



# *Climate Change* **RISKS AND OPPORTUNITIES**

**FOR ZESPRI AND THE  
KIWIFRUIT INDUSTRY**

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# About Zespri

Ensuring a climate-resilient industry is core to fulfilling Zespri's purpose of helping people, communities, and the environment around the world thrive through the goodness of kiwifruit.

It's also part of Zespri's mission to create sustainable long-term value for kiwifruit growers, and its belief in kaitiakitanga as a core value underpinning the industry.

As an organisation and an industry, it's important Zespri continues to adapt its practices to ensure it can thrive in a low-carbon, climate-resilient future. Understanding the nature and scale of risk that Zespri and its partners face is the first step in reducing vulnerability and enhancing resilience.

This is Zespri's first climate risk report and it has been prepared in accordance with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). The climate change scenario analyses and risk assessment included in this report covers Zespri's New Zealand and Northern Hemisphere supply regions.

## Overview of Zespri and the New Zealand Kiwifruit Industry

Based in Mount Maunganui, New Zealand, Zespri is 100 percent owned by current or past kiwifruit growers. Zespri exports and markets the world's leading portfolio of kiwifruit 12 months of the year, as well as implementing a world-leading research and development (R&D) programme. Orchards and postharvest are independently owned and managed.

Zespri fruit is grown in New Zealand (NZ), Italy, Greece, France, Japan and Korea and exported to more than 50 countries around the world. There are nearly 15,000 hectares in production in NZ and 3,500 hectares offshore, with 1,300 growers offshore and 2,800 growers in NZ.

The company's major markets are Europe, Greater China and Japan. Zespri is on track to grow global sales to \$4.5 billion by 2025 from \$3.89 billion in operating revenue last season (2020/21). More than \$2.2 billion was returned as direct grower payments to communities around regional NZ last season.



# Governance

At Zespri, climate change is governed by the Board of Directors and Global Executive Team, with risk management, accountability and oversight being an integral part of Zespri's global governance structure.

## RESPONSIBILITIES

### Zespri Board of Directors

The Zespri Board of Directors is responsible for integrating environmental and social considerations into Zespri's assessment of business risk, strategy development and performance.

Climate change and sustainability is a material governance and strategic issue and is a standard item in Board reporting, as well as being incorporated into Board discussions on strategy development, portfolio reviews and investment decisions, risk management oversight and monitoring, and performance against Zespri's targets and commitments.

Zespri's Audit & Risk Management Committee (a sub-committee of the Board), is responsible for reviewing risk management strategies, internal controls and compliance processes, including those relating to climate change.

In the 2021 financial year, the Audit and Risk Management Committee met five times. Climate change topics covering risk management and carbon reporting were included as agenda items at four of these meetings.

### Zespri Executive Team

The global Zespri Executive Team provides executive management and oversight of Zespri's climate change and sustainability objectives, ensuring all associated projects and workstreams are on track to deliver against objectives.

The Executive Team is supported by Zespri's business unit managers in the development, implementation and monitoring of climate change-related projects, workstreams and risk management. Further details of Zespri's risk management processes are provided on page 5.

