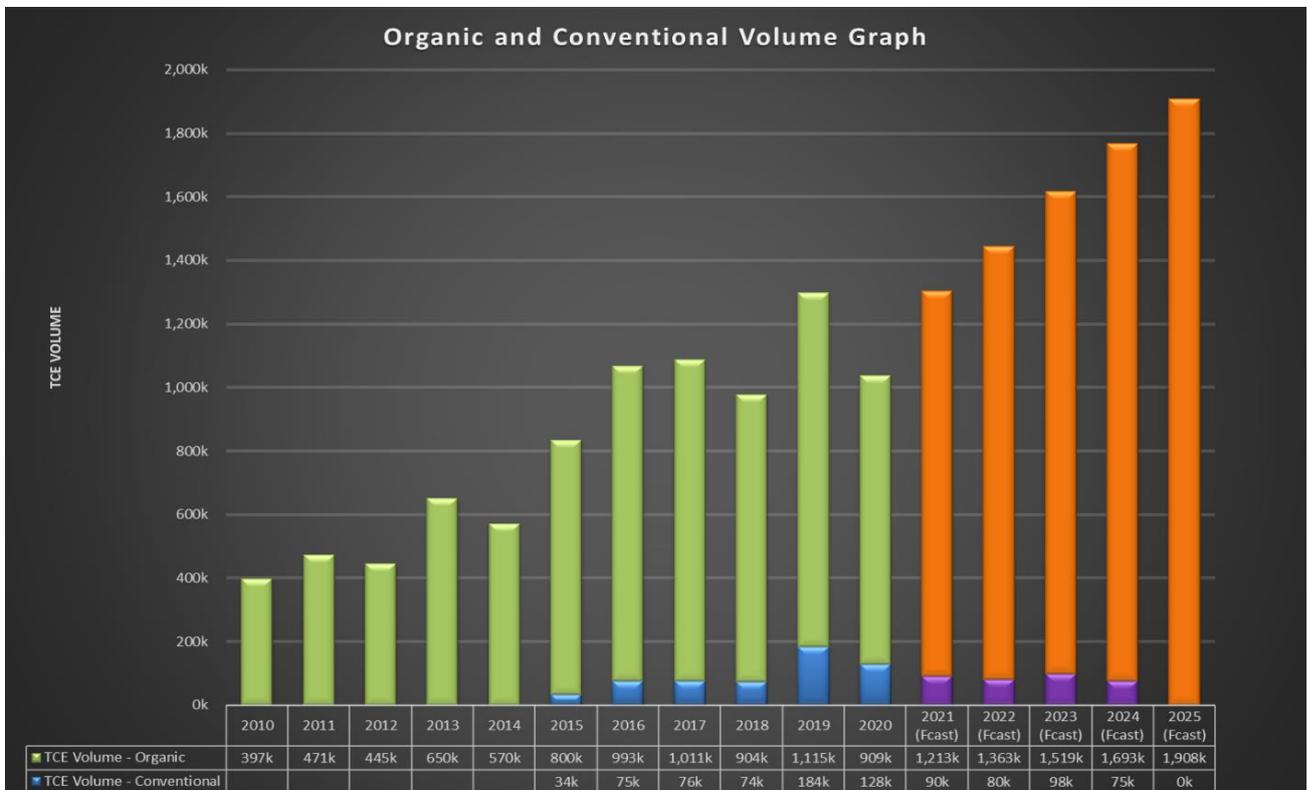
- o **Figure 1** shows increase in young orchards under development.
- o **Figure 2** increasing volumes of export apples over 10 years.
- o **Figure 3** Export apple returns (in red) FAS /TCE compared with export apple costs (in green) FAS/tce.
- o **Figure 4** shows increasing yield per hectare and increasing total hectares planted. Production per hectare including development has in 2015 gone from 1,935 tce/ha to 2,316 tce/ha projected in 2021. Productivity per hectare increases as new planted hectares come into production. New improved varieties and increasingly intensive modern planting systems are improving yield per hectare.
- o **Figure 5** shows increasing production per permanent worker in Bostock New Zealand apple orchard group  
TCEs per permanent employee has increased and is forecasted to increase because of increased yield (**Figure 5**). **Figure 5** needs to be read in conjunction with the Change in Employee Headcount graph (Bostock Employees section below on page 9, which shows an increasing use of RSEs).

The RSE scheme has allowed the business to grow using seasonal labour, thus allowing further investment in new plantings, capex, and other investment. The RSE scheme is allowing Bostock to grow, create permanent jobs both internally and externally with flow on effect to the wider external support businesses e.g., irrigation, packing, trucking etc.

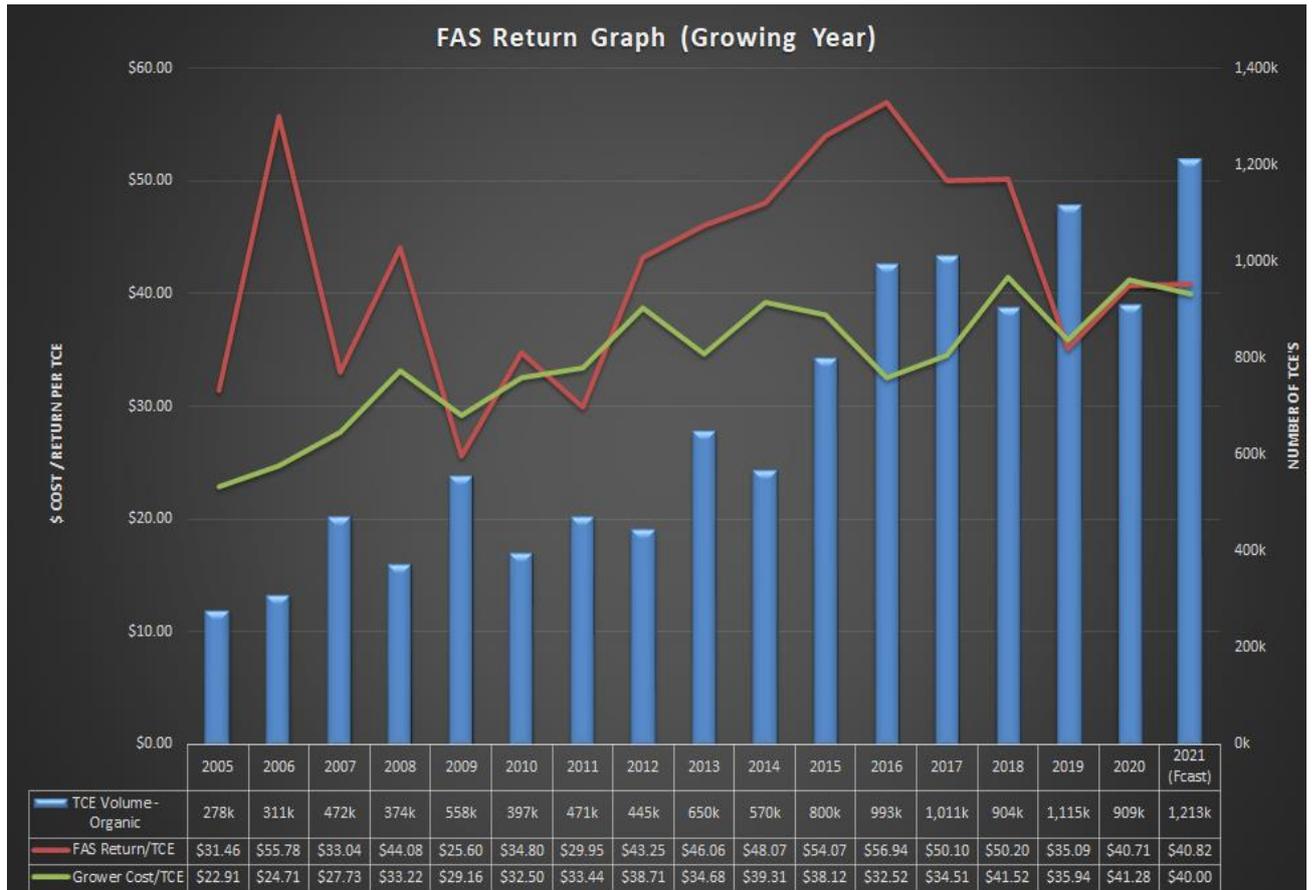
**Figure 1:** Historical Bostock total planted apple area 2010 to 2021 – split between mature/producing trees (over 4 years old) and young/non-producing trees.



