National (Kiwifruit) Pathway Management Plan proposal –

Draft for Consultation

Draft proposal to meet requirements of Section 81 of the Biosecurity Act

2 September 2020

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1. Introduction

This document is a proposal by Kiwifruit Vine Health Incorporated to establish a National (Kiwifruit) Pathway Management Plan under the Biosecurity Act 1993, to meet the requirements under Section 81 of that Act.

KVH is mandated to lead biosecurity for the kiwifruit industry, including as the GIA signatory for both the kiwifruit and kiwiberry industries. Where "kiwifruit" or "kiwifruit industry" are referred to in this plan this refers to the fruit of any plant of the genus *Actinidia* and is inclusive of both kiwifruit and kiwiberry industries.

Biosecurity is one of the kiwifruit industry's biggest risks and we must be prepared for the full range of potential biosecurity risks. Effective pathway management is a foundation of KVH's Biosecurity Strategy 2017-2020, and is critical and fundamental to being prepared as it underpins;

- surveillance to detect new or emerging risks;
- pathway hygiene and traceability; and
- preventing or slowing the spread of risk organisms.

This proposed National (Kiwifruit) Pathway Management Plan (hereafter referred to as the "Pathway Plan") aims to unite the efforts of Growers and associated people and industries that influence risk associated with kiwifruit industry pathways. And it provides for appropriate consistency and a coordinated approach to kiwifruit pathway management.

Key elements of the plan involve surveillance and monitoring, reporting, movement controls and implementing standards and practices that including hygiene and traceability requirements, along with a continued focus on awareness, education and research.

Only by working together will it be possible to achieve the outcomes the plan is designed to achieve. It takes all of us to protect what we've got.

KVH requests that this Pathway Plan and associated levy commence from 1 April 2022.

2. The name of the person making the proposal [s.81(2)(a)]

The proposer of the plan is Kiwifruit Vine Health Incorporated (KVH). KVH is a non-profit, incorporated society governed by a Board of Directors which comprises representatives from key industry groups including Zespri, post-harvest operators (supply) and growers.

The current Directors/Associate Directors on the KVH Board are:

Dr David Tanner (Chair)	Director - Grower representative
Graeme Marshall	Director - Independent Director
Craig Thompson	Director - Zespri representative
Simon Cook	Director - Grower representative
Dermott Malley	Director - Grower representative
Nicki Paget	Director – Supply representative
Cody Bent	Associate Director

The present Chief Executive is: Stuart Hutchings
PO Box 4246
Mount Maunganui 3149

3. The subject of the proposal [s.81(2)(b)]

The subject of the proposal is kiwifruit (including kiwiberry) industry pathways, being "risk items" that move to, from or between places where kiwifruit (all *Actinidia* spp.) plants or any other kiwifruit plant

material (excluding kiwifruit for sale) are grown, grow wild or are produced or processed. Where 'risk item' includes—

- kiwifruit plant material, such as plants, budwood, seeds, pollen and flowers of the genus *Actinidia*
- kiwifruit shelter belt plants, such as plants of the genus *Cryptomeria*, *Casuarina*, *Salix* and *Populus*
- growing media and organic matter, such as soil, potting mix, compost and mulch
- vehicles, machinery and equipment (including beehives)
- personal effects, such as footwear and clothing
- fruit that may be contaminated with kiwifruit plant material (other than fruit that has been processed and packaged, whether for domestic consumption or for export)

While the proposed pathway plan does not address natural spread (e.g., wind, water etc.), the intent is that it can be used to reduce the risk of natural spread that could also increase human-mediated spread on kiwifruit industry pathways (as above). For example, it could be used to control an isolated reservoir of pests or pathogens that could realistically and naturally spread to neighbouring kiwifruit orchards, and from there be spread by Growers, contractors or others on risk items to kiwifruit orchards.

4. A description of the actual or potential risks associated with it [s.81(2)(c)(i)]

The actual or potential risks associated with the movement of the risk items referred to in section 3, above, is that these spread harmful pests around New Zealand and into kiwifruit orchards. The types of potential harm include:

- increased kiwifruit production impacts or costs of control on the orchard
- restrictions on market access (e.g., if organisms spread on pathways in the future and trigger market access restrictions)
- reduced 'sustainability' of growing practices (e.g., if new and less sustainable crop protection tools or greater frequency of application are required)
- harm to marketing overseas of kiwifruit (e.g., damage to sustainability credentials or disruption to supply)
- harm to the NZ economy if serious harm impacts the kiwifruit industry at a scale that impacts jobs and revenue (e.g., as was experienced with Psa-V).

This could either be a direct movement (for example, movement of contaminated machinery from a kiwifruit orchard in the North Island to a kiwifruit orchard in the South Island) or indirectly (for example, movement of budwood from an orchard in one location to a nursery in another location, which then in turn distributes plants to multiple orchards).

The movement of risk items referred to in section 3, above, could also potentially lead to inadvertent spread of pests that harm other industry sectors, the environment, human health or cultural values. This risk is no greater to comparable industries or other sectors (arguably it is lower given the efforts of KVH and other parts of the kiwifruit industry to lift biosecurity awareness and practices, including lessons from Psa-V experience). KVH is committed to achieving better biosecurity in New Zealand consistent with its commitments as a GIA signatory, and this pathway plan proposal is consistent with those commitments.

This also includes movements of risk items from sites where kiwifruit plants grow other than orchards. These include, but are not limited to:

- sites where kiwifruit plants are produced (e.g., nurseries and tissue culture facilities); and
- areas of kiwifruit that are potential reservoirs for disease (e.g., areas previously used for the cultivation of kiwifruit, or kiwifruit flowers or pollen if kiwifruit remains present, and areas where kiwifruit plants grow in a wild state).

Two case studies are provided in Appendix 3, which further illustrate the actual or potential pathway risks associated with spread of two threats (*Neonectria* spp. and *Ceratocystis fimbriata*).

5. The reasons for proposing a plan [s.81(2)(c)(ii)]

The KVH strategy 2020-2025 establishes a vision for 'A biosecurity resilient kiwifruit industry' to be achieved through:

- A kiwifruit industry committed to biosecurity excellence - working together as one to taking ownership of our biosecurity;
- Pathway risk management – we focus on pathways to reduce pest and disease transmission;
- Incursion readiness and response – we are well prepared for the next biosecurity event; and
- Innovation in biosecurity management – we strive for new, efficient ways to strengthen our biosecurity systems.

Pathway risk management is integral to the KVH vision and includes minimising spread of biosecurity threats between kiwifruit orchards and from other sites to kiwifruit orchards, across a range of risk items described in section 3, above.

Effective pathway management requires action from a broad range of individuals and groups across New Zealand; including kiwifruit Growers, post-harvest, processers, marketers, a wide range of orchard contractors, technical advisers, consultants, scientists and associated industries, such as nurseries, compost manufacturers and beekeepers. And it requires concerted, sustained and complementary actions across these groups.

This requires coordination at a national level and a uniting goal and set of objectives and measures. It also requires a clear set of fundamental rules that apply consistently across groups and across New Zealand, and that create a level playing field and support the huge effort many already put into biosecurity. Reliance upon voluntary compliance alone is insufficient. There was clear experience of this with Psa-V, where major breaches of voluntary industry requirements were experienced before the National Psa-V Pest Management Plan came into effect – an important lesson. And it is critical that voluntary compliance by the majority of kiwifruit Growers and others who invest in biosecurity to protect the kiwifruit industry are not undermined by a small minority that do not.

While achieving compliance through voluntary means should be the primary focus when implementing this plan, ability to enforce requirements in extreme situations of non-compliance is required to manage pathway risks effectively.

Consistent with the context above, the reasons for proposing this plan are to:

- establish clear national objectives and a nationally coordinated and consistent approach to managing kiwifruit industry pathway risks;
- give access to powers under the Biosecurity Act to require specific actions of kiwifruit Growers and others;
- provide for appropriate distribution of costs; and to
- secure funding for implementation over the 10-year duration of this proposed plan.

6. The objectives that the plan would have [s.81(2)(c)(iii)]

The following are the proposed objectives:

A. Reduce the spread of biosecurity threats on kiwifruit industry pathways

Explanation: Effective management of pathway risks entails implementing risk management practices, such as effective hygiene and restricting or controlling high risk movements. Reduction in spread of biosecurity threats gives our industry higher probability of preventing establishment of new threats, at preserving response options (including cost-effective

elimination), and at minimising impacts on Growers and the kiwifruit industry (e.g., minimising control costs, productivity impacts and/or market access impacts).

B. Detect biosecurity threats on kiwifruit industry pathways early

Explanation: Early detection entails ensuring people are aware of biosecurity threats and actively monitoring and reporting the unusual. And it includes targeted surveillance programmes to identify potential threats associated with high risk pathways. Early detection gives our industry higher probability of acting early to prevent establishment of new threats and taking action early to achieve the most cost-effective outcome for the industry with the least impact on Growers.

C. Ensure biosecurity threats can be rapidly traced on kiwifruit industry pathways

Explanation: Effective traceability ensures that risk goods are traced and tracked throughout the supply chain. Traceability is vitally important for biosecurity (as well as for food safety and operational efficiency) as it enables rapid investigation and response and assists with assurance of pest and disease status.

D. Improve understanding of kiwifruit industry pathway risks and risk management practices

Explanation: Kiwifruit industry pathway risks will continue to change over time as, for example, industry practices, growing locations and pest and disease status/distributions, change over time. Continually improving our understanding of, and toolbox to manage, pathway risks is critical and will be underpinned by sound science and research, technology innovation and Grower innovation.

In relation to the National Policy Direction for Pest Management 2015 (NPD) the proposed National Pathway Management Plan is a "Pathway Programme" for which the intermediate outcome for the programme is 'to reduce the spread of harmful organisms'. [Note that the term "biosecurity threats" is used in the objectives as this term is better understood by Growers than the term "harmful organisms". To connect the two terms and make sure there is clear alignment with the Pathway Plan and the NPD it is proposed "biosecurity threats" means 'harmful organisms' including pests and pathogens that create, or have the potential to create, harm to the kiwifruit industry, including but not limited to production impacts and market access impacts.

7. The principal measures that would be in the plan to achieve the objectives [s.81(2)(c)(iv)]

The following are proposed as the principal measures to achieve the Plan objectives:

A. Growing awareness of pathway risks and risk management practices;

B. Applying the results of science, research and innovation;

C. Implementing programmes that include, for example, biosecurity awareness, hygiene, traceability, monitoring and/or reporting requirements;

D. Carrying out surveillance and monitoring to enable:

- understanding the level of risk associated with kiwifruit industry pathways;
- understanding the effectiveness of kiwifruit industry pathway risk management practices and tools;
- early detection of threats on kiwifruit industry pathways;
- understanding the levels of compliance with the requirements of the plan;

E. Applying quarantine measures for the highest risk pathways, where justified, to facilitate the safe movement of risk items where an acceptable level of protection can be achieved;

F. Applying targeted movement controls that apply to risk items that are, or may be capable of, spreading biosecurity threats that impact the kiwifruit industry;

G. Applying targeted movement controls that apply to specific sites (including, but not limited to, sites with wild kiwifruit plants, kiwifruit orchards and sites that have previously been kiwifruit orchards where kiwifruit plants are still present) where risk items are present and their potential movement off the site has the potential to spread biosecurity threats that impact the kiwifruit industry;

H. Applying effective treatments to reduce kiwifruit pathway risks; and

I. Restricting or applying additional measures to reduce risk associated with movements of risk items between the North Island and South Island.

8. Other measures that it would be reasonable to take to achieve the objectives, if there are any such measures, and the reasons why the proposed measures are preferable as a means of achieving the objectives [s.81(2)(c)(v)]

The other potential measure considered, but not preferred, is restricting movements of risk goods between growing regions within the North Island (a rule is proposed to restrict movements between North and South islands in both directions).

The reason why this was not preferred is because growing regions within the North Island typically have less geographic isolation (e.g., natural barriers) and more pathway connections (e.g., common orchard ownership that spans, and post-harvest operators and contractors that work across, regions).

In contrast, the South Island is more isolated, including the natural Cook Strait buffer and significantly few connections. This difference has been demonstrated by the successful long term exclusion of Psa-V from the South Island, and the continued support for tight movement restrictions by South Island Growers.

Implementing risk management programmes that enable safe movement of risk goods between North Island growing regions will have lower economic impact on Growers and the industry relative to introduction of tighter inter-regional movement restrictions.

A purely voluntary approach to pathway management has also been considered (this is included as an alternate scenario in the accompanying cost benefit analysis[1]). Reliance upon voluntary compliance alone is insufficient. There was clear experience of this with Psa-V, where major breaches of voluntary industry requirements were experienced before the National Psa-V Pest Management Plan came into effect – an important lesson. A clear set of rules is required that applies consistently across groups and across New Zealand, and that creates a level playing field and supports the huge effort many already put into biosecurity; that is, both kiwifruit Growers and associated industries. And it is critical that voluntary compliance by the majority of kiwifruit Growers and others who invest in biosecurity to protect the kiwifruit industry are not undermined by a small minority that do not. While achieving compliance through voluntary means should be the primary focus when implementing this plan, ability to enforce requirements in extreme situations of non-compliance is required to manage pathway risks effectively. For this reason, a purely voluntary approach to pathway management is not preferred.

9. The reasons why a national plan is more appropriate than a regional plan [s.81(2)(c)(vi)]

Kiwifruit is grown across multiple growing regions in both the North and South Islands (Northland, Auckland, Waikato, Bay of Plenty, Taranaki, Manawatu-Whanganui, Gisborne, Hawkes Bay and Nelson-Tasman). Kiwifruit industry pathways extend even further beyond these growing regions (for example,

[1] Harris, S. (2020). *Economic Analysis Kiwifruit Vine Health Pathway Management Plan. Report prepared for KVH, August 2020.*

young kiwifruit vines are produced by nurseries in parts of the South Island remote from kiwifruit growing regions (e.g., Christchurch and Fiordland).

While individual and group actions can assist Growers to manage risk associated with kiwifruit industry pathway risks, effective management of these requires coordinated and consistent actions from all Growers and others in the industry, including service providers and suppliers, throughout New Zealand. This requires coordination at a national level and a uniting goal and set of objectives and measures that manages pathway risks across the country.

A single national plan is likely to be far more efficient and effective than multiple regional plans as the latter would result in duplication, higher transaction costs, and create boundary issues that would make it far more challenging to achieve a nationally consistent and coordinated approach to pathway risk management.

10. An analysis of the benefits and costs of the plan [s.81(2)(c)(vii)]

A full analysis of the benefits and costs of the Pathway Plan proposal and alternative scenarios is provided in the following report:

Harris, S. (2020). *Economic Analysis Kiwifruit Vine Health Pathway Management Plan. Report prepared for KVH, August 2020.*

This concludes:

The analysis shows that there are significant potential costs associated with the proposed Pathway Management Plan (PMP), the largest of which is to growers and for management of the plan. However, because of the scale of the potential damages in the event of an incursion, it is worthwhile spending that money in advance to ensure readiness for any incursion.