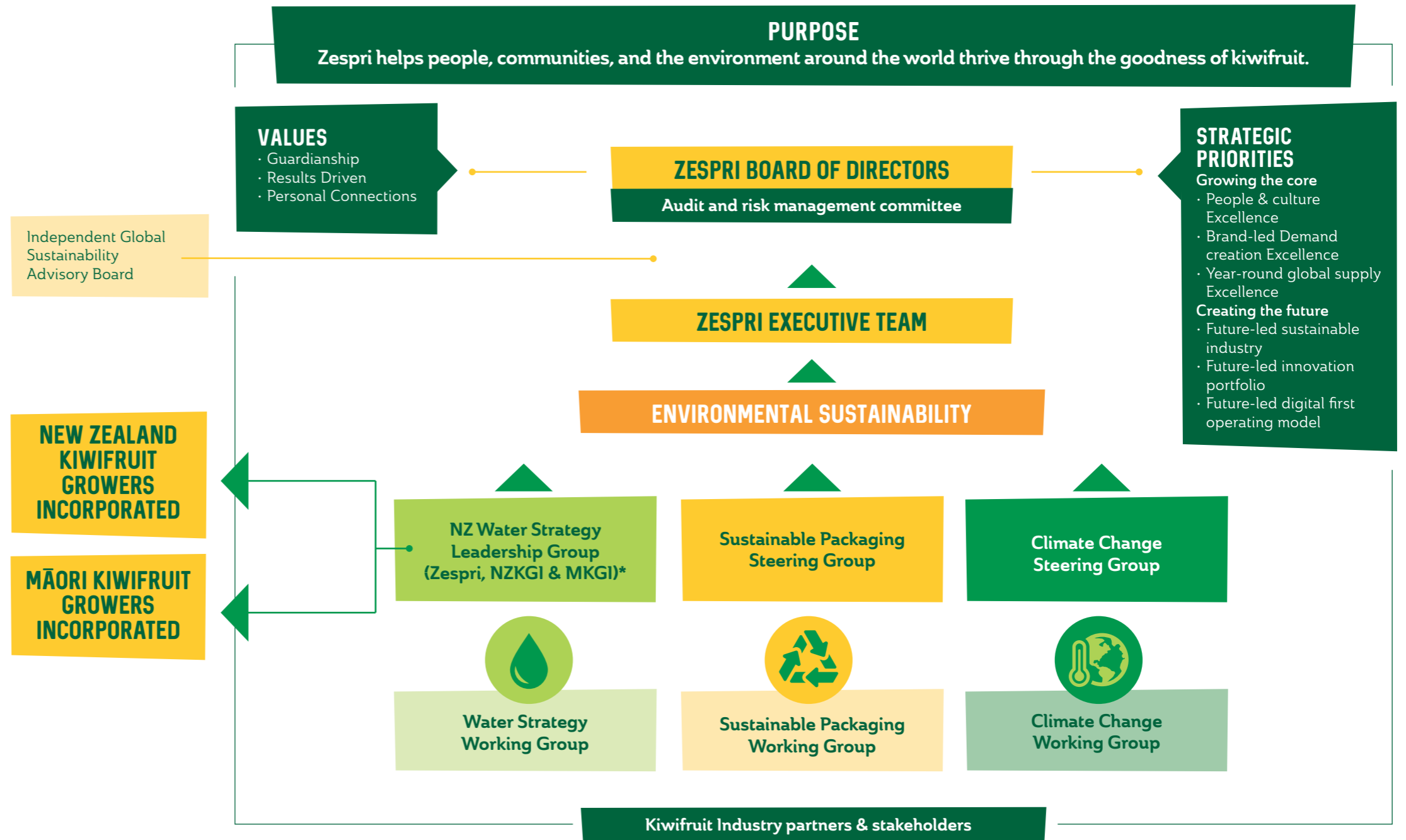


Figure 1. Zespri Environmental Sustainability Governance.

\*A collaboration between Zespri, NZKGI (New Zealand Kiwifruit Growers Incorporated), and MKGI (Māori Kiwifruit Growers Incorporated).

## STRENGTHENING ZESPRI'S CLIMATE GOVERNANCE

One of the three strategic goals that comprises Zespri's climate change strategy is to grow its capability as a climate leader. A key objective underpinning this goal is to strengthen Zespri's corporate governance of its climate-related risks.

To achieve this, in 2021 Zespri established a Climate Change Steering Group to strengthen governance and support the integration and implementation of climate change priorities across the industry.

The establishment of an Independent Global Sustainability Advisory Board in 2022 also helped to build the knowledge and capability required to realise sustainability and climate change leadership ambitions.

Zespri's strengthened climate change and sustainability governance structure is illustrated in Figure 1.

Zespri is committed to leading change in the kiwifruit industry, recognising the need to address structural, process and knowledge gaps, building its climate resilience over time.

# Risk Management

## Identifying and assessing climate-related risks

To identify and assess the most relevant climate-related risks to Zespri and the kiwifruit industry, a qualitative scenario analysis of the physical and transitional risks posed by climate change was undertaken for Zespri's New Zealand and Northern Hemisphere growing regions (including Italy, France, Greece, Japan and Korea).

Scenario-based analysis focuses on how a number of uncertain, forward-looking variables might logically interact to create a plausible future state. The purpose of this is to provide a stress test for assumptions underpinning critical business decisions.

This scenario based approach conforms to the best practices recommended by the Task Force on Climate-related Financial Disclosure (TCFD), Intergovernmental Panel on Climate Change (IPCC) and International Standards Organisation<sup>1</sup>.

The two integrated scenarios applied in the analyses of Zespri's New Zealand (figure 5) and Northern Hemisphere growing regions (see Appendix) are based on the representative concentration pathway (RCP) scenarios developed by the IPCC. This includes a 'Moderate' 2°C scenario (RCP 4.5) and 'High' 4°C scenario (RCP 8.5). Both scenarios applied a medium to long term (30-80 year) time horizon (shown in figure 2).

The scenarios were assessed against publicly available data and insights provided through interviews, focus groups and surveys with key stakeholders.

To consistently assess the potential impact of the climate-related risks under each of the two scenarios, the risks ratings (shown in figure 3) were applied.

Scenario 1 Moderate (2°C) Emissions Scenario	Scenario 2 High (4°C) Emissions Scenario
<ul style="list-style-type: none"> <li>A moderate emissions scenario, in which aggressive action keeps global warming to within 2°C.</li> <li>RCP 4.5</li> </ul>	<ul style="list-style-type: none"> <li>A business-as-usual high emissions scenario, in which global warming continues unchecked.</li> <li>RCP 8.5</li> </ul>
<ul style="list-style-type: none"> <li>This scenario describes a world that has succeeded in implementing the Paris Agreement and is likely to keep total warming below a 2°C tipping-point.</li> </ul>	<ul style="list-style-type: none"> <li>This scenario describes a world in which countries have failed to meet their emissions reduction pledges under the Paris Agreement.</li> </ul>

Figure 2. The two scenarios applied in Zespri's climate risk analysis.

Risk Ratings	
High	May require adaptive action in the short to medium term in order to minimise negative financial impacts.
Moderate	May require adaptive action, but uncertainties are high/timescales long. Keep a watching brief.
Low	Little clear evidence of risk requiring adaptive action. Revisit when fresh information becomes available.

Figure 3. Risk ratings applied to assess Zespri's New Zealand climate-related risks.

## Zespri's risk management process

Zespri's Risk Management Policy provides the overarching framework for assessing, monitoring and managing risks, including those relating to climate change.

Each business unit within Zespri is responsible for monitoring, reporting and establishing mitigation controls for the risks that threaten achievement of their key objectives.

Each risk identified is assessed using Zespri's risk impact assessment matrix that assesses individual risks to the business based their likelihood and impact. Each risks receives an initial, residual and targeted rating within this matrix based on the current and planned mitigations in place.