**Figure 2:** Historical and future forecast Bostock export apple volumes (TCE/18kg equivalent cartons) 2010 – 2025



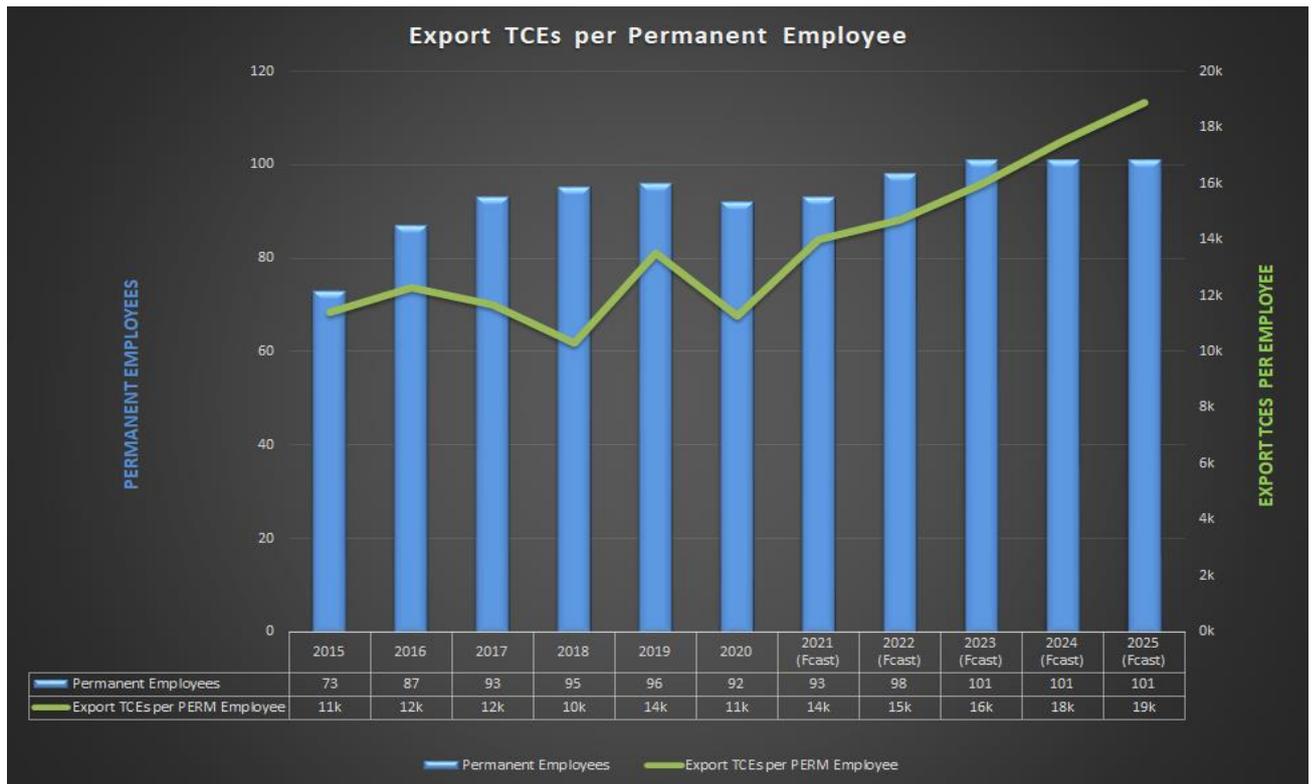
**Figure 3:** Historical Bostock FAS organic apple revenue & cost (organic only) per TCE



**Figure 4:** Export apple TCEs per Planted Ha



**Figure 5: Export TCEs per Apple group Permanent Employee**



## MARKETABLE YIELD

Bostock has focused on improving marketable yield. This is being done through two parts, improving the gross yield, and improving pack outs. Several initiatives both in the paddocks and in the orchards have focused on improving productivity.

The crop growing division has numerous field trials as well as a constant focus on continuous improvement with field work. An example of this is the use of GPS software which allows tractor drivers to be more exact with their fieldwork. This accuracy improves yields, by optimizing the area within a given field and between plants. The technology ensures less disruption to the crop from tractor damage/soil compaction, better organic weed management by knowing exactly where the target weeds and crop are located, and reduced tractor passes lowering our carbon footprint.

Other initiatives include the constant search for new seed varieties which suit the unique growing conditions of each location. The continuous trialing of new genetics targets increasing yields finding improved disease resistance, improved pack out, less waste, less decay and better marketability.

The company employs a range of innovation managers and technical experts. The focus is on increasing productivity and innovation. Both aspects aim to maximize tons per hectare. Trials include looking at canopy structures, crop loads on young trees, tree training initiatives, thinning formulas, spray application and evaluation of root stock and tree spacing.

Over the last ten years Bostock has invested significantly in redeveloping apple orchards. There are several reasons for the redevelopment, but two of the main advantages are increased yield and planting new orchards with new planting systems and with new genetics all aimed at increasing productivity and returns to NZ.