While the results have considerable uncertainty around them given the range of possible input assumptions, even when testing the assumptions with a wide possible range of inputs there is only a very small probability that the benefits of the PMP do not exceed the costs. The quantitative results provided here do not take into account the wider economic costs to employees, suppliers, and processors that will arise from an incursion, and the social costs that would occur from the disruption to the industry. The prevention or reduction of these unquantified wider costs will increase the net benefit associated with the PMP.

It is considered reasonable therefore to conclude that the PMP shows the highest net benefit of the options considered here [the PMP was compared in the analysis to two other options, "voluntary action" and "do nothing"]*, and it is appropriate to proceed with the proposal.*

11. The extent to which any persons, or persons of a class or description, are likely to benefit from the plan [s.81(2)(c)(viii)] and the extent to which any persons, or persons of a class or description, contribute to the creation, continuance, or exacerbation of the problems proposed to be resolved by the plan [s.81(2)(c)(ix)]

Key beneficiaries and exacerbators in relation to kiwifruit industry pathway management are summarised below. It is acknowledged that in many cases the beneficiaries will also be exacerbators and vice versa (e.g. a contractor moving risk items between orchards is a potential exacerbator, but is also a potential beneficiary of the plan as the contractor's business is may experience significant disruption in a biosecurity event that results from a pathway issue proposed to be resolved by the plan).

The main beneficiaries of the plan are all kiwifruit Growers. The benefit to Growers is protecting their investment and future orchard gate returns; this is through avoiding the establishment and spread of biosecurity threats and through greater effective response as a result of effective pathway management (including early detection, reduced spread/distribution and more robust traceability systems).

Others who benefit from the plan include:

- Marketers and post-harvest operators and processors, whose business rely upon effective kiwifruit production – the extent of impact on these organisations is high, recognising kiwifruit typical accounts for a large proportion if not 100% of their business;
- Associated industries, who supply goods or services to the kiwifruit industry (e.g., 'kiwifruit orchard contractors' who supply services to orchards or post-harvest operators; 'beekeepers' who derive revenue from pollination services; 'nurseries' who supply kiwifruit plants to Growers; and ports and transport companies, who supply services to the kiwifruit industry) – the extent of impact on these persons or organisations is likely to be variable, depending on proportion of the business that is part of or relies upon the kiwifruit industry (e.g., some spray contractors exclusively provides services to the kiwifruit industry, while for beekeepers or ports the kiwifruit industry is likely to account for a modest proportion of their business.;
- Regional communities, from jobs created by the kiwifruit industry and revenue as it trickles through regional economies (multiplier effects) - the extent of benefit is variable depending on the proportion the kiwifruit industry contributes to the regional economy, and is very high for regions such as the Bay of Plenty, and modest for some regions with limited kiwifruit production, such as the Manawatū-Whanganui Region;
- Regional authorities that identify "wild kiwifruit" in their Regional Pest Management Plans and actively manage these in order to control and prevent further spread of wild kiwifruit, as a pest plant that threatens biodiversity values – the extent of this benefit is low to moderate, with opportunity for Councils and KVH to work in partnership where there is common interest to share / reduce control costs; and
- Government and the nation, which benefits from export returns of over $2.3 billion and associated tax revenue and economic stimulus (multiplier effects), and through efficient use of land (recognising that kiwifruit production generates amongst the highest level of all alternate productive land uses) – the extent of this benefit is moderate, reflecting that kiwifruit contributes to *c.*1.13% of GDP.

The categories of persons who contribute to the creation, continuance and exacerbation of the problems proposed to be resolved by this plan are:

- Kiwifruit Growers who either directly control or manage (through contractual service delivery arrangements) the movement of 'risk items' to, from or between places where kiwifruit are grown – kiwifruit Growers are considered by KVH to be a low- to medium-risk group as they make decisions on moving the full range of risk items to, from, and in some cases between, their orchard(s), they come into direct contract with kiwifruit vines, and they typically have strong incentives to protect their investment. [Note: However, the ability of Growers to control access and to ensure that contractors and others accessing their orchards implement effective biosecurity is highly variable (e.g., some have professional managers with a high level of oversight, while others have limited management oversight and rely heavily on unsupervised compliance) - this risk associated with these other parties that access orchards is reflected below.]
- Kiwifruit orchard contractors (e.g., pruners, pickers, sprayers etc. – refer to full list of types of contractors in the glossary), which move 'risk items' to, from or between orchards - contractors are considered by KVH to be a high-risk group, as they typically move between orchards and in some cases between regions, and come into direct contact with vines;
- Kiwifruit processors and post-harvest operators, which move people, equipment (e.g., fruit bins), vehicles and fruit that may be contaminated with soil and plant material off-orchards, then process fruit and separate out waste plant material in doing so – kiwifruit processors and post-harvest are considered by KVH to be a high-risk group, as they typically move equipment,

personnel/contractors, and plant material between orchards and in some cases between regions, and come into direct contact with vines;

- Nurseries, garden centres and other individuals or organisations who/which distribute young kiwifruit and shelter belt plants – nurseries are considered a high-risk group by KVH as kiwifruit plant material represents the highest risk pathway for spread of kiwifruit pathogens, and a high risk pathway for some plant pests affecting kiwifruit.
- Budwood suppliers, and any other individuals or organisations who/which collect and distribute budwood – budwood suppliers are considered a high-risk group by KVH as kiwifruit plant material represents the highest risk pathway for spread of kiwifruit pathogens, and a high risk pathway for some plant pests affecting kiwifruit.
- Pollen mill operators and pollen suppliers, who move vehicles, flowers and pollen between orchards and in some cases between growing regions – pollen processors and distributors are considered by KVH to be a medium-risk group, as inherent risk associated with pollen is lower relative to other types of plant material (e.g., only a subset of kiwifruit pests and pathogens are pollen-transmissible).
- Growing media and organic matter suppliers, which move and/or spread compost, mulch, potting mix and other growing media and organic matter to and/or within kiwifruit orchards, or to other sites that grow kiwifruit and/or shelter belt plants (e.g., nurseries) – compost and other growing media suppliers are considered a medium risk as their production processes (e.g., composting) may reduce or eliminate some or all biosecurity threats.
- Transport operators, who move vehicles and fruit (including waste fruit) that may be contaminated with plant material – transport operators are considered by KVH to be a low-risk group, as in some cases they move vehicles and fruit to and from orchards, however, they are less likely to come into direct contact with vines;
- Beekeepers, who move vehicles and beekeeping equipment that could be contaminated with soil that harbours pathogens – beekeepers are considered by KVH to be a low-risk group as they are less likely to spread pests or pathogens that are not soil-borne and are unlikely to come into direct contact with vines;
- Other landowners or occupiers, who either feed reject fruit to their stock (that could either include contaminated plant material or provide a source of kiwifruit seeds / wild kiwifruit if not fed out appropriately) or have wild kiwifruit growing on their property – other landowners or occupiers are considered by KVH to be a medium-risk group as their action or inaction could create future populations of wild kiwifruit that harbour biosecurity threats and create a pathway risk.
- Researchers and industry consultants, who move on and off orchards in the process of carrying out research – this group is considered to be low risk by KVH as while they typically visit and may move equipment between orchards, they also typically have well developed systems and capability for managing biological risk.
- Other staff working for kiwifruit industry organisations, whom move on and off orchards during the course of their work – other staff are considered by KVH to be a low-risk, as they are typically observing rather than directly handling plants, and have well developed systems and capability for managing biological risk.

A more detailed analysis of how groups (exacerbators and/or beneficiaries) are impacted by the proposed plan is provided in Appendix 1.

12. The anticipated costs of implementing the plan [s.81(2)(c)(x)]

Implementing the Pathway Plan (excluding research) is expected to cost $648k in 2022/23, and $970k per annum (to be adjusted for inflation) from 2023/24 to 2032/33, with these anticipated costs to be funded from the proposed levy revenue.

The reduced costs in the first year result from savings associated with 1-year overlap with the National Psa-V Pest Management Plan (i.e. the latter will be retained until its' term expires in May 2023), with some common elements (e.g., education and awareness, governance, office expenses, operations, personnel and professional services) that will deliver short term leverage and savings.

The annual budget breakdown for Pathway Plan implementation is as follows:

Item	*Description – includes:*	*Amount 2022/23*	*Amount 2023/24 and outyears*
Education and awareness	Growing awareness of pathway risks and risk management practices	$20,146	$31,000
Governance	Board fees and secretariat	$45,621	$70,200
Office expenses	Rent and other office expenses	$46,394	$71,390
Operations	Surveillance and monitoring, risk management programmes, quarantine measures, targeted movement controls, applying treatments, NI/SI border measures	$144,433	$222,250
Personnel and professional services	Management, planning and reporting, standard setting, compliance and audit, technical transfer	$341,055	$524,808
Strategy projects	Development of new pathway risk management strategies and programmes	$50,000	$50,000

In addition to this there will be continued investment in science, research and innovation (RD&I) to underpin kiwifruit industry readiness, including pathway management improvements, which support implementation of this proposed Pathway Plan. This activity is already funded through an existing 'Kiwifruit Biosecurity Research Portfolio' overseen by a 'Biosecurity Steering Group' that prioritises research to meet the following objectives:

- Develop a greater understanding of the biosecurity threats to the kiwifruit industry;
- Develop tools to reduce the likelihood of establishment and impact of these biosecurity threats, which includes tools for diagnostics, surveillance, eradication and management; and
- Pathway analysis to understand where gaps may occur in the biosecurity system and take a collaborative approach with the Ministry for Primary Industries to address these.

Approximately $1 million is invested annually to fund the Kiwifruit Biosecurity Research Portfolio.

For clarity, this RD&I and associated investment is an activity that sits outside the scope of this Pathway Plan proposal, while 'applying the results of science, research and innovation' falls within the scope of this Pathway Plan (also refer to "principal measures" in section 7 of this proposal).

13. How it is proposed the costs be funded [s.81(2)(c)(xi)]

Explanatory note on funding options:

There are two options to fund costs of the proposed National Pathway Management Plan associated with activities other than research – these are:

- Option 1: to fund the national pathway plan through the Biosecurity (Readiness and Response - Kiwifruit) Levy, and

- Option 2: to fund the plan through a new Biosecurity (National Pathway Management Plan – Kiwifruit) Levy.

The first option is KVH's preferred option, however, this option will only be possible if changes are made to the Biosecurity Act 1993 prior to 1 April 2022; that is, through the current "Biosecurity Act Overhaul" project and any associated amendment to that Act. This currently appears unlikely.

Therefore, the proposed approach to funding in this proposal is based on Option 2, above. This content will be amended to align with Option 1 if the Biosecurity Act Overhaul accelerates and Option 1 becomes a realistic option.

KVH and MPI have agreed to use this proposal as a "case study" to assess issues with the current legislation that prohibit this first option and the changes needed to enable this first option. The two options and issues of relevance to the Biosecurity Act Overhaul are considered further in Appendix 2.

It is proposed the costs of administering and implementing this plan (i.e. $648k in 2021/22, and $970k per annum (to be adjusted for inflation) in outyears) be funded through a Biosecurity Act Levy on Growers.

A levy struck at $0.004 per tray of kiwifruit would cover the costs to be funded by a levy in the first year (i.e. $648k per annum).

KVH intends to seek a resolution to amend the levy rate for the 2022/23 year (via AGM resolution) to $0.006 per tray of kiwifruit. A levy struck at $0.006 per tray of kiwifruit would cover the costs to be funded by a levy (i.e. $970k per annum – refer to section 13), with a small surplus of $21k.

The calculations above are based on at estimate of 162 million trays of kiwifruit. This is slightly higher than the 2019/20 estimated harvest of 155m trays, and as tray numbers vary between seasons a slightly conservative estimate (small surplus) has been used in this calculation to ensure adequate funding for the implementation of the plan for its proposed duration. Inflation adjustments are likely to be comfortably offset by forecast increase in production.

Further detail relating to the levy proposal is provided in Section 15.

Additional funding for kiwifruit industry pathway research and development will continue to be funded through revenue from the Biosecurity (Readiness and Response—Kiwifruit Levy) Order 2015 as outlined in section 12 of this proposal.

14. The rationale for the proposed allocation of costs [s.81(2)(c)(xii)]

Significant exacerbators and beneficiaries of kiwifruit industry pathway management are identified in Section 11 of this proposal, above.

The group of persons most likely to benefit from the implementation of the plan, and whom have the greatest control over activities or inaction most likely to contribute to the creation, continuance, or exacerbation of the problems proposed to be resolved by the plan, are kiwifruit Growers.

Growers have the ability to change their behaviour and are best placed to reduce pathway risks by deciding who and what can enter their orchard and under what conditions (including the hygiene requirements to be met). They do this through purchasing decisions and service agreements, and by monitoring and directing what happens on their orchard(s). KVH further assists this/Growers by implementing biosecurity risk management and certification schemes, such as post-harvest risk management plans and the Kiwifruit Plant Certification Scheme. This sort of assistance will be further strengthened under this Pathway Management Plan proposal, for example, through addition of legal requirements for all types of kiwifruit plant material and for orchard contractors (with associated certification to assist ease of compliance).

Growers also have the ability to reduce the costs of pathway management on their orchard(s), or where a risk originates on their orchard(s). In this context Growers are able to determine the most cost-effective method of management suited to their situation, and to determine whether the benefits of a particular pathway management activity outweigh the costs and make a commercial decision on the best approach for their orchard.

To prevent the spread of pests and minimise their impacts on kiwifruit production, Growers need to take primary responsibility and, as such, the approved plan would primarily be funded by a Grower levy, with Growers and industry participants picking up their direct costs.

Other persons or groups of persons that either benefit from this plan or incur a cost as a result of this plan, or both, and that have been considered when proposing the allocation of costs, include:

- Kiwifruit marketers and post-harvest operators: Marketers and post-harvest operators benefit from this plan, and also make significant contributions toward implementation of this plan 'in kind' (e.g., in the case of both Zespri and Post-harvest operators, which implement biosecurity risk management plans to protect their Growers and play key roles in tech transfer and support to their Growers). Any costs these organisations incur would be passed on to Growers, and it is more efficient to collect the levy once and directly from Growers. This is consistent with established industry practices.

- Associated industries: Associated industries - including orchard contractors, beekeepers, pollen mill operators and nurseries - potentially contribute to the creation, continuance, or exacerbation of the problems proposed to be resolved by the plan, are typically affected by the plan in that they may incur costs of compliance (for example, costs associated with hygiene requirements and movement controls), and in most cases associated industries are also beneficiaries of the plan in that they generate revenue by providing goods and/or services to the kiwifruit industry. On balance, it is deemed inappropriate to collect any levy from associated industries, and their support with implementation of this plan is greatly valued by the kiwifruit industry.