All significant risks identified within Zespri's business unit risk registers are incorporated in an overarching enterprise level risk register. Zespri's Risk and Assurance Team, in collaboration with individual business units, update the Group Enterprise Risk Register from department risk documentation. Priority enterprise risks are reported to the Audit and Risk Management Committee at each meeting.

Zespri's risk management process is illustrated in Figure 4.

## Managing climate-related risks

The risk mitigations and controls currently in place for managing Zespri's climate-related risks include:

- strengthening climate change governance processes;
- integrating sustainability into business strategic and planning processes;
- establishing work programmes for climate change; and
- establishing performance measurement systems.

Further details on the climate risk mitigation actions Zespri is taking are included in the Strategy section of this document (page 10).

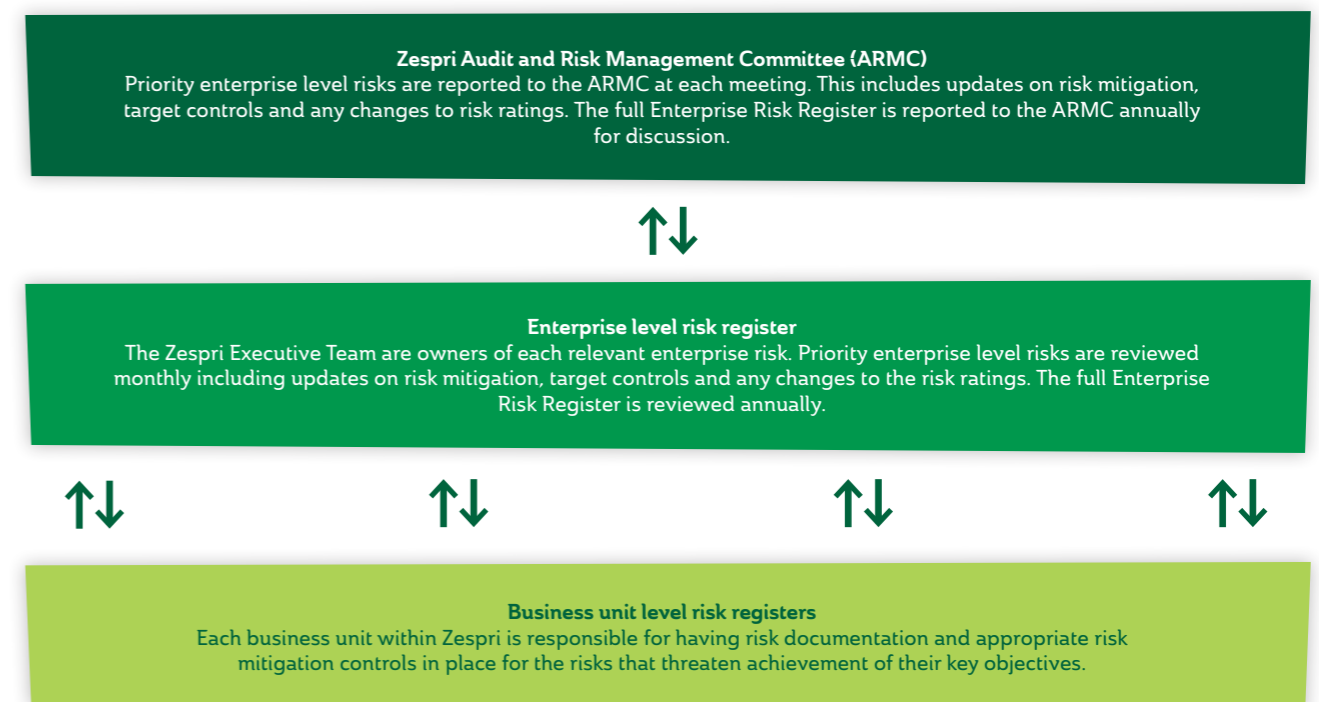


Figure 4. Zespri's risk management process.

<sup>1</sup>ISO14090:2019

<sup>2</sup>IPCC Assessment Report 5 (AR5)

# Strategy

This section describes Zespri's climate change risks and opportunities, their potential impact and the climate change strategy Zespri has developed in response. In accordance with the recommendations of the TCFD, the risks identified are classified as either physical or transitional climate-related risks.

The description of risks is divided into two parts – physical and transitional. Physical climate risks refer to the risks that reflect long-term climatic changes such

as shifting seasons or result from 'acute' events such as increasingly frequent and/or intense storms. Transition risks arise from policy, regulatory, legal, technological, market and other societal responses to the challenges posed by climate change and the transition to a low carbon economy.

The risks, opportunities and Zespri's strategic response to these are set out in each part.

Climate Variable	Potential Impact	Projected change in 2050		Risk Rating
		2°C scenario	4°C scenario	
Average temperatures	Rising average temperatures may increase the risk of pests and pathogens becoming established in primary growing regions.	~0.9°C	~1.1°C	High
Minimum temperatures	A rise in minimum spring temperature may prevent consistent bud-break and king flower production in primary growing regions.	~1°C	~1.25°C	High
Maximum temperatures	A rise in summer maximum temperatures may increase energy costs in post-harvest sorting and distribution centres.	~1°C		Moderate
Number of hot days (>25°C)	An increase in the number of hot days in primary growing regions may increase the risk of heat stress among orchard workers.	~75% increase	~95% increase	Moderate
Average Rainfall	Kiwifruit vine water demand may increase with rising temperatures, impeding on fruit development in water-deprived areas.	Substantial regional and seasonal variation.		Moderate
Drought	An increase in the severity and frequency of droughts, especially in already dry areas, may impede on fruit development.	100mm increase in PED <sup>3</sup>		Moderate
Number of dry days (<1mm / day rainfall)	An increase in the number of dry days may marginally alter the risk of drought and water stress in primary growing areas.	0-5% Increase in dry days		Low
Extreme rainfall events	An increase in extreme rainfall events may marginally alter the risk of harvest losses, soil erosion, flood damage and diminish soil productivity.	0-5% increase in the magnitude of a 99th percentile rainfall event		Low
Extreme wind speeds	An increase in extreme wind speeds may see more wind damaged fruit on the vine.	0-2.5% increase in the magnitude of a 99th percentile daily mean wind speed		Low

Figure 5. Zespri physical climate risk scenario analysis and risk ratings for New Zealand growing regions.