## **PREMIUMIZATION AND ORGANIC CATEGORY GROWTH**

Bostock made the decision in 1996 to start conversions from conventional production to organic production firstly all apples and increasingly other crops. The aim was to use less agrichemicals, improve soils, increase sustainability, and achieve market premiums. This was done for environmental reasons but equally due to the premium that organic produce can demand. Since then, Bostock has continued to focus on producing premium produce and expand organic product offerings.

Bostock has invested in planting premium apple varieties all grown organically. The Dazzle apple variety is a good example. This new variety targets markets such as China and Vietnam and in the next 7 years Dazzle will make up over 25% of the apples grown by Bostock.

Another example of investing in premium produce is organic Orange Summer squash. This product opens a new market in Europe predominantly Germany. The price received per kg compared to traditional conventional squash and pumpkins is 50% higher while yield is between 10%-20% higher. In recent years Bostock has moved away from high volume/low value squash into premium varieties organic and conventional. This has been achieved by securing an exclusive supply of premium variety seed and investing significantly in the branding and marketing of these varieties. Marrond'Or and Bochan squash are the best examples of this. The Marron d'Or variety has improved yields and extended shelf life with improved market acceptance achieving higher prices. The productivity gains and returns to NZ are significant by improving genetics and finding markets.

The company is moving away from lower value conventional grain and onions converting more land to higher paying organic production as techniques improve and markets are developed. The organic maize production feeds the organic free-range Bostock Brothers chickens as a vertically integrated system. The yields and productivity of the maize has improved significantly with new organic technology and new maize varieties.

Organic orchards have a much higher reliance on labour compared to conventional orchards which use chemical shortcuts to achieve quick results such as chemical thinning. Fruit maturity is the biggest issue for organic growers as there are no organic chemicals available to manage fruit maturity. The window to pick organic fruit is much tighter for organic production as each variety of organic apple matures in a very narrow window. This requires many pickers during a short picking window. Organic returns add value to NZ exports by achieving market premiums above conventional fruit. However, it is essential to pick the produce at the precise optimum time. There are no post-harvest chemicals permitted in the organic regime to maintain fruit condition, hence optimum harvest timing for organic fruit is essential.

## **BOSTOCK NEW ZEALAND LABOUR CASE STUDY**

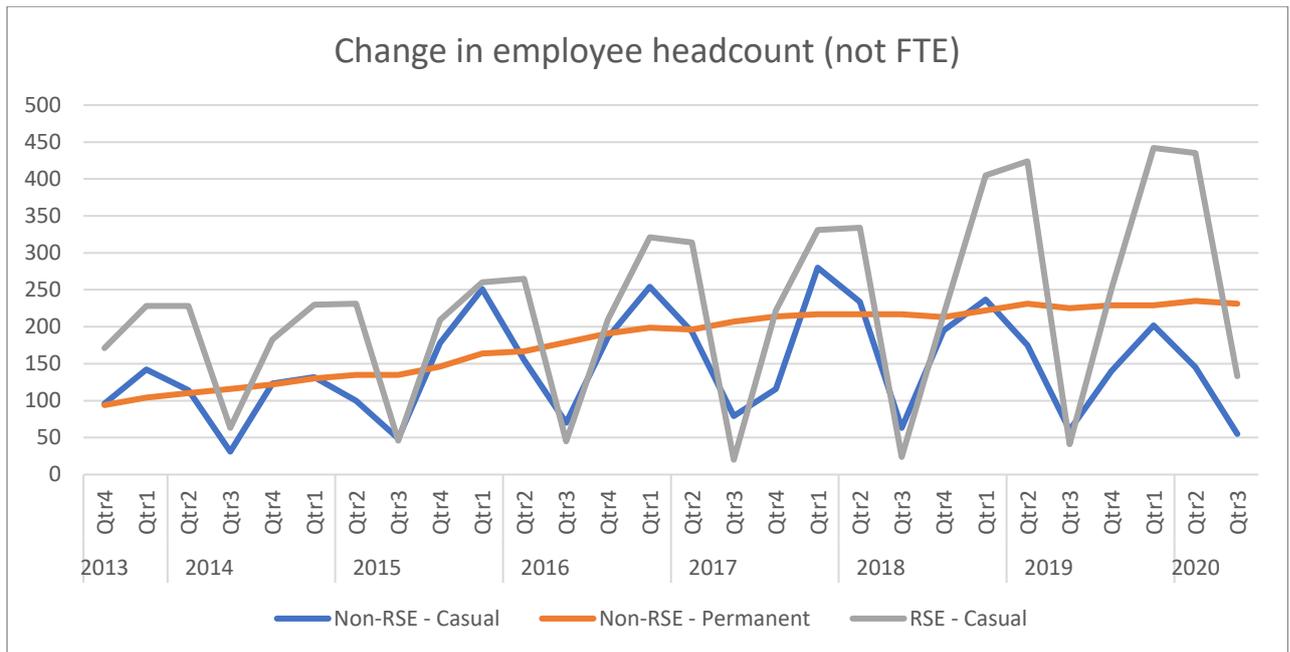
### **EMPLOYMENT TRENDS**

Total permanent employees between 2013 to 2020 have increased from 94 to 231. The increase in permanent workers is a direct result of expanding production and having more RSEs available to pick crops.

The number of RSEs employed has increased from 228 to 435, during the peak of harvest.

Casual, non-RSE labour has increased from 142 to 202 during peak season over the same period, however this peaked at 280 employees in 2018.

**Figure 6:** Change in Bostock New Zealand quarterly Employee Headcount (based on employee number for FTE) from 2013 to 2020.