- Local authorities: Both the kiwifruit industry and regional councils benefit from the control of wild kiwifruit and abandoned orchards, and a memorandum of understanding that includes agreements on cost sharing and implementation arrangements) has been established between KVH and some regional councils where there is mutual benefit. Local authorities with kiwifruit orchards within their boundaries are also beneficiaries of the plan as they benefit from the contribution of the kiwifruit industry to their local and regional economies (with the plan reducing risk to that contribution). Local authorities have no obligations to contribute to the costs of this plan other than to address pathway risks associated with wild kiwifruit on public lands they administer.

- Government / Crown: While the Government and national economy benefit from implementation of this plan, the Government has no obligations to contribute to the costs of this plan other than to address pathway risks associated with wild kiwifruit on Crown land (an obligation which the Crown currently meets). The Kiwifruit Industry and the Government (through the Ministry for Primary Industries) are partners under the "Government Industry

Agreement for Biosecurity Readiness and Response" (GIA), and as such may choose to jointly invest in pathway management activities that contribute to better biosecurity readiness or response. However, this plan would not create any obligation on the Ministry of Primary Industries to co-fund pathway management activities under this plan.

- Other industry GIA partners: The Kiwifruit Industry co-invests from time to time with other industry GIA signatories (as well as with the Ministry for Primary Industries) to achieve better biosecurity readiness or response outcomes, including pathway management. However, this plan would not create any obligation on other industry GIA Industries to co-fund pathway management activities under this plan.

KVH considers that the costs are allocated in a fair and practical manner that encourages behaviour change, appropriate beneficiary feedback on the value of the measures and pressure on KVH to deliver the plan in the most cost-effective manner.

A full analysis of how costs should be allocated to fund the proposed National (Kiwifruit) Pathway Management Plan (to meet requirements of the *National Policy Direction for Pest Management 2015*) is provided in the supporting document, *'Draft cost allocation analysis to support the National (Kiwifruit) Pathway Management Plan Proposal'*.

15. If it is proposed that the plan be funded by a levy under section 100L, how the proposed levy satisfies section 100L(5)(d) and what matters will be specified under section 100N(1) [s.81(2)(c)(xiii)]

Further explanatory note on funding options:

KVH's preferred option is to fund the national pathway plan through the existing Biosecurity (Readiness and Response - Kiwifruit) Levy. However, KVH understands this option is only available if the Biosecurity Act Overhaul results in a legislative change that provides for this and provides for this prior to 1 April 2022 - also refer to the 'Explanatory note' in section 13, above.

KVH intends that this Pathway Plan and associated levy commence from 1 April 2022. [Note that KVH also intends the Biosecurity (National Psa-V Pest Management Plan) Order 2013 and associated levy will be maintained beyond this for a further year, and then either rescinded on 31 March 2023 or left for the Order in Council to terminate on 17 May 2023 – this is considered further in section 19 of this proposal].

A proposal for a new Biosecurity (National Pathway Management Plan – Kiwifruit) Levy under section 100L is included below.

Section 100L(5) requires that the Minister be satisfied that:

> *The imposition of the levy is the most appropriate means of funding the plan or the part of the plan, having regard to the extent to which the levy would target—*
>
> > *"(i) persons likely to benefit from the implementation of the plan or the part of the plan; and*
> >
> > *"(ii) persons who by their activities or inaction contribute to the creation, continuance, or exacerbation of the problems proposed to be resolved by the plan or the part of the plan;*

The rationale for the proposed levy, including the proposed allocation of costs, and including explicit consideration of those who benefit from implementation of the proposed plan and those who contribute to the creation, continuance or exacerbation of the problems to be resolved by the plan, is provided in Section 14.

Alternatives to the proposed Biosecurity (National Pathway Management Plan – Kiwifruit) Levy, that have been considered and were not preferred for the following reasons, are:

- Through the existing Biosecurity (Readiness and Response - Kiwifruit) Levy - this option is preferred, but KVH understands this is only possible if the Biosecurity Act 1993 is amended (refer to explanatory notes in sections 13 and 15 of this proposal);
- Through a new levy that covers both the Pathway Plan and the National Psa-V Pest Management Plan - this option was not preferred as KVH intends to rescind the National Psa-V Pest Management Plan; and
- Through an existing commodity levy, such as, the existing NZKGI commodity levy for kiwifruit – this option was not preferred as the purposes for levy collection differ substantively and unnecessary complexity would be added (e.g., dual governance requirement). As the existing Commodity Levies (Kiwifruit) Order 2017 would need to be revoked and remade, there was also no efficiency gain to be made through this approach.

The matters to be specified under section 100(N), and the proposed legal framework for the levy, are set out in Table 1.

Table 1: Legal framework for the Biosecurity (National Pathway Management Plan – Kiwifruit) Levy to be collected for the purpose of the National Psa-V Pest Management Plan

Sub-clause from section 100N of the Biosecurity Act 1993	***Proposed legal framework***
(1) (a) how the levy may be spent	The management agency will spend all levy money paid to it on the administration and operation of the National Pathway Management Plan, including: • implementing pathway management standards, programmes and controls • research into pathway management • providing information to, and communicating with, the kiwifruit industry in relation to pathway management • pathway surveillance and monitoring • compliance and enforcement: • audits: • the management agency's administration costs The management agency may invest levy money until it is spent.
(1) (b) the persons responsible for paying the levy	All growers of kiwifruit exported (excluding export to Australia) will be responsible for paying the levy. The definition of 'grower' is *a person whose business is, or includes, growing kiwifruit.*
(1) (c) the persons, if any, exempt from paying the levy	There are no exemptions for growers from the responsibility for the payment of the levy.
(1) (d) the basis on which the amount of levy must be calculated or ascertained	The levy must be calculated— • on the basis of cents per kilogram of kiwifruit exported; and • at the point of export (being the point at which kiwifruit is loaded on board a ship or an aircraft for export). The weight of the fruit may be determined at the point at which the fruit is graded and sorted for export.
(1) (e) the rate of levy— *(i) whether there is to be a single rate or 2 or more different rates;*	The levy must be paid at a single rate on all kiwifruit grown in New Zealand by growers for commercial purposes and export (excluding export to Australia).

(ii) if there are to be 2 or more different rates, the things to which the different rates apply; *(iii) the maximum for each rate or rates;* *(iv) how the management agency must set the actual rate or rates of levy; and* *(vi) how the rate or rates of the levy and variations of the rate or rates must be notified*	The maximum rate of levy is 0.194 per kilogram for all levy rates above (0.7c per tray) For the 2022 levy year, from the commencement date, the levy is payable at a rate of 0.11 cents per kilogram for all levy rates above (0.4c per tray). In relation to the levy payable in respect of a levy year after the 2022 levy year, the industry organisation must— • include the setting of the levy rates as an agenda item for discussion at its annual general meeting; and • permit all growers (whether or not those growers are members of Kiwifruit Vine Health Incorporated) to— • attend the meeting; and • have speaking rights in respect of the proposed levy rates; and • set the levy rates before the beginning of the levy year to which they relate. As soon as practicable after setting the levy rates, the industry organisation must notify both the levy rates and the levy year to which they apply— • in the *Gazette*; and • in the industry organisation's newsletter or other similar publication; and • by post or email to all growers and exporters known to the industry organisation (whether or not those growers or exporters are members of Kiwifruit Vine Health Incorporated). If the industry organisation fails to set the levy rates in accordance with the (process) above, the levy rates for the previous levy year continue to apply. One or more of the levy rates above may be set at zero.
(1) (f) when and how the levy must be paid	The payment of the levy becomes due on the date on which the kiwifruit is loaded on board a ship or an aircraft for export. The latest date for payment of the levy is the 90th day after the date on which the payment becomes due. The levy must be paid to the exporter. An exporter may recover the amount of any levy payable, and any goods and services tax payable on it, from the grower as a debt due to the exporter by the grower. An exporter who buys kiwifruit directly from a grower or exports kiwifruit on a grower's behalf may recover the amount of the levy, and any goods and services tax payable on it, by deducting the amount from the exporter's payment to the grower.
(1) (g) the persons responsible for collecting the levy	The exporter is responsible for collecting the levy. The exporter must pay the levy to Kiwifruit Vine Health Incorporated.

(1) (h) on the matter of a fee for recovery,— *(i) whether or not the persons responsible for collecting the levy are entitled to charge a fee for recovering it; and* *(ii) if so, the amount of the fee or a means by which its amount may be calculated or ascertained; and*	The exporter is not entitled to charge a fee for recovering the levy.
(1) (i) for the purpose of ascertaining whether or not the order is being complied with,— *(i) the keeping of accounts, statements, and records of a specified class or description by all or any of the persons responsible for collecting the levy, the persons responsible for paying it, and the management agency; and* *(ii) the retention of the accounts, statements, or records for a specified period; and*	A grower must keep records, for each levy year, of— • the quantity of kiwifruit produced and sold; and • the name of the post-harvest operator or exporter that the grower uses; and • the amount of levy money paid to the exporter or the Director-General, as the case may be; and • the quantity of kiwifruit to which the levy paid relates. An exporter must obtain and keep records, for each levy year, of— • the quantity of kiwifruit exported; and • the amount of levy money paid, in respect of each grower, to Kiwifruit Vine Health Incorporated; and • the name of each grower of kiwifruit exported; and • the quantity, values, and classes of kiwifruit exported; and • a copy of every Customs declaration in respect of the kiwifruit exported. The industry organisation must keep records, for each levy year, of the following: • each amount of levy money it receives; and • for each amount of levy money,— – the date on which the money is received; and – the name of the person who paid the money; and • for all levy money paid to it, how the money has been spent or invested. Records must be kept for at least 2 years after the levy year to which the records relate. Every grower and exporter who is required to keep records must provide the industry organisation with information from the records as soon as is reasonably practicable after receiving a request, by post or email, from the industry organisation for the information.
(1) (j) for the purpose of resolving disputes about whether or not a person is required to pay the levy and the amount of levy a person is required to pay— *(i) the appointment of arbitrators;*	The KVH Board will carefully consider and attempt to resolve any disputes in the first instance. Where resolution cannot be achieved through this process, any party to the dispute may ask the President of the Arbitrators and Mediators Institute of New Zealand Inc. to appoint a person to resolve the dispute by arbitration.

(ii) the procedures to be followed by arbitrators; *(iii) the remuneration of arbitrators;* *(iv) the payment of arbitration costs;* *(v) a right of appeal to a District Court Judge against decisions of arbitrators;* *(vi) the procedures governing the exercise of the right of appeal;* *(vii) any other matters relating to the resolution of disputes;*	The parties to a dispute may agree to submit the dispute to arbitration. If the parties to a dispute are unable to agree on the appointment of an arbitrator, the arbitrator must be appointed in accordance with Schedule 1 of the Arbitration Act 1996. For the purposes of the Arbitration Act 1996: • an agreement on the appointment of an arbitrator is an 'arbitration agreement; and • the arbitrator appointed is an 'arbitral tribunal'. Except where the parties to a dispute otherwise agree, the provisions of the Arbitration Act 1996 (including the provisions for procedures to be followed by an arbitral tribunal) will apply to the resolution of a dispute submitted to arbitration. The costs of the arbitration (including the arbitrator's remuneration) will, unless the parties agree otherwise, be determined under Schedule 2 of the Arbitration Act 1996. A party to a dispute who is dissatisfied with the decision made by an arbitrator may appeal to a District Court against the decision. The appeal must be brought by the filing of a notice of appeal within 28 days after the making of the decision concerned, or within any longer time that a District Court Judge allows. The Registrar of the court must: • fix the time and place for the hearing of the appeal and notify the appellant and the other parties to the dispute; and • serve a copy of the notice of appeal on all parties to the dispute. Any party to the dispute may appear and be heard at the hearing of the appeal. On hearing the appeal, the District Court may confirm, vary, or reverse the decision appealed against. The filing of a notice of appeal does not operate as a stay of any process for the enforcement of the decision appealed against.
(1) (l) the remuneration payable to an auditor appointed under section 100P	The costs of the arbitration (including the arbitrator's remuneration) must, unless the parties agree otherwise, be determined under Schedule 2 of the Arbitration Act 1996.
(2)(a) the returns to be made to the management agency or some other person or body for the purpose of enabling or assisting the determination of amounts of levy payable	An exporter must, when paying the levy to Kiwifruit Vine Health Incorporated, provide a completed return in a form approved by that industry organisation. The return must include, in relation to the levy being paid,— • the quantity of kiwifruit exported; and • the date or dates on which the kiwifruit was exported; and • the amount of levy paid per kilogram, or tray equivalent, of kiwifruit exported on behalf of each grower; and

	• the name or names of the grower or growers of the kiwifruit. The definition of 'tray equivalent' is 3.6 kilograms of kiwifruit.
(2) (c) a method of paying the levy that may be used by persons who object on conscientious or religious grounds to paying the levy in the manner provided in the order	A grower who objects on conscientious or religious grounds to paying the levy in the manner provided for (above) may pay the amount concerned to the Director-General. The Director-General must pay the amount to Kiwifruit Vine Health Incorporated. The 'Director-General' as used here refers to the Director-General of the Ministry of Primary Industries.

16. Whether any unusual administrative problems or costs are expected in recovering the costs allocated to any of the persons whom the plan would require to pay the costs [s.81(2)(c)(xiv)]

No unusual administrative problems or costs are expected.

17. The effects that, in the opinion of the person making the proposal, implementation of the plan would have on economic wellbeing, the environment, human health, enjoyment of the natural environment, and the relationship between Māori, their culture, and their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga [s.81(2)(d)(i)]

Effects on economic wellbeing

The impact of an incursion on the kiwifruit industry will have impacts beyond Growers and those directly affected. The kiwifruit industry is New Zealand's largest horticultural export industry, generating export returns of $2.3B (based on 2019 export value). The kiwiberry industry generates export returns of $3.6M (New Zealand KiwiBerry Growers).

There are 10,000 permanent employees in the kiwifruit industry and 22,000 seasonal workers forecast to pick and pack the 2020 season. Typically, this consists of 50% New Zealanders, 20% recognised seasonal employees, and 30% backpackers/international students etc (although COVID-19 has disrupted this balance in the current season). NZKGI projects seasonal worker numbers to increase from 19,500 FTE in 2019 (148mTE) to 27,880 FTE in 2027 (190mTE) (NZKGI pers. comms 24 June 2020).

The losses incurred by the kiwifruit Growers will extend to other parts of the economy. Packhouse operators and processors will be immediately affected, and there will be a reduction in profits, GDP, employment and household income for these parties. The loss of wages and profits in the orchard, their staff, suppliers and processors reduces consumption and investment in the surrounding communities, and will have ongoing flow on impacts for the region and country.

Examples of actual or potential losses associated with biosecurity threats that could be spread on kiwifruit industry pathways include:

- Psa-V (including potential future strains of "copper resistant" Psa-V) - A report released by Lincoln University in May 2012 conservatively estimated that Psa-V would cost the kiwifruit industry between $310 and $410M over the first five years, and between $740 and $885M over the next 15 years. Multiplier effects were not included in these estimates. However, average loss of employment within the Bay of Plenty region alone was estimated at between 360 to 470 full-time-equivalent jobs per year between 2012 and 2016.