<sup>3</sup>Potential Evapotranspiration Deficit.

## PHYSICAL RISKS

Zespri's scenario analyses considered how physical climate-related risks are likely to impact on Zespri's growing regions in New Zealand, Europe (France, Italy and Greece) and Asia Pacific (Japan and South Korea). The findings of the analyses for all regions are described in detail below. Under both scenarios, the risks identified are expected to increase consistently over a medium (30 year) time period. Following mid-century, the risks diverge markedly, worsening considerably under the high emissions scenario.

A summary of the physical risks and risk ratings specific to Zespri's New Zealand growing regions over a medium time frame (30 years) are provided in figure 5. Further details on the scenario analyses results for Zespri's European and Asia Pacific growing regions are provided in the Appendix (figures 8 and 9).

### THE RISKS

#### Temperature change

Chronic rising temperatures are expected to impact on the kiwifruit industry over the medium to long term (30-80 years). In particular, a rise in minimum spring temperature is expected, over time, to prevent consistent bud-break and king flower production in primary growing regions in New Zealand and in

Europe, especially in the Hayward variety which requires more chilling.

Rising average summer temperatures will increase vine water demand and may impede fruit development in water-deprived areas. An increase in the number of hot days could cause thermal stress, and have negative impacts on production.

Zespri's European growing regions already experience much warmer growing conditions than in New Zealand. An expected increase in the number of hot days (above 35°C) across Europe presents a risk of increased thermal stress to kiwifruit vines. Overall, this risk is considered low for orchards in Italy, moderate for orchards in Greece, and high for orchards in France (refer to Appendix).

Warmer temperatures are expected to lengthen growing seasons. Plants will start maturing earlier potentially exposing them to frosts. Although the number of frosts are generally expected to decline, when they do occur, their impact could be much larger than previously experienced. Frost protection will become increasingly important.

Biosecurity risks are expected to increase with invasive pests and pathogens finding conditions more suitable as the climate warms. This was identified as a particular risk to growing regions in both New Zealand and Japan.



## Rainfall

There is less certainty about changes in rainfall than temperature, because it is more difficult to model. Generally rainfall is expected to decrease in Zespri's European growing regions, with a slight increase in Asia. It is changes in rainfall patterns that are more likely to impact than reduction in rainfall.

Enhanced risk of dry periods and drought are considered likely and may be intensified by increasingly strict water use regulations. Under a High emissions scenario, water access is likely to become a key concern over a long-term period (30-80 years), particularly in drier regions of Southern Italy, and Greece.

Heavier rainfall events are expected, which could have impacts such as flooding and waterlogging of soils, the latter being linked to kiwifruit vine decline syndrome — which is a concern in some growing regions.

Over the coming decades, the distribution of rainfall should be carefully monitored in major kiwifruit growing areas in order to determine patterns of change and geographical distribution of risk.

## Hail

Crop damage due to an expected increase in the frequency and severity of large hail events has been identified as a moderate-to-high risk for Zespri's European growing regions. This is despite many of these regions already having hail netting in place. This higher sensitivity to hail reflects some concern around whether existing structures in orchards will be strong enough to protect against increased hail, and the significant damage hail can cause, potentially affecting not just the current crop but future crops. In Zespri's New Zealand growing regions there is a projected decrease in precipitation (including hail) over time.

## Wind & other extreme weather events

Changes in wind speed are unlikely to be severe before mid-century. However, risk of wind-rub damage may rise and should be monitored so that additional protective measures can be put in place as appropriate.

There is an expectation that the frequency with which extra-tropical cyclones may impact on kiwifruit growing regions in New Zealand, Japan and Korea will increase. However, current climate change models display little uniformity in their projection of intensity, frequency or reach of these storms in coming decades.

## OPPORTUNITIES

The primary opportunity for Zespri and its supply chain partners is to increase investment in climate adaptation practices over the short-term to increase resilience, before both physical and transition climate-related risks mount to pose altogether more challenging circumstances.

There is some evidence the physical impacts of climate change could act in favour of kiwifruit production. For example:

- Warmer temperatures and longer growing seasons in some regions may result in higher quality fruit (e.g. increased dry matter) and yield.
- Warmer temperatures may make existing sites with sub-optimal growing conditions (e.g. colder) more favourable and alternative growing locations may become more suited to production.

## STRATEGIC RESPONSE

Zespri is committed to taking action to address the physical risks, both in reducing its impact as an industry and also, preparing for the impacts climate change will have through the supply chain from orchard to packhouses to transport, customers and consumers.

Zespri's focus is on ensuring the kiwifruit industry is both resilient to a changing climate, and able to realise any opportunities that come from this. It will work with industry partners to build resilience as the climate changes, support good practice, incentivising change and sharing successes and challenges.