## BOSTOCK NEW ZEALAND LOCAL CASUAL LABOUR VS. RSE LABOUR

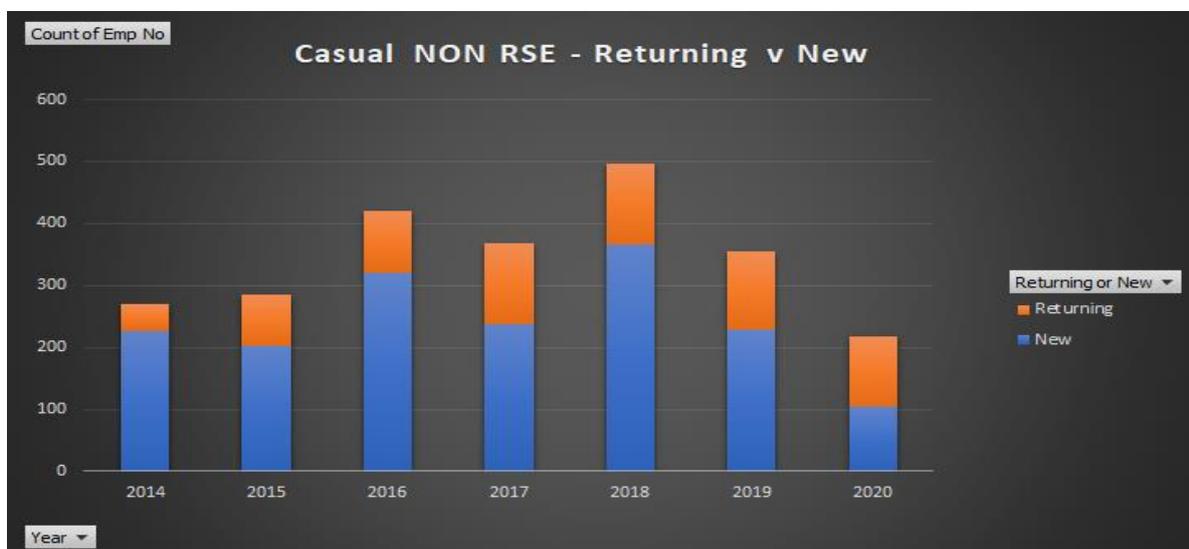
The choice of RSE employees over local casual labour is based on sound logic.

### HIGHER RETENTION RATES

All seasonal work requires training and practice. New workers normally are not proficient until the second season. This means retaining people with skills learnt in prior seasons is highly desirable.

The retention rate for NZ Casual NON RSE is low, averaging around 50% in 2020. There are numerous reasons for this including the desirable possibility that people have gained full time employment and are no longer casual workers.

**Figure 7:** Year on Year employee retention – Local casual / Non-RSE



In contrast with the low retention / returning rates for non RSE's, retention rates for RSEs are significantly higher. The retention rate for RSE's sits around 85% in 2020.

**Figure 8:** Year on Year employee retention – RSEs



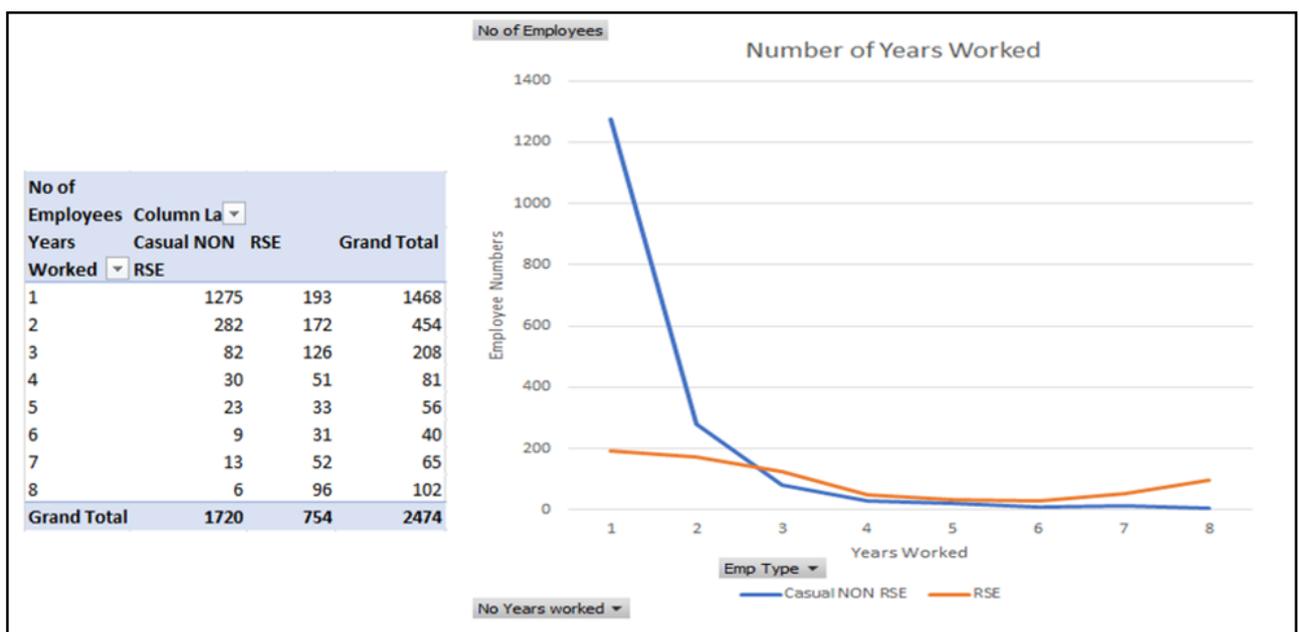
The nature of seasonal work means it is often not conducive for locals, which adds to the difficulty finding local labour as it is seasonal without an ongoing work commitment. This is reflected in our own data.

**Figure 9** shows the numbers of employees that have worked 1 year to 8 years split between NZ Casual NON RSE and RSE. The period covered is 2013 to 2020.

As an example, between 2013 and 2020, 1275 casual employees only worked one season.

Some of these NZ casuals have only worked 1 to 3 weeks (see Figure 10). Locals prefer permanent work to casual work.

**Figure 9:** Bostock New Zealand compares Number of years worked by individual casuals and RSE's.



**Figure 10** shows the turnover of NZ Casuals in a season. For example, in 2016 there were 154 people who were employed for less than 3 weeks, or 36% of total casual staff employed in that year. Staff turnover results in additional cost, admin work, re-training of replacements, and can impact quality of crop picked.

**Figure 10:** Bostock New Zealand Number of weeks local casual employees retained.

Row La	1 - 3 weeks	4 - 6 weeks	7 - 12 weeks	13 or more weeks	Grand Total
2013	42	56	1		99
2014	90	70	47	63	270
2015	79	81	47	79	286
2016	154	105	65	97	421
2017	110	67	62	129	368
2018	188	117	85	107	497
2019	98	81	59	116	354
2020	39	37	57	85	218
<b>Grand Tot</b>	<b>751</b>	<b>564</b>	<b>371</b>	<b>372</b>	<b>1720</b>

## PRODUCTIVITY

RSE's have proven to be more efficient at picking than local casual labour.

Efficient picking is not just about productivity.

Efficiency is crucial as crops are harvested within a narrow time window. This is particularly so for organics, which has even shorter windows to get the fruit off trees than conventional.

During 2020, RSEs averaged a rate of 16 bins picked per employee per week (with the peak week being an average of 24 bins), compared to 10 bins by NZ casual non-RSE staff (peak week an average of 19 bins).