- *Ceratocystis fimbriata* - emerging worldwide as a major plant pathogen, a specific strain of this pathogen in Brazil has caused vine losses in the order of 20 - 40% of vines, with some Growers reported 50% vine loss (also refer to Appendix 3).

A full economic analysis is provided in the accompanying document: Harris, S. (2020). *Economic Analysis Kiwifruit Vine Health Pathway Management Plan. Report prepared for KVH, August 2020.*

Effects on the environment

Implementation of this plan is likely to have some positive effects on the environment, including through the following measures:

- Growing awareness of pathway risks and risk management practices;
- Implementing standards and programmes that include, for example, biosecurity awareness, hygiene, traceability, monitoring and/or reporting requirements;
- Carrying out surveillance and monitoring
- Controlling wild kiwifruit plants where these are potential reservoirs for pests of pathogens and elevate pathway risks.

While the primary purpose of these measures is to control or eliminate threats to the kiwifruit industry, there is secondary benefit to the environment as some kiwifruit industry threats are also potential environmental threats (e.g., *Xylella fastidiosa*, Brown Marmorated Stink Bug, *Ceratocystis fimbriata*), and increased biosecurity awareness and surveillance by kiwifruit industry Growers, contractors and other audiences significant strengthens the "Biosecurity Team of 4.7 million New Zealanders" and New Zealand's overall biosecurity capability to detect and respond to threats (including environmental threats).

Control of wild kiwifruit (including associated management of the feeding of reject fruit to stock and on disposal of reject fruit to prevent establishment of wild kiwifruit populations) also have a secondary benefit of protecting indigenous biodiversity values. Wild kiwifruit can strangle trees causing them to die or fall, and wild kiwifruit populations threaten native forest ecosystems. KVH coordinates the implementation of the measures above with regional councils, recognising the dual benefits in terms of managing reservoirs/pathways for spread of kiwifruit threats and protection of indigenous biodiversity.

Effects on human health

Significant biosecurity events have been shown to significantly effect human health, including high profile events that have impacted the health of Growers and farmers (e.g., *Mycoplasma bovis*, FMD, Psa-V). Others within rural communities have also been affected, including agricultural suppliers, small rural businesses and community groups.

For example, while Psa-V itself has no known effects on human health, many Growers reported loss of enjoyment in their work, elevated stress levels, and an inability to cope emotionally or financially when their orchards became infected. There has been substantial effort by New Zealand Kiwifruit Growers Inc. and KVH and MPI in providing pastoral care during biosecurity events. This includes seminars which present information about stress and how to manage it and significant focus on suicide, as well as increasing Grower support networks and community awareness of the issues that accompany biosecurity events.

A similar body of experience and effects on human health have been recorded during major biosecurity events effecting farmers, including in relation to the current *M. bovis* response in New Zealand and the 2001 foot and mouth outbreak in the UK[2]. Effects on human health during such events includes both 'emotional loss, a sensory loss and a financial loss'[3] and human impact of such crises, which are

[2] David F. Peck, Stewart Grant, William McArthur & David Godden (2002). *Psychological impact of foot-and-mouth disease on farmers*. Journal of Mental Health, Volume 11, 2002 - Issue 5

[3] Dr Fiona Doolan-Noble (pers. comm.) from Dairy News (2019), *Study on wider effects of M. bovis,* Wednesday, 23 January 2019 08:55

'accompanied by distress, feelings of bereavement, fear of a new disaster, loss of trust in authority and systems of control, and the undermining of the value of local knowledge'[4].

Effects on enjoyment of the natural environment

Implementation of this plan is likely to have modest positive effects on the environment, through the control of wild kiwifruit (also refer to 'effects on the environment above'). These benefits to native ecosystems may improve enjoyment of the natural environment.

Effects on the relationship between Māori, their culture, and their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga

The primary effects on Māori, in the opinion of the persons proposing this plan, are the economic effects of pests and pathogens on Māori kiwifruit Growers and economic effects on other Māori affected by loss of jobs as a direct result of any future biosecurity events. It is estimated that Māori have investments in the industry totalling more than $300m. It is also estimated there are at least 2,475 FTE of people of Māori descent employed in the industry.

Māori will also be affected by wider economic effects (multiplier effects - refer to 'effects on economic wellbeing' above) felt wider in regional communities following future biosecurity events. The intent of this pathway plan is to avoid or reduce such economic affects for all Growers and communities, including Māori Growers and communities, through proactive pathway management.

This plan provides, in the opinion of the persons submitting this proposal, a potential benefit to Māori through the control of wild kiwifruit populations. Wild kiwifruit can strangle trees causing them to die or fall. Wild kiwifruit threatens native forest ecosystems, including taonga species of significance to Māori.

Other specific issues of potential interest or concern to Māori relevant to this pathway plan proposal that KVH is aware of include:

- Concerns relating to safe disposal of any infected kiwifruit vine material (where such disposal is necessary to achieve effective pathway management), in a way that accords with local tikanga and respects ancestral lands, waters, wāhi tapu, and taonga.
- Concerns, generally, relating to the application of chemicals to land and water, and the possibility that contamination of soils or water might arise from this. This is principally a wider issue (i.e. relating to use of chemical sprays in general) and of limited relevance to pathway management, although use of chemical sprays is a potential measure to address sites where there is an elevated pathway threat (e.g., to control wild kiwifruit, or to control a pest or pathogen at a site where this is necessary to reduce a pathway threat).

  [Note: all plant protection products currently in use to manage kiwifruit threats are approved products that have been assessed and approved by the national regulator, the Environmental Protection Agency (or its predecessor, the Environmental Risk Management Authority). To gain such approval, the national regulator carefully considers the effects of use of the product on the relationship between Māori, their culture, and their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga. Strict regulatory controls for registration and the controlled use of these products are then implemented through the kiwifruit industry spray programme.]

KVH has worked with, and will continue to work with, Māori Growers through the 'Māori Kiwifruit Growers Forum' to understand the interests of, and how best to address issues of specific interest to, Māori Growers. The forum has been operating since 2018, was created to advocate for the interests of

[4] Maggie Mort, Ian Convery, Josephine Baxter & Cathy Bailey (2008). *Animal Disease and Human Trauma: The Psychosocial Implications of the 2001 UK Foot and Mouth Disease Disaster.* Journal of Applied Animal Welfare Science, Volume 11, 2008 - Issue 2: Caring During Crisis: Animal Welfare During Pandemics and Natural Disasters

Māori Growers in the sector and is a partnership between Māori kiwifruit Growers, Te Puni Kōkiri and Zespri.

18. The effects that, in the opinion of the person making the proposal, implementation of the plan would have on the marketing overseas of New Zealand products [s.81(2)(d)(ii)]

The effects of implementation of this plan on the overseas marketing of New Zealand Kiwifruit is likely to be significant (also refer to the cost benefit analysis in Section 10). The objectives of the Pathway Plan include reducing the spread of biosecurity threats, detecting these early, and ensuring rapid tracing on kiwifruit industry pathways. And through these to minimise impacts of future biosecurity events on kiwifruit production levels, which reduces impacts on Grower financial returns.

An example of how pathway management under the proposed plan is expected to have a positive effect with respect to the overseas marketing of New Zealand products is given below for the exotic organism, *Ceratocystis fimbriata* (Cf). Cf is a soil-borne fungal pathogen that is emerging worldwide as a major plant pathogen. A specific strain of this pathogen in Brazil has caused significant damage to kiwifruit orchards. The first reports of a wilt disease in kiwifruit in Brazil appeared in 2010. In the following years, significant vine losses occurred, with some orchards losing 10-30% of vines. Over the last five years, some Growers have reported 50% vine loss.

This is considered the most significant pathogenic threat to the New Zealand kiwifruit industry and the focus of readiness planning by KVH and MPI under GIA. This readiness planning has identified that there is only a small window for which eradication may be feasible and this requires early detection and that the pathogen is limited in distribution.

If eradication is unsuccessful or not considered feasible there are limited tools to successfully contain this pathogen. Based on the experience of Brazil we could see a gradual spread across the industry on human mediated pathways which could impact up to 50% of industry production after four years. In Brazil, sustained losses of 30% or more have seen Growers abandoning their orchards where Cf is present and the crop may no longer be viable for the region.

Effective pathway management reduces the risk of Cf spreading during the initial asymptomatic phase and therefore contributes to preserving response options and giving the best possible chance of successful eradication at lowest cost.

This is highlighted by Ferreira et al. (2017), who analysed the genetics of the kiwifruit strain of Cf in Brazil and concluded; "*the primary pathogen population on kiwifruit appears to be indigenous and originated from a single farm that distributed the pathogen in grafting material. In addition, commercial nursery stock was also implicated as sources of C. fimbriata genotypes. The disease is a major limiting factor for kiwifruit production in southern Brazil, and the results suggest that clean planting stock will be important to successful production*."

This offshore illustration highlights the real risk of unmanaged plant movements. Had pre-emptive measures been in place to source clean plant material, the widespread distribution of Cf throughout the Brazilian industry may have been avoided or reduced.

Cf is listed as a "quarantine pest" in the following countries; Indonesia, Korea, Russia, South Africa, Taiwan, Vietnam[5]. Market access restrictions are more likely to be relevant for the movement of plant material, as opposed to produce. New Zealand is a world leader for the development of new kiwifruit cultivars and regularly sends plant material offshore, either through Zespri to support their global supply, or through other kiwifruit organisations independent of Zespri.

[5] Readiness and Response Plan for *Ceratocystis fimbriata* affecting kiwifruit and kiwiberries, April 2017. Plan jointly prepared by KVH and the Ministry for Primary Industries under the Government Industry Agreement for Biosecurity Readiness and Response.

Most if not all biosecurity threats to the kiwifruit industry have the potential to be spread on kiwifruit industry pathways to a greater or lesser extent – as per the Cf case study above – with some having market access impacts (e.g., economically significant fruit flies; Esca disease, *Fomitiporia mediterranea*; Yellow Peach Grub, *Conogethes punctiferalis*; Spotted Wing Drosophila, *Drosophila suzukii*).

Consequently, the plan is expected to have a positive effect with respect to the overseas marketing of New Zealand products.

There could be increasing concerns from international markets and consumers regarding any increase or other change in use of plant protection products as a result of pest spread on kiwifruit industry pathways, in relation to. Such concerns will continue to be mitigated through the continued application of the robust regulatory framework that governs the use of plant protection products, and the strict standards and quality assurance programme operated by the kiwifruit industry.

19. If the plan would affect another pathway management plan or a pest management plan, how it is proposed to co-ordinate the implementation of the plans [s.81(2)(e)]

KVH intends that this Pathway Plan and associated levy commence from 1 April 2022, and that the Biosecurity (National Psa-V Pest Management Plan) Order 2013 and associated levy be maintained until the term of the Biosecurity (National Psa-V Pest Management Plan) Order 2013 terminates on 17 May 2023.

Therefore, there would be an overlap period of approximately 12 months.

Over this period the Pathway Plan will be treated as the primary instrument for management of kiwifruit industry pathways by KVH (i.e. the default will be to use the Pathway Plan where KVH requires access to legal powers to address a pathway risk), and the two plans will be coordinated by:

- Aligning operational planning (including KVH policies) and annual reporting across both plans;
- Revoking requirements (i.e. requirements other than rules) used under the Psa-V Plan where these are redundant or duplicate requirements of the Pathway Plan without adding value (e.g., requirements established through place or area controls on movement of risk items).
- Providing certification schemes, risk management plans, protocols and associated tools and guidance that enable kiwifruit Growers, contractors, nurseries and other audiences to meet the requirements of both plans - any requirements specific to a given plan or common across both plans would be clearly identified. An example of this is the 'reporting' requirements/rule under each plan;
- Ensuring KVH enforcement action is taken based on legal advice to clarify appropriate use of powers under the relevant plan or plans; and
- Maintaining clear separation of levy funds [Note this will be an extension of the existing approach KVH uses for its two existing biosecurity levies, including transparent accounting within separate cost centres).

KVH will continue to work with regional authorities in relation to the management of 'wild kiwifruit', where wild kiwifruit is a 'pest' in regional pest management plans.

KVH and regional authorities manage 'wild kiwifruit' for different purposes. Some regional authorities manage wild kiwifruit to reduce its impact as a plant pest that threatens indigenous biodiversity values. Under this proposed Pathway Plan KVH has an interest in ensuring that areas of 'wild kiwifruit' do not create a pathway risk; for example, if an area of wild kiwifruit harbours biosecurity threats and there is potential for risk items (e.g. movements of machinery or equipment) to spread these to kiwifruit orchards, or for natural spread that gives rise to a pathway risk.

KVH maintains a memorandum of understanding (MOU) with each of the relevant regional authorities to coordinate the management of wild kiwifruit, including co-funding of control activities where such control serves both of the purposes above. Each MOU will be updated to extend this coordination to the new Pathway Plan when this commences.