To achieve this, Zespri has developed a climate change strategy with the purpose of leading the kiwifruit industry to a low-carbon, climate resilient future. It is structured around three goals:

1. To provide the world with carbon positive kiwifruit
2. To enable the kiwifruit industry to thrive in a rapidly changing climate and
3. To grow our capability as a climate leader.

Goal two is about adapting to the physical risks of climate change and is comprised of four key strategic objectives, which are:

1. Climate resilience of new kiwifruit varieties is improved
2. Growers and supply chain partners have strengthened climate-resilient practices
3. Climate-related policies and financial instruments have enabled decarbonisation and adaptation
4. Community and stakeholder relationships are strengthened by demonstrating and communicating authentic climate leadership.

Zespri is investing more than \$1 million per year in research to understand more about mitigating and managing the impacts of climate change.

From assessing the carbon footprint of the Zespri Global Supply business, to understanding the water requirements of kiwifruit vines, investigating soil carbon storage, and modelling the impact of changes in weather on yield, there is commitment to taking a science-led approach to the solutions that are put in place.

Zespri assesses new kiwifruit varieties against a range of indicators, including those impacted by climate change. It is working on further strengthening the integration of climate risk into the new varieties programme, to help future-proof the industry.

Following the work undertaken to assess and report its climate-related risks, Zespri's next adaptation target is to build an industry-wide adaptation plan by December 2022. This will help bring together the actions already underway to build resilience for the long-term.



## TRANSITIONAL RISKS

For Zespri the priority transitional risks identified include the risk of tightening environmental regulations, and an increasing consumer aversion to unsustainable products (shown in figure 6). In the short to medium-term (10-30 years), non-physical transition risks present a more immediate threat to Zespri and its supply chain partners than the physical risks which are expected to occur over a longer time horizon (30-80 years).

### THE RISKS

#### Environmental regulation

Tightening environmental regulations may cause significant direct and indirect cost increases over short and medium terms. Environmental regulations are already starting to increase in many of the markets in which Zespri operates.

The Paris Climate Change Agreement, ratified in 2016 and now signed by 194 countries around the world, set a target of limiting total global warming to 1.5°C. Over time this will likely result in increased costs for Zespri.

For example, markets including the US, EU and UK are currently exploring the introduction of carbon border tax adjustments. International agreements to reduce emissions from shipping are also expected to increase international distribution costs.

In New Zealand cost increases will be imposed through changes to the Emissions Trading Scheme (ETS) and National Policy Statement on Freshwater Management (NPSFM).

In Europe the EU Green Deal may have further implications for Zespri including in terms of the availability and status of chemicals and other inputs used for kiwifruit production.

#### Social licence to operate & consumer aversion to unsustainable products

Social licence to operate and shifting consumer preferences pose both short- and medium-term risks to Zespri.

As European and North American customers, in particular, increasingly choose products based on the carbon footprint and other environmental impacts of the producing organisation, this may have brand impacts for Zespri if aspects such as carbon emissions are not well managed.

Moderate (2°C) emissions scenario	Risk Rating	High (4°C) emissions scenario	Risk Rating
<b>Environmental regulation</b>			
Under a moderate emissions scenario, the short-term financial impacts of regulation diminish over time and are ultimately offset by reduced production costs and enhanced market access.	High	Under a high emissions scenario environmental regulation is rolled back to foster primary sector growth in the face of climate deterioration.	Low
<b>Social licence to operate &amp; consumer aversion to unsustainable products</b>			
Under a moderate emissions scenario, the short-term financial impacts of regulation diminish over time and are ultimately offset by reduced production costs and enhanced market access.	Low	Under the high emissions scenario social licence steadily erodes over the short to medium term to become a substantial problem.	High

Figure 6. Zespri's priority transitional risks & potential impacts.

### OPPORTUNITIES

Consumers, the public, politicians, regulators and investors are increasingly expecting business to play its part in reducing the impact on the climate. The kiwifruit industry will need to work together to address the challenges as economies around the world decarbonise. While this includes increasing climate regulations, there will also be opportunities as consumer preferences for healthy, low impact products increases.

For example, carbon labelling is emerging in Zespri's global markets and will start to set the standards that New Zealand exporters are expected to meet. Such labelling will provide consumers with information about the level of product embodied carbon emissions. It could also provide consumers with transparency to make informed shopping decisions.

By taking a leadership approach in its response to climate change, by continuing to embed sustainability as a core part of its business, there is an opportunity for Zespri to continue to build a brand that is recognisable for what it stands for as much as for the quality of its fruit.

Timely action to address climate risks can enhance value and build resilience. By moving quickly ahead of the incoming environmental regulations in its response to the challenges posed by climate change, Zespri and its supply chain partners will be well placed to convert a number of climate risks into opportunity.

### STRATEGIC RESPONSE

Zespri provides the world with a good product – fresh, healthy, kiwifruit. While the environment impact of growing kiwifruit is relatively low, continued investment and innovation is needed to mitigate and adapt to the risks.

The industry will need to work together to address the transitional risks outlined as a result of economies around the world decarbonising. While this includes increasing climate regulations, there will also be opportunities as consumer preferences for healthy, low impact products increase.

Zespri will work with its industry partners to reduce greenhouse gas emissions and invest in nature based solutions such as offsetting. It will work towards offering consumers certified carbon positive kiwifruit. This is the first goal of Zespri's climate change strategy: To provide the world with carbon positive kiwifruit.

The key objectives underpinning this goal are:

1. Corporate emissions targets achieved
2. Supply chain partners supported to achieve emission reduction targets
3. Unavoidable supply chain emissions offset
4. Customers and consumers value Zespri's carbon positive action.