The 2020 season was hampered by COVID-19, therefore 2019 data is also presented below. The increased bin rate by RSE staff is a combination of RSEs being more efficient per hour (as a whole group) and RSEs choosing to work longer hours to pick more. All staff can work the same hours. RSEs chooses to work longer to make as much money as they can on their short stay in NZ. Their work rate is essential to meet the short window in which Bostock must get the fruit off.

**Figure 11:** Bostock New Zealand weekly productivity figures comparing RSE harvest production with non RSE harvest production.

Bostock New Zealand	RSE	Non-RSE
2020 average bins picked per week (over 10 weeks)	16	10
2020 peak week average bins picked	25	19
2019 average bins picked per week (over 11 weeks)	15	8
2019 peak week average bins picked	24	14

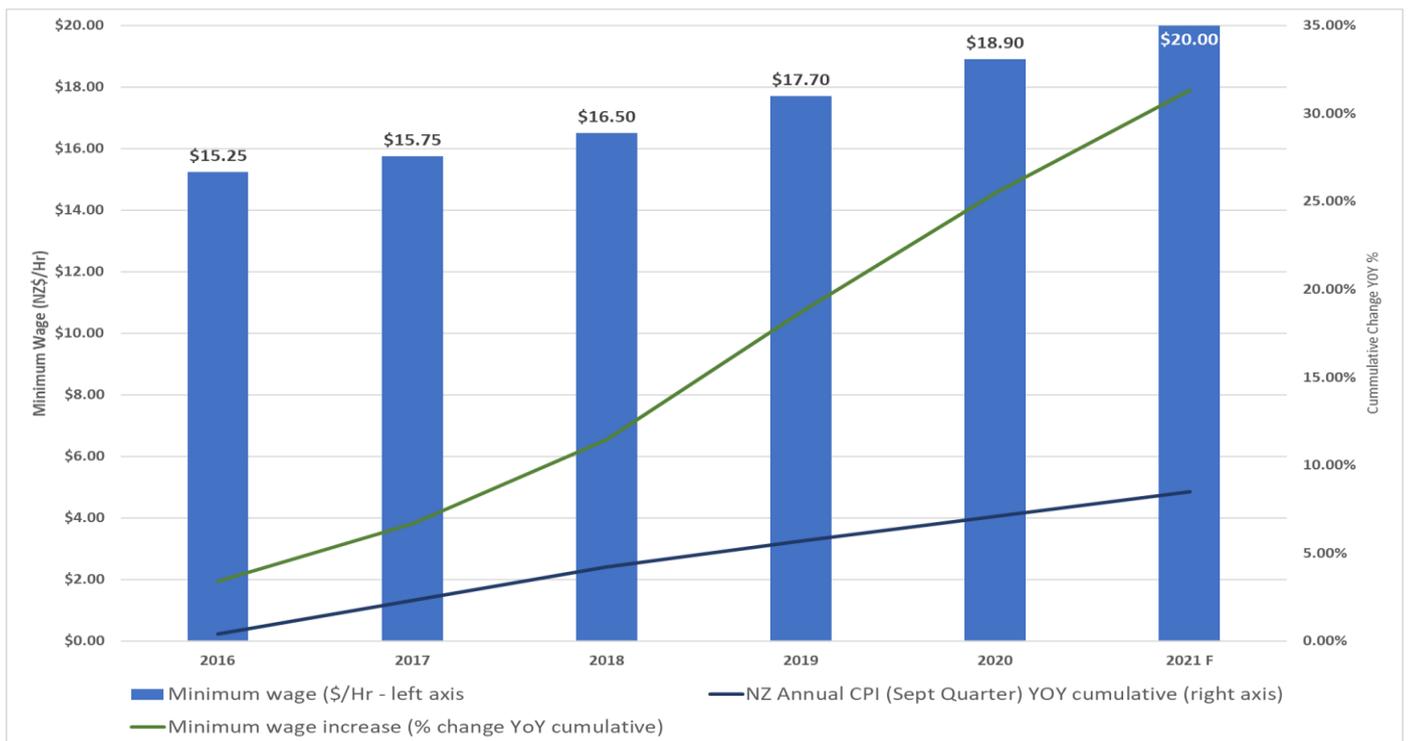
The Productivity Commission report (page 126 R8.2) makes two assertions-

- That RSEs are cheaper than hiring locals and,
- Wages have been suppressed because of importing RSEs.

We do not agree and have 8 retorts to those assertions:

- Our data shows RSE's remuneration is higher than local non RSE casual labour.
- Employing RSE workers costs significantly more than hiring locals for any equivalent role. The additional cost of airfares, accommodation, and pastoral care costs 25% more using RSEs than NZ casual workers for the same role. However, the productivity gain and the reliability of being able to harvest the crop on time make employing RSE workers viable for harvest.
- While RSEs might be technically "cheaper" than locals, the phrase "cheaper" needs to be qualified as it reflects a productivity differential.
- 23 % of non RSE labour is not sufficiently productive to make the minimum wage on contract and needs to be topped up and subsidised. This compares with 2% for RSE workers.
- Between 2015 and 2020 the number of Bostock employees earning over \$100,000 pa has increased by 106% from 17 to 35.
- The report (page 125) states, "continued reliance on the scheme (RSE) also suppresses wages for locals" but fails to produce evidence. Between 2015 and 2020 minimum wages rates have moved 31.3% whilst CPI inflation has moved 8.5 % (refer **Figure 12** below).
- Average remuneration of Bostock New Zealand permanent employees has risen 23% between 2015 and 2020, well above the rate of inflation, movement in Statistics New Zealand Labour Cost Index, and average weekly earnings from the Quarterly Employment Survey.
- Bostock New Zealand has found wage rates are not the limiting factor finding New Zealand seasonal workers but rather availability for a relatively short season, fitness, work readiness and reliability.

**Figure 12** Compares cumulative minimum wage growth (green line) with cumulative inflation (blue line.). Also, annual minimum wage rises (blue bars).



## WHAT IF WE CANNOT ACCESS RSE'S?

The combination of rising demand for our product and local challenges sourcing labour have made RSE's a critical component of the business. Without the availability of RSE's Bostock New Zealand would not have been able to grow. We believe the removal of RSE's would be catastrophic to the Bostock business, apple industry and wider community.

To put some numbers on it:

- Our data shows that RSE's are 60% more valuable in terms of output over a season than non RSE's casual labour (refer Figure 11, bins picked per week).
- Technology has not yet delivered a viable in-field harvest alternative meaning more costly and less productive local labour (if available) would be the only substitute. The industry cannot afford to sit around and wait for technology to provide a sustainable solution; fruit needs to be picked given the considerable upfront investment in time and money planting new varieties and systems.
- Profitability would turn negative and Bostock New Zealand would be faced with restructuring and downscaling.
- A temporary blip in profitability would be manageable, however, a lack of access to RSE's or even uncertainty over access would represent a clear pivot in the trajectory for expenses and create business uncertainty.
- There would be no return on equity and the company would be required to sell down assets to keep within banking covenants.
- The economics of apple production would not justify the risk.