20. The powers in Part 6 that it is proposed to use to implement the plan [s.81(2)(f)]

It is proposed that the following Part 6 powers be conferred on the management agency in relation to the Pathway Plan:

Section	*Power*	*Reason why the power is needed*
106	Power to require assistance	So an 'authorised person' can seek assistance when required
109	Power of inspection	To carry out monitoring for the purpose of confirming presence, former presence, or absence of risk organisms on kiwifruit industry pathways
111	Entry in respect of offences	To investigate potential non-compliance where all reasonable efforts to achieve cooperation have been exhausted
113	Power to record information	To enable recording or gathering of information when sections 109 or 111 are used
114	General powers	To enable expedient actions to be taken to manage any serious risks that could lead to further spread of risk organisms on kiwifruit industry pathways when sections 109 or 111 are used
114A	Application of articles or substances from aircraft	To enable abandoned orchards or wild kiwifruit to be sprayed by helicopter or other aircraft where this is the most cost-effective approach to reduce the pathway risks associated with these [Note: Approval by a chief technical officer in the Ministry of Primary Industries is required to access this power] *[Note: Approval by a chief technical officer in the Ministry of Primary Industries is required to access this power]*
115	Use of dogs and devices	To enable use of detector dogs or any other devices to assist with surveillance or monitoring when sections 109, 111, 113, 114, or 120 are used
118	Power to seize evidence	To enable evidence to be collected when section 111 is used
119	Power to seize abandoned goods	To enable seizure, treatment or disposal of any risk goods that appear to have been abandoned and that create a serious risk
120	Power to intercept risk goods	To enable any craft (e.g., vehicle) to be stopped, and to open anything to inspect the contents for the presence of risk goods (e.g., kiwifruit plant material), when sections 130 and 131 have been used
121	Power to examine organisms	To enable collection and testing of material for the purpose of establishing whether risk organisms are present or absent on kiwifruit industry pathways
121A	Power to apply article or substance to place	To enable monitoring where equipment or a substance need to be left in a site where kiwifruit plant material is grown (e.g., an orchard or nursery) in order to collect information
122	Power to give directions	To enable the management agency to give directions to comply with rules in this plan
123	Power to Vaccinate	To enable the management agency to apply any procedure to organisms (e.g., a treatment to improve vine health or control threats on kiwifruit plant material)
128	Power to act on default	To enable the management agency to act on default where a notice has been issued, and to recover the costs and expenses reasonably incurred

130	Declaration of restricted place	To enable place controls to be put in place where pathway risks are specific to the place (e.g., an area of wild kiwifruit that presents a risk of spreading known pests or pathogens to local orchards)
131	Declaration of controlled area	To enable movement controls to be applied to a specific pathway or pathways in high risk situations (e.g., where the distribution of risk organisms is localised, and targeted pathway controls will enable those organisms to be contained or excluded)
135	Options for cost recovery	To enable recovery of costs (e.g., where a landowner or occupier responsible for an abandoned orchard or area of wild kiwifruit that give rise to a pathway risk refuses to cooperate and comply with a notice of direction)
136	Failure to pay	To enable recovery of costs

21. Each proposed rule and an explanation of its purpose [s.81(2)(g)]

Proposed rule	*Proposed rule wording*	*Policy intent/Explanation of its purpose*
1. Obligation to report	*Every person who recognises, or ought to recognise, that a kiwifruit industry pathway is, or may be, contaminated - as described in the sub-clause below - must notify the management agency of the contamination or potential contamination within 48hrs of first recognising the contamination or potential contamination.* *The types of contamination that must be reported include (without limitation) where any risk item exhibits unusual symptoms, harbours, or may harbour, a high risk kiwifruit pest or any unusual pest, and/or are contaminated with visible soil or kiwifruit plant material.* *Failure to comply with this rule is an offence.*	The intent of this rule is to enable the management agency to gather new information on situations that may elevate risk associated with a kiwifruit industry pathway or pathways. That is, to report any known kiwifruit pest or pathogen (KVH maintains a list and images of such organisms on its website) or any unusual organisms or symptoms or any organic contaminant (e.g., soil or kiwifruit plant material) associated with a risk item that is moved to, from or within places where kiwifruit plant material is grown, produced or processed. This information is fundamental to decisions on the best approach to pathway risk management. Such information will enable the management agency to investigate potential changes in risk associated with a kiwifruit industry pathway or pathways, including to arrange any further testing/diagnostics needed, and to take action or to alert MPI if any report relates to a potential new-to-NZ organism.
2. Provision of information	*If the management agency requires a person, in writing, to provide specified information, the person must provide that information to the management agency in the manner, and within the time (which must be not less than 24 hours) specified by the management agency.* *The information that the agency may require to be provided is information about the location, condition, source, movement or distribution of any kiwifruit industry risk good.*	The intent of this rule is to enable the management agency to gather information about biosecurity risks associated with kiwifruit industry pathways, including the location, condition, source, movement or distribution of any kiwifruit industry risk good. Such information is fundamental to decisions on the best approach to management of kiwifruit industry pathway risks, including to understand the likely mechanisms by which risk organisms have spread on kiwifruit industry

	Failure to comply with this rule is an offence.	pathways and to trace movements in specific situations so the management agency can mitigate risks and/or manage compliance. Where it is reasonable to require a person to collect and hold specific information that is within the scope of this rule (i.e. so it is always available and can be provided to KVH when needed at short notice), KVH proposes to include such specific requirements in pathway-specific rules (e.g., traceability requirements are included in rules 6-8 below). KVH has considered requiring that a person must keep records of the information within the scope of this proposed rule and concluded this would be impractical in many situations. For example, it is unreasonable to expect a person to keep track of where every tractor and pair of secateurs have moved, and their condition etc. over time. But information on the whereabouts of such risk items would be reasonably required as part of tracing for a specific issue or risk where they are relevant.
3. Kiwifruit Orchard Biosecurity Plans	*Every occupier (or owner where an occupier cannot be identified[6]) of an orchard must have and operate in accordance with a "Kiwifruit Orchard Biosecurity Plan".* *Every person referred to above must ensure that the Kiwifruit Orchard Biosecurity Plan includes, as a minimum, the following matters:* • *the pathway risks to be managed;*	The intent of this rule is to ensure that every kiwifruit Grower successfully protects their kiwifruit orchard investment(s), as well as their neighbours' kiwifruit orchard investment(s) and the kiwifruit industry, by implementing effective on-orchard biosecurity. By practicing better biosecurity on-orchard Growers can reduce or eliminate the impacts of pests on-orchard and prevent their arrival and spread. This reduces the risk of direct financial impacts on the individual Grower, as well

[6] See wording used to determine hierarchy of responsibility between orchard occupiers and owners in the National Psa-V Pest Management Plan

	• *the source and location of any plant material that enters the orchard, including new budwood, kiwifruit plants, pollen, compost and shelterbelt plants;* • *the orchard hygiene practices to be met when entering, leaving and moving within an orchard, including tool, vehicle, machinery, kiwifruit bin, footwear and clothing hygiene;* • *the people or groups of people or organisations likely to enter and/or leave the orchard and the steps taken to ensure they understand the biosecurity requirements and comply with them; and* • *how kiwifruit industry pathway risks will be monitored and reported.* *Failure to comply with this rule is an offence.*	as reducing potential impacts of biosecurity events on the industry as a whole. In practical terms effective biosecurity on-orchard involves a Grower: • Understanding the orchard specific biosecurity risks; • Agreeing what must happen on the orchard (including establishing and ensuring biosecurity requirements to be met by people visiting the orchard); • Sourcing and tracing clean plant material; • Checking and cleaning other risk items (e.g., tools, vehicles, machinery, bins, footwear and clothing); and • Reporting. In practice this requirement will be met if Growers adopt 'Kiwifruit Growers Biosecurity Guidelines' by completing and implementing the biosecurity plan set out in the aforementioned guidelines. KVH plans to run workshops for Growers early to help them with what will work best for their orchard and get their plans in place. Implementation of orchard plans will be further simplified through expanded certification (e.g., for orchard contractors and all kiwifruit plant material), assisting Growers to identify where good biosecurity has been followed (for inputs and service providers).

4. Kiwifruit Post-Harvest and Processor Biosecurity Plans	*Every kiwifruit post-harvest and processor must have and operate in accordance with a "Kiwifruit Post-harvest and Processor Biosecurity Plan".* *Every person referred to above must ensure that the Kiwifruit Post-harvest and Processor Biosecurity Plan includes, as a minimum, the following matters:* • *the practices and procedures that will be applied in order to—* – *ensure that any vehicles and equipment that enter every orchard are free of visible soil and kiwifruit leaf and plant material (excluding plant material that meets the requirements of rules 6, 7 & 8);* – *sanitise harvest bins so they are free of soil, pests and kiwifruit leaf and plant material when entering every orchard;* – *reduce the risk of bins of fruit becoming contaminated with soil, pests and/or kiwifruit leaf and plant material prior to and during transport;* – *remove, contain, and safely dispose of any residual contaminant soil and kiwifruit leaf and plant material after transport or during processing; and* – *maintain a level of general hygiene that reduces the risk of any risk item that could be contaminated with a kiwifruit industry risk organism being moved from, or being allowed to leave, the post-harvest or processing facility.* • *the system that will be applied to enable fruit to be traced, and how the integrity of that system will be maintained* *Failure to comply with this rule is an offence.*	Post-harvest operators and processors manage significant movements of people, vehicles, equipment and fruit that can be contaminated with kiwifruit leaf and plant material; moving these between orchards and the main post-harvest or processing facility. Post-harvest operators and processors already recognise this and play a key role in managing biosecurity risks associated with their own operations. KVH will maintain a protocol and pro-forma "systems audit report" that assists post-harvest operators and processors to comply with this rule. Note that these will also address/accommodate other rules under this Plan that any post-harvest operators and processors may need to comply with (excluding rules relating to plant material and the KPCS) – this provides for a single biosecurity risk management plan and associated audit.

5. Kiwifruit Orchard Contractor Biosecurity Plans	*Every kiwifruit orchard contractor must register with KVH.* *Every person referred to above must have and operate in accordance with a "Kiwifruit Orchard Contractor Biosecurity Plan".* *Every person referred to above must ensure that the Kiwifruit Contractor Biosecurity Plan includes, as a minimum, the following matters:* • *A description of the pathway risks to be managed;* • *The hygiene practices in place that ensure all vehicles, machinery, tools, equipment and personal effects are clean and disinfected using management agency approved disinfectants, including before entering the kiwifruit orchard; and* • *The steps that will be taken to ensure that all kiwifruit orchard contractor personnel are aware of kiwifruit industry biosecurity risks and of reporting and hygiene requirements before entering a kiwifruit orchard.* *Failure to comply with this rule is an offence.*	The intent of this rule is to address the high risk associated with kiwifruit orchard contractors, who routinely move machinery, equipment and tools, personal effects, kiwifruit plant material and/or compost into, within and between orchards. The intent of this rule is to ensure all orchard contractors are actively managing biosecurity risks, with a plan and that involves biosecurity hygiene and staff biosecurity awareness and training programmes in place. KVH will issue guidance on appropriate cleaning and disinfection. This will necessarily be tailored to the wide range of vehicles, machinery, tools, equipment and personal effects that come into contact with kiwifruit orchards, the level of risk these pose (e.g., tools that come into direct contact with vines typically represent a higher risk than other risk items that do not), and practical considerations. Guidance will be updated over time to reflect the latest understanding of risk and available tools and technologies. To assist those that need to comply with the rule KVH will maintain a list of approved disinfectants, which are disinfectants that have been scientifically proven to be effective against kiwifruit biosecurity pests and that have requisite regulatory approvals (e.g., approval under the HSNO Act 1996). This rule would apply to all types of "kiwifruit orchard contractor", meaning any person or entity that supplies goods or services to kiwifruit Growers that involve the movement of any "risk items" into, within or from a kiwifruit orchard. This includes, but is not limited to contractors providing the following goods or services: • Vine work -pruning and other canopy work; • Spray application;

		• Fertilizer application; • Supply of labour for any of the above activities; • Shelter trimming; • Root pruning; • Compost spreading; • Post-harvest – bud counts preharvest assessments; • Pest monitoring; • Maturity clearance staff; • Harvest; • Technical advice; • Orchard mapping; • Irrigation; • Infrastructure development; • Beekeepers; and • Artificial pollen applicators. For clarity, the intent is that this list can be added to as there could be additional types of contractors in the future that we cannot foresee now, or that we do not recognise as posing a material risk now (where this understanding changes). In practice there may be different approaches to implementation and associated options for different groups of contractors, and ability to differentiate groups of contractors on the basis of risk. [Note: this would not change the types of information required as per proposed rule wording, but rather

		the risk management approaches/practices that would be covered in a risk management plan] For example, KVH is actively working with Zespri to explore integrating biosecurity within Zespri GAP requirements for contractors to be registered and hold a Compliance Assessment Verification (CAV). At this stage the Zespri GAP/CAV requirements apply to a sub-set of contractors who come into direct contact with fruit and vines (i.e. vine work -pruning and other canopy work; spray application; fertilizer application; supply of labour for any of the above activities), and this scope may evolve/grow over time. KVH will work with other equivalent schemes to explore integration opportunities. And will provide additional options for contractors that are not part of any existing scheme. This includes providing access to simple tools that help with ease of compliance (e.g., online staff training video, pro-forma plans and alignment with the "OnSide" mobile application that helps rural people manage visitors, biosecurity and health & safety).
6. Safe movement of kiwifruit plants and shelterbelt plants (for planting in kiwifruit orchards)	*Any kiwifruit plant sold, offered for sale or moved, and any shelterbelt plant moved into a kiwifruit orchard, must be produced by a plant producer or grower that meets the following requirements:* • *The plant producer or grower must be registered with the management agency;* • *Hygiene practices must be in place that ensure all shoes, tools, equipment or other items are clean and disinfected using management agency approved disinfectants, including before entering the nursery premises;* • *Incoming kiwifruit plant material must achieve a level of freedom from high risk pests determined by the management agency*	The intent of this rule is to address the high risk associated with movement of young and mature kiwifruit plants and associated growing media, and shelterbelt plants and associated growing media planted in kiwifruit orchards. This includes, but is not limited to, young and mature plants propagated and grown by plant producers in tissue culture facilities and nurseries, and mature plants are grown-on in kiwifruit orchards (i.e. some Growers double or triple plant young vines in their orchards, and then seek to move a proportion of these to other orchards if their vine survival rates are high/they have an excess of vines). The intent is this rule applies across New Zealand, and to both commercial and non-commercial nurseries and plant

	(where "high risk pest" and "level of freedom'" have the meaning below); • *A crop protection programme must be in place that includes products that are effective against high risk pests determined by the management agency (where "high risk pest" has the meaning below);* • *Growing media for potted plant production must not be re-used, and must meet the requirements of proposed rule 9;* • *Compost and mulch used for ground-grown plant production must meet the requirements of proposed rule 9;* • *All tools, containers, and surfaces used during kiwifruit and shelterbelt plant production processes, including grafting and pruning processes, must be cleaned and disinfected using management agency approved disinfectants;* • *Production and storage areas must be pest free, well organised and segregated, so that kiwifruit and shelterbelt plant batches are not mixed;* • *Monitoring must be carried out by suitably qualified persons and testing (where applicable) must be carried out by an independent laboratory approved by the management agency, using appropriate sampling and diagnostic methods;* • *A system must be in place that allows kiwifruit plant propagation materials and plants to be traced back to the last growing location and to their batch and traced forward to the buyer or final destination;* • *Plant traceability records, including suppliers, transporters and buyers and records that can trace the entire chain of custody, must be provided to the management agency within the time (which must be not less than 24 hours) specified by the*	transporters. This recognises kiwifruit industry risk organisms can be inadvertently and rapidly spread through this activity. And that the nature of the plant production industry and associated transport system is such that kiwifruit plants can be grown right across NZ (well outside kiwifruit growing regions) and can be transported across NZ within 24 hours. KVH will issue guidance on appropriate cleaning and disinfection. This will necessarily be tailored to the wide range of vehicles, machinery, tools, equipment and personal effects that come into contact with kiwifruit orchards, the level of risk these pose (e.g., tools that come into direct contact with vines typically represent a higher risk than other risk items that do not), and practical considerations. Guidance will be updated over time to reflect the latest understanding of risk and available tools and technologies. To assist KVH will maintain a list of approved disinfectants, which are disinfectants that have been scientifically proven to be effective against kiwifruit biosecurity pests and that have requisite regulatory approvals (e.g., HSNO Act 1996). KVH will determine an official list of "high risk pests" that apply to this specific rule and make this publicly available on its website (https://www.kvh.org.nz/). The reason that "high risk pests" need to be determined over time is because risk associated with pests and pathogens affecting the kiwifruit industry will inevitably change over time. This includes, for example, change in risk as a result of new to NZ organisms establishing, of existing pests or pathogens evolving (e.g., evolving into strains that are more virulent or resistant to control tools), of environmental conditions changing, and/or as a result of introduction of new kiwifruit cultivars or varieties (i.e. with different risk profiles/susceptibility to pests or pathogens) over time. It is also