Zespri is working to capture the opportunity it has with its consumers to add value by addressing environmental issues they care about. This will be through supporting growers and post-harvest operators to change as well as growing its capability for leadership, integrating climate risk into business decision-making, risk planning and reporting.



# Metrics and Targets

In February 2020, Zespri announced a set of targets for reducing its own emissions, working across the supply chain to reduce emissions and for building resilience to climate change. These are:

**We will work with our partners to be climate positive by 2035, achieving two key targets along the way:**

- Zespri corporate will be carbon neutral by 2025;
- We will support our global supply chain to become carbon positive to retailers by 2030.

**We will strengthen our preparedness for climate change by:**

- Reporting on our climate risks and opportunities by August 2021
- Building an industry wide adaptation plan by December 2022

## REPORTING OUR PERFORMANCE

### Zespri's corporate emissions

Zespri's corporate emissions are defined as the core emissions resulting from its immediate business activities. The first milestone of Zespri's carbon mitigation target is for the corporate operation to be carbon neutral by 2025.

Over the year ended 31 March 2021 (FY21) Zespri's corporate emissions reduced by 90 percent, however we recognise this is largely due to the reduction in global travel as a result of COVID-19.

While we expect some rise in travel emissions once the world starts to return to normal, the increased adoption of remote and virtual working across our global teams provides an opportunity for the business to rethink its approach and make even more progress towards Zespri's target to be carbon-neutral by 2025.

### Industry emissions

Zespri's industry carbon mitigation milestone is to be carbon positive to its retailers by 2030. Industry emissions are defined as the indirect emission sources associated with Zespri's supply chain operations. In 2019, Zespri re-measured the cradle-to-grave emissions of its NZ fruit using internationally recognised product lifecycle methodology (PAS2050). This was previously reported in 2010.

At 2kg of CO<sub>2</sub>-e emissions per kg of fruit consumed internationally, Zespri is a small contributor when compared to other food products. While the industry has reduced emissions by 20 percent over the course of the last decade through more efficient shipping, better cool store technology and more efficient growing practices on orchard, the overall contribution is just over 600,000 tonnes CO<sub>2</sub>-e. Figure 7 illustrates the proportions of this attributable to of each stage in the supply chain for New Zealand grown kiwifruit.

Shipping is Zespri's largest industry emissions source accounting for approximately 43% of total supply chain emissions. Between FY20 and FY21 our shipping emissions increased by 7%. This is in line with the increase in volume of fruit shipped over the same reporting periods.

Our shipping efficiency (measured in kg of CO<sub>2</sub>-e per kg of fruit and tray equivalents shipped) was the same for both reporting periods (refer to Table 2). Over the coming year, we will work with our shipping partners to develop a pathway for emissions reduction.

## LOOKING AHEAD

Zespri has set some ambitious targets in line with its goal of being world leading in the fresh fruit category. Achieving them will require transformation across the business and industry while safeguarding shareholder profits and business growth.

This means looking beyond reduction of emissions to achieve carbon-positive growth. Zespri is well-placed to do this through incentivising the adoption, over time, of nature-based climate solutions. This will enable and require the industry to take bold, innovative new paths. It is encouraging to hear the support from senior leaders in the kiwifruit industry for this kind of approach and together Zespri and the industry will respond to the challenge.

Scope	Emission source	tCO <sub>2</sub> -e	
		FY20	FY21
Scope 1	Vehicle fuel	300	100
Scope 2	Office electricity	300	300
Scope 3	Air travel	7,800	300
	Staff mileage and taxis	200	100
<b>Total Zespri corporate emissions</b>		<b>8,600</b>	<b>800</b>

Table 1. Zespri's corporate greenhouse gas emissions <sup>4</sup>.

<sup>4</sup>Calculated in accordance with ISO 14064-1:2018 organisational reporting standard.

Industry emissions source	Unit	FY20	FY21
Shipping	t CO <sub>2</sub> -e	319,000	339,800
	kg CO <sub>2</sub> -e per kg of fruit shipped	0.5	0.5
	kg CO <sub>2</sub> -e per Tray Equivalent (TE)	2.2	2.2