The Bostock business would downsize significantly and restructure. We would exit orchard leases and undertake land use changes to find more viable and stable income stream. For example, Bostock New Zealand would plant maize which is mechanised and significantly lower value. The loss to NZ exports and GDP would be felt in the community.

Bostock New Zealand would reduce to circa 200ha of orchards, or broadly the size we were in the year 2000. This represents a reduction of 366ha resulting in the loss of at least 50 permanent jobs at Bostock plus significant upstream and downstream job losses. This loss of scale would significantly impact productivity and profitability. Apple revenue could drop by 65% and consistent profitability year on year would be a challenge. If other orchardists did similar maths, we estimate that the impact on GDP and employment in horticulture regions would be significant. Hawkes Bay could lose 3,000 permanent jobs.

## LOW-COST LABOUR MYTH:

The draft report (page 125) talks about "low-cost labour" which is a judgement without reference to skill, education, and importance of other sectors such as teachers, nurses, and other industry groups in the economy. Below are pay rates for trained teachers and nurses which are required to have training, education, literacy, and numeracy skills. We have also provided Bostock New Zealand pay rates for a range of roles including RSEs as a comparison.

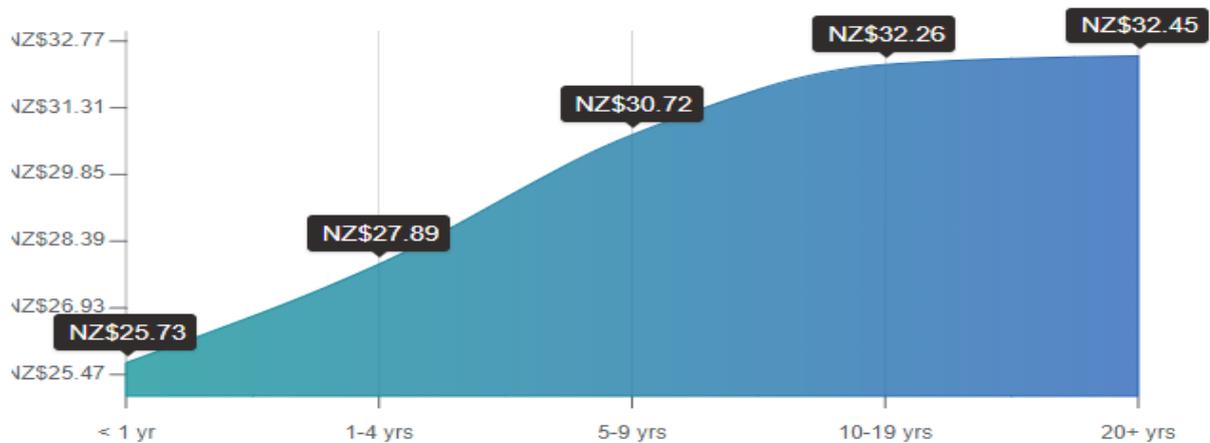
**Figure 13:** Data from ministry of education web site primary school teacher salary scale.

SALARY GROUP	STARTING SALARY	MAXIMUM SALARY	NQF* LEVEL
1	\$49,862	\$83,000	5
2	\$49,862	\$83,000	6
3	\$49,862	\$83,000	7
3+	\$54,318	\$83,000	7
4	\$56,440	\$83,000	8
5	\$59,994	\$87,500	9 or 10

\*NQF = National Qualifications Framework

**Figure 14:** Nurse pay based on years of experience:

Data from <https://www.payscale.com/research/NZ/>



**BOSTOCK NEW ZEALAND REMUNERATION RANGES:**

Senior management	\$150,000-\$400,000/annum
Marketing manager	\$135,000-\$200,000/annum
Middle Administration	\$75,000-\$100,000/annum
Orchard manager (no formal tertiary education)	\$115,000-150,000/annum
Experienced field Tractor driver (no education)	\$30/hr
Average Contract RSE picker (no education or literacy or numeracy required)	\$25/hr -\$30/hr

Comparing Bostock New Zealand pay scales with skilled, educated, and critical roles such as teachers and nurses puts into perspective pay rates. It is hard to make the case RSE harvest workers are low-cost workers when looking and comparing the facts.

Average weekly take home pay for Bostock New Zealand RSE harvest workers exceeds most nurses and primary school teachers. The RSE workers are here to earn money. They earn a respectable hourly rate and work long hours typically in the season 60-70 hours per week. Nurses and teachers are required to have completed comprehensive training while picking fruit requires no education, no numeracy or literacy skills. Given these facts the draft report fails to make the case that RSE workers are low paid.

## POVERTY

Having said all the above Bostock New Zealand acknowledges there are real poverty and deprivation issues in Hawkes Bay.

Housing availability and affordability is central to these issues.

**Figure 15:** Below are official statistics from MBIE showing rental rates in Hawkes Bay.

HAWKES BAY REGION	YEAR	PERCENTAGE INCREASE IN AVERAGE WEEKLY RENTS
SOURCE: OFFICIAL MBIE RENTAL STATS.	1993-2003	31.91%
	2003-2013	52.15%
	2013- current (7 years)	53.00%
	entire sample	207.09%

Two-thirds of people unemployed in Napier and Hastings have been on job seeker benefit for more than a year despite a desperate labour shortage in the fruit industry. Source <https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/statistics/benefit/index.html>.

There is a danger for policy makers to wrongly assume RSE workers are low paid and contributing to the social issues. This is not supported by the facts as above.

It is clear there are structural issues in the economy that will not be solved by restricting RSE workers as proposed in the draft report.

Rather Bostock New Zealand thinks social issues will be amplified by restricting RSEs as it will result in contraction of the industry and reduction in full-time employment.