	management agency, and records must be kept for a minimum of seven years; • *All other records must be kept for a minimum of three years, including:* – *monitoring and testing records;* – *crop protection records; and* – *transport records.* *Failure to comply with this rule is an offence.* Note that in relation to this rule: "High risk pest" means a pest: • where there are effective tools or measures available to control and/or reduce potential impacts of the pest; and • that Is listed on KVH's website; and • that meets two or more of the following criteria: – There is a high likelihood of the pest spreading on a kiwifruit industry pathway; – There is a high likelihood of the pest establishing and forming self-sustaining populations in kiwifruit orchards; – There is a high likelihood of the pest causing significant economic impacts if it establishes in kiwifruit orchards; – There is a high likelihood of the pest causing serious harm to the kiwifruit industry. "Level of freedom" means the level of freedom an orchard, a plant or parts thereof, including germplasm, or growing media and organic matter must achieve so that it is practically or effectively free from high risk pests.	reasonable to expect that scientific understanding of risks associated with pests and pathogens affecting kiwifruit will further develop over time. The list of "high risk pests" will therefore be updated over time by KVH to reflect the latest scientific understanding and in accordance with the proposed definition. KVH will specify the "level of freedom" from each high risk pest that must be achieved for any given pathway (where applicable), in accordance with the proposed definition. Specifying a "level of freedom" from target organisms is a routine and practical approach used to achieve biosecurity assurance for plant material (e.g., 'Kiwifruit Plant Certification Scheme', 'NZ Grafted Grapevine Scheme', 'NZ Avocado High Health Scheme', NZ 'Plant Production Biosecurity Scheme', Australian 'BioSecure HACCP'). KVH will issue guidance on how to demonstrate level of freedom, including the appropriate sampling and diagnostic methods (where applicable). KVH will make level of freedom information publicly available on its website (https://www.kvh.org.nz/). KVH will also issue guidance on 'effective crop protection', including information on products that have been scientifically proven to be effective against kiwifruit biosecurity pests. To assist ease of compliance existing certification schemes will be used as a clear path for nurseries to demonstrate compliance. For example, an existing certification scheme (the 'Kiwifruit Plant Certification Scheme' or KPCS) is already in place to manage risk associated with young kiwifruit vines and this will be expanded to encompass mature kiwifruit plants and shelterbelt species (those moved onto kiwifruit orchards). The intent is that any plant producer growing kiwifruit plants, or kiwifruit and shelterbelt plants, that meets requirements of the

		KPCS will fully comply with this rule. This provides a clear and cost-effective pathway for nurseries and their customers to be assured they are fully compliant. Note that KPCS certification will not be available to nurseries that grow shelterbelts but do not grow kiwifruit plants. Rather, an alternative cost-effective pathway will be available to such nurseries; plant producers that meet requirements of the NZ Plant Production Biosecurity Scheme (PPBS) will also satisfy the requirements of this rule as it applies to shelterbelt species. The existing tailored risk management approach for kiwifruit Growers who "grow for own use" will also be maintained, with the intent that any kiwifruit Grower that meets the "grow for own use" requirements will meet the requirements of this rule. The intent is that KVH will issue approved standards and associated guidance in the areas covered by this rule. This includes approving any target organisms and monitoring methods, including timing, frequency, sampling and testing (if applicable) methodology. Such methods necessarily must evolve to reflect future changes in risk and available technology. The intent is that a "suitably qualified person" be a person that has appropriate experience, technical competence, and qualifications relevant to the area of responsibilities proposed to be allocated to that person. This would be run as a simple approval process and could operate in an equivalent way to that currently run by chief technical officers for authorised persons under the Biosecurity Act (i.e. with guidance and templates to assist applicants issued, and management agency assessment against these). To support Growers and the industry, KVH will identify and approve independent laboratories (independent from KVH,

		Growers, post-harvest, marketers and other parts of the kiwifruit industry) that have capability to deliver scientifically robust and reliable diagnostic services relevant to the pathway plan.
7. Safe movement of budwood	*Any kiwifruit budwood sold, offered for sale or moved onto an orchard must be produced and supplied by a budwood supplier that meets the following requirements:* • *The budwood supplier must be registered with the management agency;* • *The budwood supplier must only accept or harvest budwood from orchards, or parts of orchards, that achieve a level of freedom from high risk pests determined by the management agency and that meet the following requirements:* – *A crop protection programme must be in place that includes products that are effective against high risk pests determined by the management agency;* – *Monitoring must be carried out by suitably qualified persons and testing (where applicable) must be carried out by an independent laboratory approved by the management agency, using appropriate sampling and molecular diagnostic methods;* • *All tools, containers, and surfaces used during the budwood collection process must be cleaned and disinfected using management agency approved disinfectants;* • *Budwood must not be collected from cuttings left on the ground after pruning;*	The intent of this rule is to address the high risk associated with movement of budwood. The intent is this rule applies across New Zealand to every budwood supplier and covers all aspects of the budwood supply chain, from management of biosecurity risk on the budwood source orchard (or part of an orchard, or any other facility that produces budwood) and through to the supply of budwood to the end-user/Grower. This recognises kiwifruit industry risk organisms can be inadvertently and rapidly spread through this activity. Budwood can be rapidly transported across orchards and growing regions. "High risk pests" and "level of freedom" would be determined and made publicly available by KVH as described for rule 6 (above). Note, however, there may be some differences in the list of high risk pests and associated level of freedom across risk items. For example, some high risk pests associated with plants are not likely to be associated with budwood (e.g., the risks associated with spread of root knot nematode and other soil and/or root associated pathogens on plants is high, but negligible on budwood). KVH is actively working to expand the existing 'Kiwifruit Plant Certification Scheme' so this includes certification for kiwifruit budwood, with the intent is that any kiwifruit budwood supplier that meets the requirements of this scheme will satisfy the requirements of this rule.

	• *Budwood batches must be clearly labelled and storage areas must be pest free, well organised and segregated, so that budwood batches are not mixed;* • *A system must be in place that allows kiwifruit budwood to be traced back to the orchard it is sourced from and to their batch, and traced forward to the buyer or final destination;* • *Budwood traceability records must be kept for a minimum of seven years, including records of budwood suppliers, transporters and buyers and records that can trace the entire chain of custody, and must be provided to the management agency within the time (which must be not less than 24 hours) specified by the management agency;* • *All other records must be kept for a minimum of three years, including:* – *evidence the obligation to have and implement a kiwifruit orchard biosecurity plan has been met;* – *monitoring and testing records;* – *crop protection records.* *Failure to comply with this rule is an offence.* Note that in relation to this rule "high risk pest" and "level of freedom" have the same proposed meaning as per rule 6, above (and as defined in the glossary).	A tailored risk management approach for kiwifruit Growers who "grow for own use" will also be established for budwood, equivalent to the existing "grow for own use" scheme for young kiwifruit plants. The intent is that KVH will issue approved standards and associated guidance and approve "suitably qualified persons" as described in relation to rule 6 above.
8. Safe movement of pollen	*Any kiwifruit pollen sold, offered for sale or moved onto an orchard must be produced by a pollen mill operator.* *Every pollen mill operator must meet the following requirements:* • *The pollen mill operator must be registered with the management agency.*	The intent of this rule is to address the medium risk associated with movement of pollen. The intent is this rule applies across New Zealand to all aspects of the pollen supply chain, from management of biosecurity risk on the pollen source orchard (or part of an orchard), to the

	• *The pollen mill operator must only accept and mill flowers from orchards, or parts of orchards, that achieve a level of freedom from high risk pests determined by the management agency and that meet the following requirements:*
	  – *The orchard must be operated in accordance with a "Kiwifruit Orchard Biosecurity Plan";*
	  – *A crop protection programme must be in place that includes products that are effective against high risk pests determined by the management agency;*
	  – *Monitoring (where applicable) must be carried out by suitably qualified persons and testing (where applicable) must be carried out by an independent laboratory approved by the management agency, using appropriate sampling and diagnostic methods;*
	• *All tools, containers, and surfaces used during the flower collection process must be cleaned and disinfected using management agency approved disinfectants;*
	• *All pollen containers must be sealed to prevent contamination, and must only be opened for the purpose of testing pollen viability in an area that is clean and sterile such that it is free of pests or pathogens;*
	• *Pollen traceability records must be maintained for a minimum of seven years, including records of the orchards from which flowers have been collected, orchards that pollen is supplied to directly or other pollen buyers and transporters, and must be provided to the management agency within the timeframe (which must not be less than 24 hours) specified by the management agency.*
	• *All other records must be kept for a minimum of three years, including:*
		pollen milling process, through to the supply of pollen to the end-user/Grower.
		This recognises that kiwifruit industry risk organisms transmissible through pollen have the potential to be inadvertently spread through this activity.
		"High risk pests" and "level of freedom" would be determined and made publicly available by KVH as described for rule 6 (above). Note, however, there may be some differences in the list of high risk pests and associated level of freedom across risk items. For example, some high risk pests associated with plants are not likely to be associated with pollen (e.g., some viruses are not pollen transmissible).
		KVH is actively working to expand the existing 'Kiwifruit Plant Certification Scheme' so this includes certification for kiwifruit pollen, with the intent is that any kiwifruit pollen supplier that meets the requirements of this scheme will satisfy the requirements of this rule.
		KVH will approve monitoring methods and pest monitoring centres (as per proposed rule 6 above).

	– *evidence the obligation to have and implement a kiwifruit orchard biosecurity plan has been met;* – *monitoring and testing records;* *Every pollen supplier (a person or business that buys pollen from a pollen mill operator, or another pollen supplier, to on-sell to kiwifruit growers) must:* • *be registered with the management agency;* • *ensure all pollen containers remain sealed to prevent contamination, and are only opened for the purpose of testing pollen viability in an area that is clean and sterile such that it is free of pests or pathogens;* • *maintain pollen traceability records for a minimum of seven years, including records of the pollen mill the pollen is sourced from, transporters and orchards that pollen is supplied to, and must be provided to the management agency within the timeframe (which must not be less than 24 hours) specified by the management agency.* *Failure to comply with this rule is an offence.* Note that in relation to this rule "high risk pest" and "level of freedom" have the same proposed meaning as per rule 6, above (and as defined in the glossary).	
9. Safe movement of growing media and organic matter	*Any growing media and organic matter moved onto an orchard must achieve a level of freedom from high risk pests determined by the management agency.* *Growing media and organic matter traceability records must be kept for a minimum of seven years, including records of the orchard receiving growing media and organic matter, the transporter and date of delivery,*	The intent of this rule is to establish the medium risk associated with movements of growing media and organic matter (including any soil, compost, mulch or any other organic matter in which kiwifruit plants can grow that is applied to kiwifruit vines or the soil in which they grow). Compost and mulch products are routinely used by some kiwifruit Growers to improve soils and plant health and to suppress weeds. Soil can be introduced onto orchards, for example, associated with

	and must be provided to the management agency within the time (which must be not less than 24 hours) specified by the management agency. *Failure to comply with this rule is an offence.* Note that in relation to this rule "high risk pest" and "level of freedom" have the same proposed meaning as per rule 6, above (and as defined in the glossary).	earthworks or other minor site works. The level of risk is further elevated where leafy kiwifruit plant material is included within compost. All of these movements have the potential to introduce soil borne pathogens, pests or weeds to the orchard. "High risk pests" and "level of freedom" would be determined and made publicly available by KVH as described for rule 6 (above). Note, however, there may be some differences in the list of high risk pests and associated level of freedom across risk items. For example, only a sub-set of kiwifruit pests and pathogens – those that are soil borne - are likely to be associated with growing media and organic matter. In relation to compliance, KVH will also accept evidence that a specified 'level of freedom from high risk pests' has been achieved through certain processes (e.g., time and temperature combinations associated with composting processes) that have been followed where there is scientific evidence the processes achieve the level of freedom specified and/or through end of process testing. KVH may issue guidance from time to time to assist suppliers of growing media and organic matter to achieve levels of freedom required (e.g., information on time and temperature treatments required to deactivate a specified high risk pest). KVH will also work with manufacturers who wish to proactively confirm their processes will satisfy the requirements of this rule (e.g., by reviewing their processes and associated evidence and confirming whether these meet the requirements of this rule).
10. Movement of risk items between the North Island	*Every person that moves any risk item between the North Island and South Island and onto an orchard must notify the management agency at*	The Cook Strait represents a defendable barrier to the spread of kiwifruit industry pests and pathogens. It represents barrier to natural spread of organisms (e.g., by wind, flight etc.). And a barrier to spread of organisms by people, as movements of risk

and South Island	*least 7 days prior to moving any risk item between the North Island and South Island.* *All kiwifruit plant material moved between the North Island and the South Island and into an orchard, or into a nursery that produces and/or sells kiwifruit plants, must:* • *meet the requirements of proposed rules 6, 7 or 8 (as applicable);* • *be monitored by suitably qualified persons and tested (where applicable) by an independent laboratory approved by the management agency, using appropriate sampling and diagnostic methods;* • *be quarantined for a timeframe, and in a facility or at location under conditions determined by the management agency, taking into account the following criteria:* – *the distribution of pests in the North Island or South Island, or both;* – *the potential for pests to spread and cause serious harm if moved on plant material between the North island and the South Island (in either direction, or both)*; – *the level of risk associated with kiwifruit plant material pathway(s) relative to other kiwifruit industry pathways, or other pathways, by which high risk pests could spread between the North island and the South Island (in either direction, or both) and onto kiwifruit orchards;* – *the effectiveness of quarantine measures (prior to movement of plant material and/or post-entry into the North Island or South Island), including the appropriate conditions, location and timeframe commensurate to the level of risk associated with pests that could cause serious harm; and*	items is more limited and easier to control. This has been demonstrated by the successful exclusion of Psa-V. This represents an opportunity for the industry – the strategic opportunity to protect Growers and ensure areas of clean plant material and fruit supply are maintained in the event of any outbreak affecting either island. And this justifies a higher level of control/risk management relative to movements within the North Island. This is a two-way street – equivalent controls would operate in both directions (cf. the status quo which focuses on the single organism, Psa, and movements to the South Island only) but could be tailored to reflect the level of risk associated with movements in either direction (e.g., 95%+ of production occurs in the North Island, so if pests that could cause serious harm are present in the South Island but not the North Island, this would represent a higher level of risk compared to the converse situation). The intent of this rule is to restrict the movement of kiwifruit plant material, which is the highest risk pathway, such that this is subject to appropriate monitoring, testing and quarantine arrangements only. These will need to be based on risk, noting what is fit for purpose (acceptable level of protection and cost-effective) necessarily must evolve to reflect future changes in risk and available technology. The intent of this rule is to allow movements of other high risk items subject to notification and specified hygiene requirements, such that KVH and its local agents (e.g., KVH regional coordinators) can verify any movements of risk items are safe (e.g., inspection).