Table 2. Zespri's industry shipping emissions from New Zealand sourced fruit \*

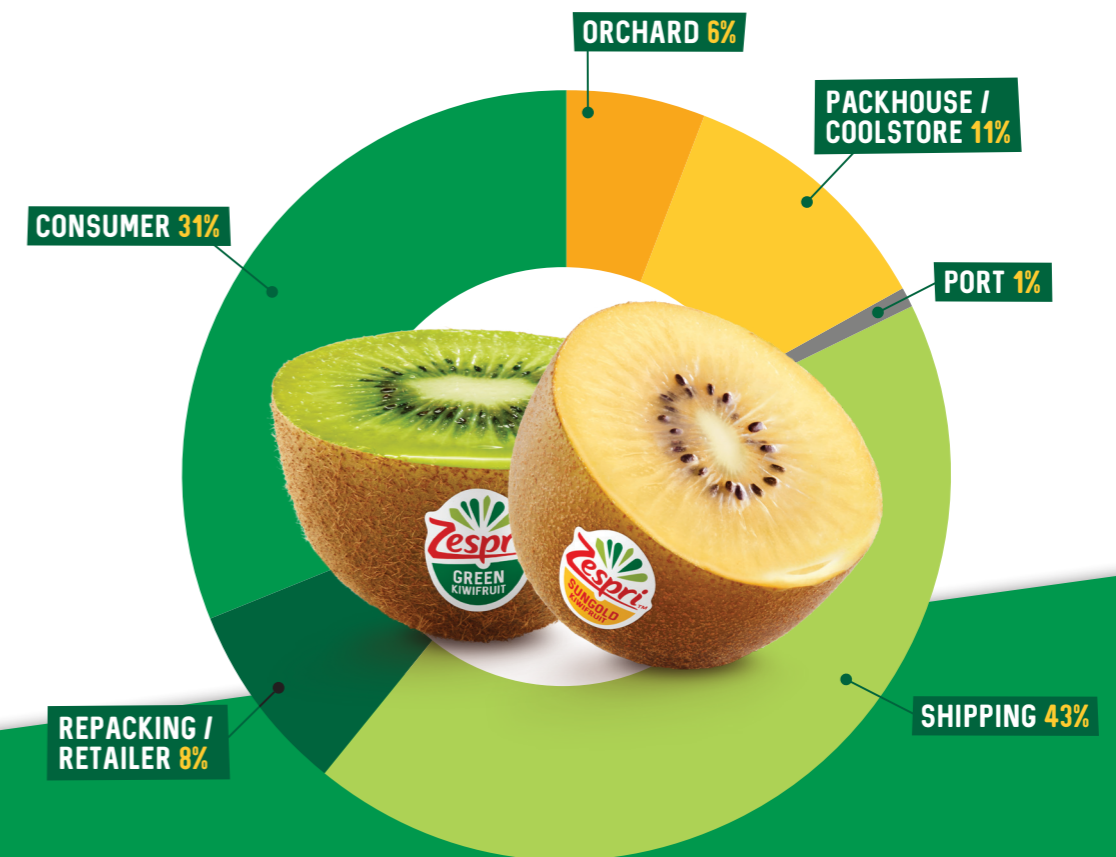


Figure 7. Supply chain contribution of emissions associated with New Zealand grown kiwifruit.



## APPENDIX: ZESPRI GLOBAL SUPPLY CLIMATE RISK ASSESSMENT

Zespri has partnered with growers in the Northern Hemisphere over the last 20 years to keep Zespri Kiwifruit on shelves all year round. The Northern Hemisphere harvest currently makes up approximately 13 percent of Zespri's total supply. The majority of this is produced in Italy (10.4% of total supply). The remainder comes from France (0.5%), Greece (1.7%), Japan (0.1%) and South Korea (0.3%).

The climate risk assessment undertaken for Zespri's Northern Hemisphere growing regions was prepared for Zespri by the AgriBusiness Group and underwent external peer review.

The risk assessment methodology used was similar to that used for Zespri's New Zealand growing regions, with the same risk ratings applied (refer to Figure 3). The scenarios were assessed against publicly available data and insights provided through interviews and surveys with key stakeholders. The results of the climate scenario analyses for Zespri's European and Asia Pacific growing regions are shown below.

For Europe, the majority of climate change projections were scored as moderate risk; hail was identified as higher risk. For Asia, key stakeholders scored climate change as a higher risk than in Europe and NZ. A possible reason for this is that they have experienced significant natural events in recent years and are more sensitive to climate hazards.

Climate variable	Scenario	Projected change in 2040-59	Risk Ratings <sup>5</sup>		
			Greece	Italy	France
Average temperature	2°C	Increase in mean temperature (1.4 - 1.7°C)	Moderate	Moderate	Moderate
	4°C	Increase in mean temperature (2.0 - 2.4°C)	Moderate	Moderate	Moderate
Number of hot days (>35°C)	2°C / 4°C	Number of hot days increase (0-25 days)	Moderate	Low	High
Average rainfall	2°C / 4°C	Annual rainfall decreases (5-8%)	Moderate	Low	Moderate
Drought	2°C / 4°C	Number of days that the longest dry spell increases (2-8 days)	Moderate	Moderate	Moderate
Growing season	2°C / 4°C	Number of days that the growing season increases (4-29 days)	Moderate	High	Moderate
Hail	2°C	Hail frequency increases by 50%	High	Moderate	Moderate
	4°C	Hail frequency increases by 100%	High	High	High

Figure 8. Zespri physical climate risk scenario analysis and risk ratings for European growing regions.

Climate variable	Scenario	Projected change in 2040-59	Risk Ratings <sup>5</sup>	
			Japan	Korea
Average temperature	2°C	Increase in mean temperature (1.5oC for Japan, 1.6°C for Korea)	High	Moderate
	4°C	Increase in mean temperature (1.9oC for Japan, 2.1°C for Korea)	High	Moderate
Number of hot days (>35°C)	2°C / 4°C	Number of hot days in a year increases (34 for Japan, 37 for Korea)	High	Moderate
Frost	2°C / 4°C	Number of frost days in a year decreases (7 days for Japan, 28 days for Korea)	High	Moderate
Average rainfall	2°C / 4°C	Annual rainfall increases (4% for Japan, 4% for Korea)	High	Moderate
Heavy rain	2°C / 4°C	Rainfall in most extreme rainfall events increases	High	Moderate
Growing season	2°C / 4°C	Growing season length increases (3 days for Japan, 10 to 36 days for Korea)	Moderate	Moderate
Cyclones	2°C / 4°C	One more very intense cyclone every decade	High	High

Figure 9. Zespri physical climate risk scenario analysis and risk ratings for Asia Pacific growing regions.

<sup>5</sup>Ratings derived from Zespri review process in each ZGS region for both Green and Gold varieties.

## GLOSSARY OF TERMS

**Adaptation** - The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects.

**Climate-related risks** - A climate-related risk refers to a potential negative impact of climate change on an organisation.