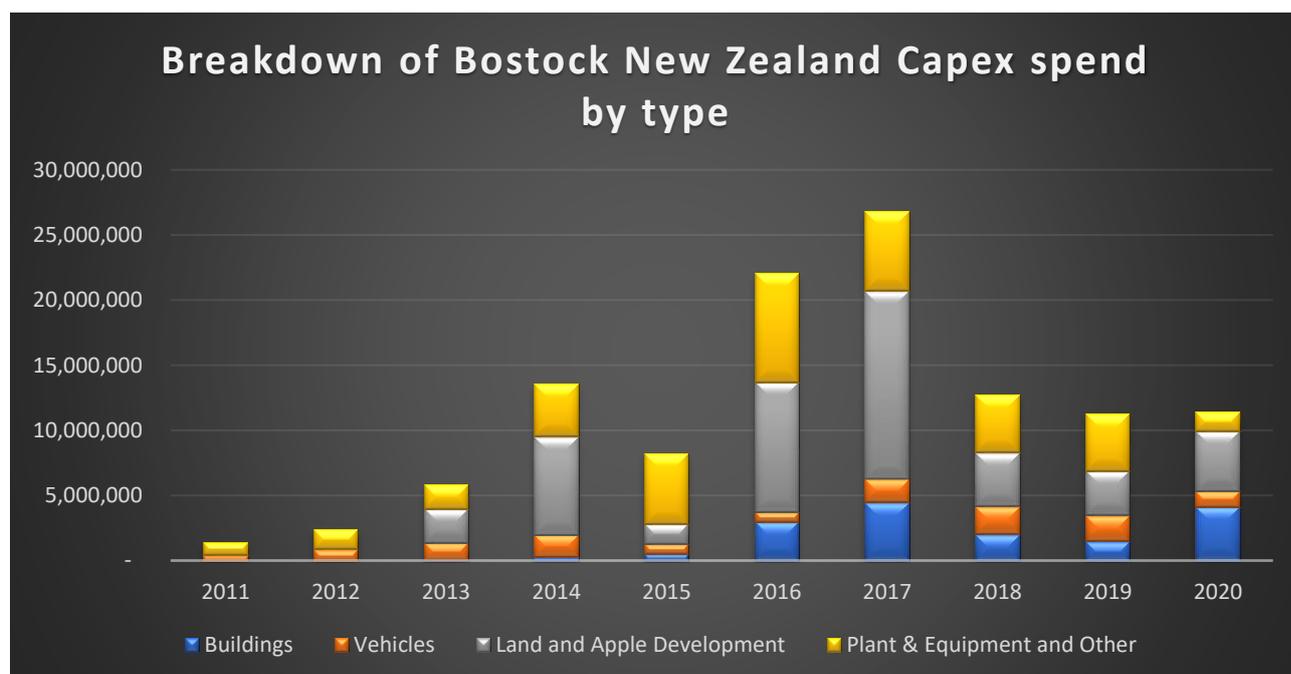
Bostock New Zealand believes seasonal jobs for New Zealanders present opportunities and challenges. Some like the temporary and outdoor lifestyle option. For others, it offers little employment security and means potentially having to shift from region to region. Full time work on the other hand for New Zealand workers creates social stability with security of earnings, skill development, personal development, and a sense of pride. By having overseas RSE seasonal workers to help manage the demand of "peak" production allows more full-time quality jobs to be created for New Zealanders.

## LOCAL COMMUNITY CONTRIBUTION

As Bostock has grown, the amount spent with suppliers has increased dramatically - orchard contractors, trucking, freight companies etc. In 2010, Bostock New Zealand had operating expenses (excluding labour) of \$26.3m, compared with \$85.9m in 2020. Wages \$7.6m (2010) vs \$25.5m (2020). In 2010 Bostock spent \$140k on capex, in the 2020 year \$10.6m was spent. This has been driven by significant apple orchard development which has occurred over the last 5 years. The certainty of the labour supply has given the company confidence to invest in capex projects. Over the last 10 years the Bostock Group has spent \$116million on capex. The majority of this spend has been apple development. This has predominantly been funded through retained earnings.

<b>BREAKDOWN OF CAPEX SPEND</b>	
Land and apple development	48,264,927
Buildings	15,999,720
Plant & Equipment	36,306,389
Vehicles	12,933,885
Other	2,188,000
<b>TOTAL</b>	<b>115,692,922</b>

**Figure 16:** Bostock Capital Expenditure by asset type (2011-2020)



## RSE INTERNATIONAL COMMUNITY SUPPORT

While working each year, RSEs can save significant sums of money to take back to the Pacific islands. This money can have a huge impact on the local community in their home country. We have examples where houses have been built and community wells and schools funded with these repatriations. Over the last 3 years Bostock RSEs have made average savings of around \$10,000 per worker

In the Pacific Islands it is not possible for unskilled working people to make enough money above living expenses to save meaningful capital. This is the best form of aid to the Pacific Islands. Capital gets in the hands of working people to address their most important needs. It does not cost the

NZ taxpayer and benefits New Zealand because the crops can be picked on time. Great relationships and enduring good-will is generated which is positive for New Zealand's influence in the Pacific.

## **TECHNOLOGY AND INNOVATION**

Bostock has recently partnered with both Callaghan Innovation and the Eastern Institute of Technology (EIT) with a focus on improving the innovation in the business. This allows the business to have access to leading experts in both the horticulture and technology industries.

These partnerships ensure that Bostock will have valuable insight into emerging technology and trends. Crop forecasting is one example of innovation targeted by Bostock. Improving crop forecasting makes a huge difference to market and marketing planning, logistics and shipping planning and reduction in waste and optimization of the crop. The company has Agmardt funding on a joint science (organic acceptable) post-harvest hot water treatment to reduce rots in squash. The company works with NZ Apples and Pears Inc. on a range of science projects some of which are specifically organic focused.

The company has an IT team of 6 constantly working on IT solutions to increase efficiency introduce new systems and software taking time and effort out of handling data and information. The IT team supports the overseas offices manage data and traceability of product giving significant advantage over other non-vertically integrated companies. The company has made significant improvements in the logistics supply chain including packing and packaging.

New technology is emerging to count the fruit on trees using quad bikes configured with high resolution cameras moving through the orchard row by row taking high resolution photos then pushing it through software to produce heat maps of fruit density. This allows thinning to be targeted into specific areas of the canopies which improves productivity and saves money.

## **PACKHOUSE PRODUCTIVITY**

The Bostock group operate two packhouses- squash and onion and contract the services of a further three for organic apples. There is significant opportunity in NZ for productivity gains in pack houses. For example, in 2018, Bostock invested approx. \$300k to automate squash bin fillers in the squash packhouse, with a further \$200k spend in 2019.

The automated bin fillers increased speed over the line and reduce reliance on seasonal labour. As a direct result of the investment in the automated bin fillers, the squash packhouse was able to reduce headcount by six people.

By reducing labour and increasing through-put there was a 93% increase in tons per labour hour throughput in the packhouse between 2018 and 2020. The investment paid for itself in one season.

The onion packhouse has invested in automatic weighing and bagging machines which optimize weights replacing 10 seasonal jobs and increasing productivity massively.

The packhouses offer greatest opportunity to increase productivity in the fruit and produce industries. The packhouses are labour intensive, employing mostly casual New Zealanders and are difficult to keep staffed.