	– *any other matter KVH considers relevant to achieving the objectives of the plan.* *All vehicles, machinery and equipment moved between the North Island and South Island and onto an orchard must:* • *be free of visible soil and plant material;* • *be sanitised with an approved sanitiser prior to movement between the North and South Islands; and* • *be stored (after sanitising referred to in the sub-clause above) and transported in a manner that avoids contamination by any risk organisms.* *All personal effects, such as footwear and clothing, moved between the North Island and South Island and onto an orchard must:* • *be free of visible soil and plant material;* • *if possible and appropriate, be sanitised with an approved sanitiser prior to movement between the North and South Islands; and* • *If possible and appropriate, be stored (after sanitising referred to in the sub-clause above) and transported in a manner that avoids contamination by any risk organisms.* *Failure to comply with this rule is an offence.* Note that in relation to this rule "high risk pest" has the same proposed meaning as per rule 6, above (and as defined in the glossary).	

22. The rules whose contravention is proposed to be an offence under the Biosecurity Act 1993 [s.81(2)(h)]

It is proposed that the contravention of all rules in section 21 of this proposal be an offence under the Biosecurity Act 1993.

23. The management agency [s.81(2)(i)]

It is proposed that Kiwifruit Vine Health Incorporated (KVH) be the management agency responsible for implementing this pest management plan. Details of the society are provided in Section 2.

24. The means by which it is proposed to monitor or measure the achievement of the plan's objectives [s.81(2)(j)]

Performance measures will be included in annual operational plan that implements the National (Kiwifruit) Pathway Management Plan.

The overall measure of performance is 'the change in the national export production levels'. However, control of biosecurity threats is only one of the factors that influences production levels (other key factors include weather, success of plant breeding programme, and Grower performance), and any evaluation of performance against this measure will need to take account of this.

Other areas where performance will be measured are in relation to:

- Levels of compliance with plan rules (e.g., compliance trends)
- Levels of biosecurity awareness and reporting (e.g., reporting trends)
- Uptake of biosecurity programmes and tools (e.g., Kiwifruit Plant Certification Scheme uptake)
- Rate and extent of establishment or spread of high risk organisms associated with pathways (e.g., new reports or range expansion for high risk organisms)
- Traceability (e.g., capability and speed)

Additional measures that relate to day to day administration of KVH will be set by the KVH Board.

25. The actions that it is proposed local authorities, local authorities of a specified class or description, or specified local authorities may take to implement the plan, including contributing towards the costs of implementation [s.81(2)(k)]

KVH already has an existing memorandum of understanding (MOU) between itself and some regional councils, to jointly implement measures that relate to wild kiwifruit.

KVH manages wild kiwifruit where these harbour, or have the potential to harbour, pests or pathogens that have the potential to spread on kiwifruit industry pathways. Some regional councils manage wild kiwifruit and abandoned orchards in order to reduce the impact of wild kiwifruit as a plant pest that threatens indigenous biodiversity values. Where these interests align, KVH and the particular regional council share costs and agree the most cost-effective approach to manage the risk.

Some regional councils have an active interest in promoting biosecurity awareness and hygiene practices amongst rural contractors. For example, Waikato Regional Council actively promotes national "Keep it clean" hygiene guidelines for rural contractors[7] and undertakes targeted initiatives to address the role of rural contractors in relation to specific issues (e.g., Velvet leaf). There are currently no council biosecurity requirements specific to kiwifruit industry contractors. However, KVH will coordinate biosecurity

[7] Produced by National Pest Control Agencies (2013), *KEEP IT CLEAN Machinery hygiene guidelines and logbook to prevent the spread of pests and weeds*, produced by National Pest Control Agencies in collaboration with: Local Government Biosecurity Managers Group, Rural Contractors New Zealand, Federated Farmers and the Ministry for Primary Industries.

awareness and hygiene initiatives relevant to rural contractors with regional councils and include any joint implementation measures that relate to these within existing MOU's where relevant.

26. The basis, if any, on which the management agency is to pay compensation for losses incurred as a direct result of the implementation of the plan [s.81(2)(l)]

Explanatory note on compensation and the Biosecurity Act Overhaul:

If, through the Biosecurity Act Overhaul, the legislation is amended to provide for an integrated pathway and pest management plan – a possible approach KVH has raised and that MPI has indicated it is considering - then it may be desirable in the future to have the ability to compensate in relation to "pest management" aspects of such an integrated plan (even if not used initially in relation to pathway management aspects). The following content of this proposal is based on current legislative provisions, which provides for separate and distinct 'pest management plans' and 'pathway management plans'.

While a National Pathway Management Plan can make provision for compensation to Growers, the proposal is that there be no compensation.

Compensation can be extremely expensive and any compensation provisions in the plan would have to be paid for by Growers through the Grower levy; that is, there is no other source of funding that KVH could access for this purpose.

Compensation has the potential to create some unwanted incentives that could lead to perverse outcomes. A hypothetical example of this is a seriously deteriorating orchard, where the owner either abandons the orchard or leaves it to continue to deteriorate and or deliberately infects it with risk organisms, so that the management agency will take action that triggers a compensation provision, where that compensation generates a greater level of revenue than could otherwise be achieved. In this example, the owner is making a rational commercial decision, but one where the outcome is increased pathway risk and significantly greater cost.

Any compliance or enforcement activities carried out under the Plan will be in response to the failure to comply with a rule, and as that would be a breach of biosecurity legislation compensation would not be payable in any case.

27. Information on the disposal of the proceeds of any receipts arising in the course of implementing the plan [s.81(2)(m)]

Any receipts arising as a result of cost recovery under section 135 of the Biosecurity Act 1993, would be used to fund the specific activities that gave rise to the costs to be recovered.

It is not envisaged that there will be any other receipts arising in the course of implementing this plan.

In the unforeseen even that any receipts do arise, these would be applied to the costs of implementing this plan.

28. Whether or not the plan would apply to the EEZ and, if it would, whether it would apply to all of it or parts of it and, if it would apply to parts, which parts [s.81(2)(n)]

The plan will not apply to the Exclusive Economic Zone.

29. Whether the plan includes portions of road adjoining land it covers, as authorised by section 6, and, if so, the portions of road proposed to be included [s.81(2)(o)]

The plan will not include portions of road adjoining land it covers.

30. The period for which it is proposed the plan be in force [s.81(2)(p)]

It is proposed the duration of the plan be 10 years from the date that the plan is made. It is proposed that the plan commences on 1 April 2022.

It is proposed the plan be subject to non-statutory reviews at three-year intervals, or at any other time as determined by the management agency.

31. The consultation, if any, that has occurred on the proposal and the outcome of it [s.81(2)(q)]

This will be added following the completion of consultation, with a detailed report on the "results of consultation" to accompany this proposal.

32. Any matter that the national policy direction requires be specified in a plan [s.81(2)(r)]

Directions on setting objectives – information to meet the NPD requirements on setting objectives is provided in section 6 over this proposal and as follows:

The subject	The subject is 'kiwifruit industry pathways' as described in s.3 of this proposal.
The particular adverse effect or effects of the subject on the matters listed in section 54(a) of the Act that the plan addresses	The adverse effects are set out in s.4 of this proposal.
Any key known organisms that are to be managed	Key known organisms to managed include: • *Phytophthora* species • Actinidia seed-borne latent virus • Psa-V • Root knot nematode • *Neonectria microconidia* The Pathway Plan also contributes to reducing risk associated with exotic organisms (e.g., *Ceratocystis fimbriata,* exotic *Phytophthora* species); as well as improving likelihood of early detection and reducing "latent" spread (i.e. over the period between when an organism arrives and is detected), the pathway plan also strengthens traceability systems critical to effective and timely response and may assist on-going pest management efforts (i.e. for exotic organisms that establish but are not eradicated) by leveraging established systems and practices that limit spread on pathways.
The pest management intermediate outcomes that the plan is seeking to achieve	The Pathway Plan is a "Pathway Programme" in which the intermediate outcome for the programme is to reduce the spread of harmful organisms.
The extent to which the outcome will be achieved (if applicable)	Pathway management is an on-going activity for the kiwifruit industry; it contributes to reducing risk associated with biosecurity threats, which are likely to continue to evolve and intensify if anything over time as, for example, trade and travel patterns and climatic conditions change.

	What is intended to be achieved in the first 10 years of the plan includes: • Increased and sustained awareness of pathway risks and pathway risk management plans in place for all Growers, post-harvest and processors. • Traceability systems in place for priority 'risk items', including young and mature kiwifruit plants, budwood, pollen and growing media and organic matter. • Comprehensive risk management programmes in place for all kiwifruit plant material (e.g., expanded Kiwifruit Plant Certification Scheme). • Comprehensive risk management programmes in place for all contractors (commensurate to level of risk they present). • Limited range expansion or area freedom maintained for high risk organisms potentially spread on pathways.

Directions on programme description – The type of programme is a "Pathway Programme" in which the intermediate outcome for the programme is 'to reduce the spread of harmful organisms'.

Directions on analysing benefits and costs – Information to meet the NPD requirements on analysing benefits and costs is provided in section 10 of this proposal, and in the accompanying economic analysis; Harris, S. (2020). *Economic Analysis Kiwifruit Vine Health Pathway Management Plan. Report prepared for KVH, August 2020.*

Directions on proposed allocation of costs for pest and pathway management plans - Information to meet the NPD requirements on allocation of costs is provided in section 14 of this proposal.

33. The steps that have been taken to comply with the process requirements in the national policy direction, if there were any [s.81(2)(s)]

The process requirements in the national policy direction have been met as follows:

- The Cost Benefit Analysis (refer to section 10) has been completed in accordance with the steps and process required for a "medium" level of analysis, as set out in the NPD Guidance Document, *Meeting the requirements of the National Policy Direction for Pest Management 2015 (Version 1.0 September 2015).*
- The proposed allocation of costs has been assessed in accordance with the process requirements set out in section 7 of the *National Policy Direction for Pest Management 2015*, and the aforementioned NPD Guidance Document. An overview is provided in section 14 of this proposal, and a full analysis in relation to requirements of the *National Policy Direction for Pest Management 2015* is provided in the supporting document, *'Draft cost allocation analysis to support the National (Kiwifruit) Pathway Management Plan Proposal'*.

Glossary/Interpretation

Term	*Definition*
Biosecurity threats	Means 'harmful organisms' including pests and pathogens that create, or have the potential to create, harm to the kiwifruit industry, including but not limited to production impacts and market access impacts.
Budwood	means short lengths of young canes with buds from kiwifruit plants prepared for grafting on to the rootstock of another kiwifruit plant
Disease	means a particular abnormal condition that negatively affects the structure or function of all or part of an organism, and that is not due to any immediate external injury.
Growing media and organic matter	means any soil, potting mix, compost, mulch or any other organic matter in which kiwifruit plants can grow that is applied to kiwifruit vines or the soil in which they grow
High risk pest	means a pest: • *where there are effective tools or measures available to control and/or reduce potential impacts of the pest; and* • *that Is listed on KVH's website; and* • *that meets two or more of the following criteria:* – *There is a high likelihood of the pest spreading on a kiwifruit industry pathway;* – *There is a high likelihood of the pest establishing and forming self-sustaining populations in kiwifruit orchards;* – *There is a high likelihood of the pest causing significant economic impacts if it establishes in kiwifruit orchards;* – *There is a high likelihood of the pest causing serious harm to the kiwifruit industry.*
Kiwifruit	means the fruit of any plant of the genus *Actinidia*
Kiwifruit orchard contractor	means any person or entity that supplies goods or services to kiwifruit Growers that involve the movement of any "risk items" into, within or from a kiwifruit orchard. This includes but is not limited to contractors providing the following goods or services: • Vine work -pruning and other canopy work • Spray application • Shelter trimming • Root pruning • Fertilizer and compost spreading • Post-harvest – bud counts preharvest assessments • Pest monitoring • Maturity clearance staff • Harvest • Technical advice • Orchard mapping

	• Irrigation • Infrastructure development • Beekeepers • Artificial pollen applicators
Kiwifruit plants	means living vines and parts thereof, including germplasm, of the genus *Actinidia*
KVH	means Kiwifruit Vine Health Incorporated
Level of freedom	means the level of freedom an orchard, a plant or parts thereof, including germplasm, or growing media and organic matter must achieve so that it is practically or effectively free from high risk pests
Movement	means the act or process of moving "risk items" into, from or between places where kiwifruit (all *Actinidia* spp.) plants or any other kiwifruit plant material (excluding kiwifruit for sale) are grown, produced or processed
Orchard	means an area of land used for, and new plantings intended for use of, the cultivation of kiwifruit, or kiwifruit flowers or pollen, for commercial purposes, and including headlands and shelter belts immediately adjacent to kiwifruit plants.
Pathway	as per its meaning under the Biosecurity Act 1993
Pest	means any species, strain or biotype of plant, animal or pathogenic agent that adversely impacts, or has the potential to adversely impact, kiwifruit plants.
Pollen	means pollen harvested from flowers of the genus *Actinidia*
Risk item	means any organism, organic material, or other thing, or substance, that (by reason of its nature, origin, or other relevant factors) it is reasonable to suspect constitutes, harbours, or contains an organism that may cause unwanted harm to kiwifruit plants or the kiwifruit industry, including (without limitation) - • kiwifruit plant material, such as plants, budwood, seeds, pollen and flowers of the genus *Actinidia* • kiwifruit shelter belt plants, such as plants of the genus *Cryptomeria*, *Casuarina*, *Salix* and *Populus* • growing media, such as soil, potting mix, compost and mulch • vehicles, machinery and equipment (including beehives) • personal effects, such as footwear and clothing • fruit that may be contaminated with kiwifruit plant material (other than fruit that has been processed and packaged, whether for domestic consumption or for export)
Pollen	means the fertilizing element of male flowers of a kiwifruit plants, consisting of fine, powdery, yellowish grains
Post-harvest operator	means a business that provides services to the kiwifruit industry in relation to the harvesting, sorting, packing, and cool storage of kiwifruit prior to its distribution to market
Processor	means a business that processes kiwifruit products and prepares those products for market

Sanitiser	means a product used to clean or disinfect a risk item by reducing the occurrence and plant pathogens
Soil	means the upper layer of earth in which plants grow, a black or dark brown material typically consisting of a mixture of organic remains, clay, and rock particles
Unusual pest	means a pest or pathogen, or symptoms associated with a pest or pathogen, that is/are novel and not typically observed associated with kiwifruit vines or any risk item