**Carbon neutral** - An activity is 'carbon neutral' when it releases net zero carbon emissions into the atmosphere. An organisation is 'carbon neutral' when it has achieved net-zero carbon emissions by 'balancing' its total carbon emissions. Typically, balancing occurs by reducing, removing or avoiding (i.e. offsetting) carbon externally to its value chain.

**Carbon positive** - An activity or organisation is 'carbon positive' when it goes beyond achieving net zero carbon emissions and creates an environmental benefit by removing additional greenhouse gas emissions (GHGs) from the atmosphere.

**Milestone timeframes** - the word 'by' refers to completion within the year stated.

**Offsetting** - Is the practice of removing, reducing or avoiding greenhouse gas (GHG) emissions in order to compensate for another practice – such as transport, agriculture or industrial processes – that generates emissions. Offsetting can occur one of three ways:

- Removal projects typically finance the absorption and sequestering of atmospheric carbon in the biosphere.
- Reduction projects finance the adoption of technologies to reduce GHGs that would otherwise be released into the atmosphere by industrial or domestic processes.
- Avoidance projects finance the development of renewable energy assets in place of fossil fuel-burning energy assets.

**Paris Agreement 2016** - An agreement within the United Nations Framework Convention on Climate Change, dealing with greenhouse-gas-emissions mitigation, adaptation, and finance, signed in 2016.

**Representative Concentration Pathway (RCP)** - A greenhouse gas concentration trajectory adopted by the IPCC. The pathways describe different climate futures, all of which are considered possible depending on the volume of greenhouse gases (GHG) emitted in the years to come.

**Resilience** - The ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions.

**Scenario Analysis** - Scenario-based analysis focuses on how a number of uncertain, forward-looking variables might logically interact to create a plausible future state. The purpose of this is to provide a stress test for assumptions underpinning critical business decisions.

**Task Force for Climate-related Financial Disclosure (TCFD)** - Climate change presents financial risk to the global economy. Financial markets need clear, comprehensive, high-quality information on the impacts of climate change. The Financial Stability Board created the Task Force on Climate-related Financial Disclosures (TCFD) to improve and increase reporting of climate-related financial information.





# Independent Limited Assurance Report to the Directors of Zespri Group Limited

## Conclusion

Our limited assurance conclusion has been formed on the basis of the matters outlined in this report.

Based on our limited assurance engagement, which is not a reasonable assurance engagement or an audit, nothing has come to our attention that would lead us to believe that for the period 1 April 2020 to 31 March 2021:

- Statements made in Zespri's TCFD report has not, in all material respects, been prepared in accordance with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) dated June 2017, as at March 2021.

## Information subject to assurance

We have performed an engagement to provide limited assurance in relation to Zespri Group Limited's (the 'Company') TCFD report, prepared in accordance with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) dated June 2017, as at March 2021.

## Standards we followed

We conducted our limited assurance engagement in accordance with International Standard on Assurance Engagements (New Zealand) 3000 (Revised) *Assurance Engagements other than audits or reviews of historical financial information*. We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusion. In accordance with those standards we have:

- Used our professional judgement to plan and perform the engagement to obtain limited assurance that the information contained within the TCFD report are free from material misstatement, whether due to fraud or error;
- Considered relevant internal controls when designing our assurance procedures, however we do not express a conclusion on the effectiveness of these controls; and
- Ensured that the engagement team possess the appropriate knowledge, skills and professional competencies.

The procedures performed in a limited assurance engagement vary in nature and timing from and are less in extent than for a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

## Restriction of distribution and use

Our report should not be regarded as suitable to be used or relied on by any party's other than Zespri Group Limited for any purpose or in any context. Any party other than Zespri Group Limited who obtains access to our report or a copy thereof and chooses to rely on our report (or any part thereof) will do so at its own risk.

To the fullest extent permitted by law, we accept or assume no responsibility and deny any liability to any party other than Zespri Group Limited for our work, for this independent limited assurance report, or for the conclusions we have reached.

Our report is released to Zespri Group Limited on the basis that it shall not be copied, referred to or disclosed, in whole (save for Zespri Group Limited's own internal purposes) or in part, without our prior written consent.



## Management's responsibility for its TCFD report

Management of the Company are responsible for the preparation and fair presentation of the:

- Statements and related supporting information made in the TCFD report

This responsibility includes such internal control as management determine is necessary to enable the preparation of information included in the TCFD report that are free from material misstatement whether due to fraud or error.

## Our responsibility

Our responsibility is to express a conclusion to the directors on whether anything has come to our attention that the:

- Statements made in Zespri's TCFD report has not, in all material respects, been prepared in accordance with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) dated June 2017, as at March 2021.

## Our independence and quality control

We have complied with the independence and other ethical requirements of Professional and Ethical Standard 1 International Code of Ethics for Assurance Practitioners (Including International Independence Standards) (New Zealand) issued by the New Zealand Auditing and Assurance Standards Board, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

The firm applies Professional and Ethical Standard 3 (Amended) and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Our firm has also provided other services to the Company in relation to statutory audit, taxation consulting and compliance services, climate change response strategy services, reasonable assurance engagements in relation to overhead allocations between segments and agreed upon procedures related to the Unlisted submission, margin statements and 2020 Annual Meeting. Subject to certain restrictions, partners and employees of our firm may also deal with the Company on normal terms within the ordinary course of trading activities of the business of the Company. These matters have not impaired our independence as assurance providers of the Company for this engagement. The firm has no other relationship with, or interest in, the Company.



KPMG

Auckland

7 July 2021