The products flow down packing lines and offer the best opportunity to automate the packing, grading, sizing, and stacking. Packing occurs inside a covered shed with a concrete floor, constant light, and power. This makes it easier for innovators to attach automatic handling equipment to parts of the packing line.

## HARVEST AUTOMATION AND ROBOTICS

The company has studied robotic harvesting of apples and the current technology in NZ and overseas. The company has looked at robotics in Italy and Washington State. Robotic harvesting will be more difficult to make viable than automating the pack houses as above.

Robotic harvesting of apples has several difficult technical issues to overcome before it is viable.

- 1) Harvesting fruit without bruising and damage.
- 2) Harvesting in the correct mechanical motion without leaf buds, leaves and fruit spurs attached to the fruit. For example, apples need a range of gentle holds and lift motions depending on how fruit is oriented on the branch which have not yet been mastered mechanically.
- 3) Harvesting the correct foreground and background colour of fruit in a field environment with variable light intensity including shading, different light intensities through the day and between days.
- 4) Harvesting on uneven and sometimes wet slippery ground.
- 5) Transforming orchards into two-dimensional canopies currently essential for robotic harvesting will take 20 years (using best practice, 5% per annum). Most orchards trees are three-dimensional in shape.

The hand, eye and brain combine into an incredibly sophisticated dextrous complex system that will take a long time to replicate mechanically. There are much better opportunities for productivity gains.

There is a possibility for automated squash harvesting and the company is supporting a project to investigate this.

These projects are high risk and would greatly help from more government support for studying innovation of automated fruit and produce harvesting.

In the meantime, the industry remains critically dependent on RSE labour.

## VARIETAL DEVELOPMENT AND INTELLECTUAL PROPERTY RIGHTS

Fruitcraft Ltd is an IP joint venture company between three competitors owned each 1/3<sup>rd</sup> by Scales Corporation, Bostock New Zealand and Freshmax NZ Ltd. The company's sole purpose is to source, assess, and manage new genetic plant varieties and IP from within NZ and around the world.

The Fruitcraft Joint Venture focuses on developing new apple varieties which improve productivity with better yields, higher pack-outs, better market returns and finding new markets and customers with unique characteristics. Through this entity some of the new apple varieties have been successful **such as** Dazzle, Prince and Premier star.

There are many other new apple varieties under evaluation. Varieties have been successful (e.g., Dazzle), while others have been less successful (Posy). The reliable labour and returns in the apple division has meant that Bostock is more willing to take on this high-risk business. As a result, new premium varieties have been developed and ensure that Bostock apple varieties remain relevant for local and global markets.

Obtaining improved genetics is the lifeblood of the horticultural industry. MPI has been too pure and fundamentalist in its approach. For example, the handling of Washington State University Irrigated Agriculture Research and Extension Centre, Prosser IAREC (a USA quarantine facility in Washington), was too severe and did not consider the future cost of delisting and the relatively low real-world actual risks of importing *Malus* plant material. The MPI action will cost NZ potentially

hundreds of millions of dollars in lost opportunity cost. Although Prosser IAREC made some mistakes, and their bookwork was below par, delisting Prosser was not in best interest to NZ. Prosser has little interest in supporting the NZ fruit industry. Biosecurity is vitally important to NZ but MPI need to assess the real-world risks of the importation of *Malus* and ways to facilitate the speedy and safe introduction of new plant material.

## **INTERNATIONAL MARKET DEVELOPMENT**

Bostock Group has made significant investment in establishing offshore entities over the last 10 years. Wholly owned Bostock offices have been set up in Korea, Japan, Russia, USA, China, and Vietnam. There are numerous benefits to opening these entities. The returns have improved with better logistics, more transparency, lower margins, and better development of direct retail relationships.

With Bostock sales teams and import offices offshore, there are no competing products sold by the importer handling Bostock products.

The direct feedback received from customers to Bostock offshore entities has been valuable improving returns to NZ. Credit risk has been significantly reduced with vertical integration.

Bostock New Zealand works closely with NZTE as focus customer in a current International Growth Fund project focused on organic apple market development in China. Bostock New Zealand works closely with NZ Apples and Pears Inc. and MFAT on market access. The Government has an essential role in gaining and improving market access. Through access to new markets and better access to existing markets NZ enterprises can significantly enhance returns for premium products. There are many constraints and non-tariff trade barriers with existing markets that need continuous work. These include onerous phytosanitary and compliance rules that can be renegotiated. Bostock New Zealand believes quantum increases in funding for MFAT and MPI with clear market focus, direction, and goals to improve market access would make a significant difference for NZ enterprises.

## **CONCLUSION AND RECOMMENDATIONS**

There are significant innovation gains to be made in the horticulture post-harvest sector through robotics and automation. Currently there are limitations in adopting new technologies for harvest that could be overcome via a collaborative international effort, though these technologies will take time.

Restricting access to harvest labour supply will have severe negative impacts on sector growth and investment confidence. We believe the Productivity Commission's draft recommendations on restricting harvest labour will have perverse negative consequences of reducing innovation, increasing social inequality, and increasing environmental degradation by harming good businesses such as Bostock New Zealand.

The draft report pages 124-126 "Migration policy settings are inhibiting productivity improvements", needs to be rewritten to reflect reality and recognise sectoral specific issues such as peak fruit flow and the glaring productivity differential between RSE's and local labour.

The Horticulture and Apple industries need supporting, not capacity constrained.

The Productivity Commission should recommend the Government give certainty to the fruit industry by giving long term meaningful commitments for growers to access RSE workers for harvest. The Government needs to study its allocation of RSE workers so growing businesses can access increasing numbers of RSE workers to match demand for harvest.

Recommendations **R8.2** "Having a principle of primarily accepting highly skilled migrants" and **R8.2** "Reducing the inflows of low-cost temporary workers" are counterproductive. They will create more social inequality with the destruction of the very businesses that can make a difference to our social and environmental problems.

The Productivity Commission should recommend that Government increase support for research to raise productivity in the fruit and produce post-harvest sector in areas such as varietal development, intellectual property, IT innovation, packhouse and cool chain automation, and global marketing initiatives. MPI needs to become more pragmatic and market focussed on its approach to importation of plant material. The Government should give more support and market focussed direction to MPI, MFAT and NZTE. A collaborative approach with enterprises such as Bostock New Zealand could take productivity to the next level.

We are happy to work with the Productivity Commission on this key issue. We are excited about the potential opportunities that exist for our industry, within an economy that is facing material changes, and have been investing as such. We have a strong desire for policy outcomes to be dictated by quantitative data and not qualitative assessments and opportunities to be supported. A sensible policy towards the RSE scheme is essential.