Appendix 1. KVH Kiwifruit Pathway Plan Proposal - Impact Analysis

I am a ...	What are my responsibilities under the Plan?	What are the changes from the status quo?	How, and who, will ensure I am meeting these responsibilities?	What will these changes cost me?	Will I be supported to help with implementation of these requirements?
GROWER: There is a specific rule for growers in the Pathway Plan requiring them to complete and implement an orchard biosecurity plan. However, as growers are central to all plan requirements, they also have a responsibility to ensure all inputs into their orchard are compliant with rules of the plan. As a purchaser, growers are also well placed to drive behaviour change for better biosecurity outcomes and better protection of their investment.					
All growers	Growers are required to complete and implement a "Kiwifruit Orchard Biosecurity Plan" which at a minimum meets the following requirements: • understanding the orchard- specific biosecurity risks • agreeing what must happen on the orchard (including establishing and ensuring biosecurity requirements to be met by people visiting the orchard) • sourcing and tracing clean plant material • checking and cleaning risk items (e.g. tools, vehicles, machinery, bins, footwear, and clothing); and	Growers are currently required to have an orchard management plan for Psa-V. An on-orchard biosecurity template has been developed which growers are completing for KVH on a voluntary basis, as well as a Zespri GAP requirement. The Pathway Plan requirements for growers are aligned with this existing template, called the "Kiwifruit Growers Biosecurity Guidelines". Therefore, if growers have adopted these guidelines there will be little change from the status quo from an administrative perspective.	As per the status quo, the need to have and implement an orchard biosecurity plan will continue to be required in order to supply fruit to Zespri (a Zespri GAP requirement). KVH will also undertake audits which may be targeted at: • Zespri GAP non-compliance • growers outside of Zespri GAP • reports of non-compliance. As per current practice, KVH will take an educative approach when following up with non-compliance, as the intent of these requirements is to protect grower's	For growers who already have and operate in accordance to an orchard biosecurity plan there will be no cost in meeting the new rules. For other growers we expect time will need to be dedicated to implementation of their existing plan. The time associated with implementation will depend on their current state, but we estimate this should take no more than one day per year.	KVH has developed a template for growers to complete their on-orchard biosecurity guidelines and simplify compliance with this rule. Further support, if required, can be provided by KVH staff or growers' post-harvest representatives. KVH has also provided training to GAP auditors so they can assist growers in meeting these requirements. This is already occurring in the current transition period. KVH will host workshops in 2021 to assist with the transition to new requirements under the Pathway Plan, including meeting this rule. KVH will maintain lists of suppliers (such as Kiwifruit

	• reporting. Growers will also be responsible for ensuring all inputs into their orchards are sourced from certified bodies (i.e. rootstock, budwood, pollen, mature plants, compost etc).	However, to date there has been little scrutiny of how growers are implementing these plans, and time may be required to improve on-orchard practices in line with their plan if this has not been done already.	kiwifruit investments from biosecurity threats.		Plant Certification Scheme - KPCS - certified suppliers of plant material) to support growers in sourcing material from only those who are compliant with the rules of the Pathway Plan.
BUDWOOD: There is a specific rule in the Pathway Plan that applies to every budwood supplier, requiring them to be certified by the management agency in order to ensure biosecurity risk is managed throughout the budwood supply chain (from management of risk on the source orchard, through to supply and then to end-user). Those who are using budwood on their own orchard and not moving budwood to other orchards are exempt from this rule.					
Budwood supplier/distributor	Persons who provide budwood to others have a responsibility to ensure the budwood has been sourced from an orchard compliant with the rules of the Pathway Plan. This includes ensuring source orchards are: • aware of biosecurity risks • undertaking monitoring • testing (as required) • ensuring good hygiene practices are occurring,	Currently requirements for all budwood suppliers include registering with KVH and operating under a risk management plan (RMP). KVH currently sights these plans and follows up to ensure movements are being recorded at the end of the season. This is also a Zespri GAP requirement that is audited annually. Key changes will include requirements around certification and testing, and the implementation of an auditing regime. Much of the criteria to meet certification are	KVH is actively working to expand the existing KPCS so it includes certification for kiwifruit budwood, with the intent that any kiwifruit budwood supplier that meets the requirements of this scheme will therefore satisfy the requirements of this rule. Growers supplying budwood will be required to document this as a Zespri GAP requirement and as part of their on-orchard biosecurity plan.	For growers there will be no cost for KPCS certification and audit, except where additional testing is required. For growers who are Psa non-detected (which is most budwood suppliers) the testing requirements are the same as the status quo at $85 per block. In addition to these testing costs distributors will also need to cover the cost of audit ($200).	The KPCS is a tool to simplify meeting these requirements. KVH provides support (at no additional charge for growers) to meet KPCS requirements which includes guidance material, phone discussions and site visits where required. KVH will host workshops in 2021 to assist with the transition to new requirements under the Pathway Plan, including meeting this rule.

	including cleaning tools • having selection best practice including not taking from ground and not from symptomatic vines • reporting. There must also be a robust system for tracing both forward and backwards from source orchard to end user. These requirements can be met through KPCS certification either as an individual supplier, or a distributor who sources budwood from 3rd party orchards and distributes to others (orchards).	already being met through the RMP, including monitoring and record keeping. Beyond the Zespri GAP control point and traceability there has been little scrutiny against how budwood suppliers operate against this plan.	KVH will independently audit some of these growers, targeting: • Zespri GAP non-compliance • growers outside of Zespri GAP • reports of non-compliance. KVH will audit all commercial distributors of budwood who source budwood from 3rd parties. This audit will verify that source orchards have met the necessary requirements.		
NURSERIES: There is a specific rule in the Pathway Plan that the movement of all kiwifruit plants and shelter belt plants to kiwifruit orchards must meet specific requirements, which can be achieved through KPCS or Plant Producers Biosecurity Scheme (PPBS) certification.					
Growing kiwifruit plants only	All kiwifruit nurseries are required to meet the following: • hygiene practices must be in place that ensure all risk inputs into the nursery are cleaned and	Kiwifruit nurseries are currently required to have KPCS certification to move plants (there are currently just over 60 KPCS certified nurseries). For these nurseries there	As per the status quo, certification under the KPCS will still be required. These nurseries will be independently audited annually, as specified by KVH.	No additional costs.	KVH has invested significant time and effort into nurseries that fall under the KPCS are supported throughout their certification. This includes site visits, online support, best practice

	disinfected (tools, shoes, equipment etc) • source clean plant material and clean growing media (i.e. soil, potting mix, compost etc) • regular monitoring • testing must be carried out as required • traceability systems both forward and backwards. By achieving KPCS certification nurseries will demonstrate compliance with these requirements.	are no additional changes under the plan.	KPCS and PPBS certification both provide avenues for compliance against the requirements.		guidance, and annual meetings. These practices will continue under the Pathway Plan.
Growing kiwifruit plants and shelter plants	The requirements for plant movements into kiwifruit orchards apply to kiwifruit and shelter belt plants. Therefore, these nurseries must have systems to capture both plant types. Nurseries can demonstrate compliance with the requirements through the KPCS and can extend this certification to include the shelter	A small portion of KPCS certified nurseries also supply shelter belt plants and would need to extend biosecurity requirements to include these plants where they are destined for kiwifruit orchards.	As per the status quo, certification under the KPCS will still be required. However, this certification will extend to cover all shelter belt species grown within the nursery. These nurseries will continue to be independently audited annually, and costs will be covered by the nursery.	A slight addition to the already established KPCS would result in a small initial administrative cost to implement systems.	KVH will support those meeting the changes through issuing approved standards and associated guidance in the areas covered by this rule. This includes approving any target organisms and monitoring methods, including timing, frequency, sampling, and testing (if applicable) methodology. Such methods must evolve to

	plant production portion of the nursery.				reflect changes in risk and available technology.
Growing shelter plants only	Shelter belt nurseries will have similar responsibilities as those above, although the mechanism for meeting them will be slightly different. In practice, shelter plant nurseries will need to be able to identify, control, manage or avoid biosecurity risk in their nursery and production processes (similar to above).	KVH does not currently have requirements for those nurseries only providing shelter species, as they are not a host for Psa. As such, shelter only nurseries will demonstrate compliance with requirements of the Pathway Plan through an equivalent certification system, such as the PPBS.	KPCS certification will not be available to nurseries that only grow shelter belts (i.e. do not grow kiwifruit plants). An alternative cost-effective pathway will be available to such nurseries; plant producers that meet requirements of the PPBS will also satisfy the requirements of this rule as it applies to shelter belt species. The PPBS will be audited at a frequency specified by the management agency.	The cost for nurseries to meet PPBS certification will depend on current state of the nursery operation but New Zealand Plant Producers Incorporated (NZPPI) estimate this to be on average $3500 for time to become certification ready, $2500 for infrastructure upgrades and ongoing costs of $2500 per year to maintain certification. However, for these nurseries the costs and benefits they derive from PPBS certification would apply to their entire operation, of which shelter plants may only be 5% or less.	NZPPI (as the lead agency for the PPBS) will provide support for nurseries to achieve these requirements in the form of guidance material and site visits where possible.
POLLEN: There is a specific rule in the Pathway Plan that applies to all aspects of the pollen supply chain (from source orchard through to the supply of pollen to the end-user/grower), requiring certification under the KPCS.					
Mill operator A person or business in charge of the pollen milling process	Mill operators have a responsibility for their own operational practices but must also	There are only minor changes proposed Currently an RMP is required and audited	KVH is actively working to expand the existing KPCS so it includes certification for kiwifruit pollen, with	An audit fee is proposed for mills to achieve consistency with other pathways. The cost of	KVH will support those meeting the changes through issuing approved standards and associated

	ensure that flowers are only sourced from orchards who follow required practices. These would include: • only accepting flowers from those certain to have the required biosecurity risk management practices are occurring • hygiene practices in place both at the orchard level and mill level • traceability is intact both forward and backwards from mill.	annually by KVH, which is a process that will be similar to the KPCS audit. Currently non-detected orchards supplying pollen provide assurance of Psa status by relying on regional status (for Exclusion regions), or voluntarily having a Psa test (if in Containment or Recovery). This testing is proposed to become mandatory for Psa non-detected source orchards only. Testing and monitoring requirements could evolve over time based on risk and science, but no additional testing is proposed at this point.	the intent that any kiwifruit pollen mill operator that meets the requirements of this scheme will satisfy the requirements of this rule. KVH will audit all pollen mills.	this fee is expected to be about $200 per year.	guidance in the areas covered by this rule. This includes approving any target organisms and monitoring methods, including timing, frequency, sampling, and testing (if applicable) methodology. Such methods must evolve to reflect changes in risk and available technology.
Pollen distributor A person or business that buys pollen from a pollen mill operator, or another pollen distributor, to on-sell to kiwifruit growers	Every pollen distributor is responsible for ensuring that they are registered and are only distributing certified pollen produced from a certified mill. In addition, they are also responsible for: • ensuring all pollen remains sealed and intact as received	No changes in requirements for pollen distributors – they will continue to be required to register with KVH and keep records for traceability requirements.	Registration with the management agency (KVH). At a minimum, there will be a paper-based auditing system to ensure that traceability records are being kept. This will be undertaken and managed by KVH.	No costs proposed.	Considering that there is little change to the status quo, it is expected that there will be little support required for pollen distributors to implement the rule.

	from the certified pollen mill • maintaining pollen traceability records including where the pollen came from, transporters used, and the orchard where the pollen will be used.				
POST-HARVEST AND KIWIFRUIT PROCESSORS: The specific rule under the Pathway Plan requires post-harvest and processors to have and operate in accordance with a biosecurity plan. This rule applies to every business that provides services to the kiwifruit industry in relation to the harvesting, sorting, packing, cool storage and/or processing of kiwifruit. Post-harvest can be central to several other Pathway Plan requirements and so have a responsibility to ensure all other rules of which they are involved are being adhered to (i.e. pollen distribution, budwood supplier).					
All post-harvest and kiwifruit processors	Post-harvest and processors must have and operate in accordance with a "Kiwifruit Post-Harvest and Processor Biosecurity Plan". This plan will ensure that practices and procedures will be applied to manage: • hygiene practices for goods going on and off a post-harvest facility • sanitisation of harvest bins prior to season • risk of kiwifruit bins (i.e. plant	The requirement for a biosecurity plan under the Pathway Plan is equivalent to the current requirement for a RMP under the National Psa-V Pest Management Plan (NPMP).	Registration with the management agency (KVH). KVH will maintain protocol and pro-forma "systems audit reports" that assist post-harvest operators and processors to comply with this rule. These will also address/accommodate other rules under the Pathway Plan that must be complied with (excluding rules relating to plant material and the KPCS) – this provides for a single biosecurity risk management plan and associated audit.	As there is no KVH charge for status quo audits and no new KVH charge for future audits proposed there is unlikely to be any change in costs/savings for post-harvest or processors.	As the current requirement is equivalent to the proposed plan, it is expected that there will be little support needed for new requirements for post-harvest and processors.

	material/soil contamination) • risk of kiwifruit plant material left over from processing Post-harvest may also have other requirements for various rules within their plan, but their responsibilities and compliance will still be managed against each specific rule (i.e. pollen distributor or budwood supplier).		KVH will continue to audit post-harvest and processors on an annual basis.		
CONTRACTORS: There is a specific rule in the Pathway Plan that requires all contractors (meaning any person or entity that supplies goods or services to kiwifruit growers that involve the movement of any risk items into, within or from a kiwifruit orchard) to complete and operate in accordance with a Kiwifruit Contractor Biosecurity Plan and implement the intent of this rule.					
CAV contractors This covers all spray, fertiliser, harvest, and vine maintenance contractors	Contractor responsibilities include having and operating with a "Kiwifruit Contractor Biosecurity Plan". In practice, this will likely involve: • understanding the pathway risks needing to be managed • understanding the hygiene	Contracting companies and all associated employees will be required to have a "Contractor Biosecurity Plan" that outlines their risk pathways and how these will be managed. There are currently 410 contractors operating under the Zespri CAV system. There will be control points within this	KVH is actively working with other parts of the industry to establish opportunities to integrate biosecurity within existing contractor assurance and verification processes (i.e. Zespri CAV accreditation). There is also a control point within Zespri GAP to ensure CAV evidence is presented to the grower	The cost of including biosecurity requirements within the CAV may increase the cost of audit by up to $100. There will be ongoing costs of implementing biosecurity best practice such as cleaning between orchards, which while required under the status quo would likely represent a change.	There will be an online training module developed as part of the certification process by the management agency (KVH). KVH also intends to support access to tools that help with ease of compliance (e.g. online staff training video and alignment with the OnSide app that helps properties manage

	requirements before entering a kiwifruit orchard • reporting.	CAV system to ensure that the requirements of the plan are being met. Currently, contractors are not a managed pathway outside of the Psa requirements around hygiene and cleaning. There has been little scrutiny into contractor adherence current hygiene requirements.	prior to undertaking orchard work. KVH will undertake audits which may be targeted at: • Zespri GAP non-compliance • contractors that fall outside the CAV • reports of non-compliance.		visitors, biosecurity, and health and safety).
Non-CAV contractors This will cover all contractors that fall outside the CAV process	Contractor responsibilities include actively managing biosecurity risks with a plan and that includes biosecurity hygiene and having staff biosecurity awareness and training programmes.	Contracting companies and all associated employees will be required to have a "Contractor Biosecurity Plan" that outlines their risk pathways and how these will be managed.	All contractors that fall outside the above accreditation scheme will need to register with the management agency (KVH), complete an RMP and undertake an online training component to become certified. KVH will undertake audits of these contractors which may be targeted at: • level of risk • reports of non-compliance.	There will be ongoing costs of implementing biosecurity best practice such as cleaning between orchards, which while required under the status quo would likely represent a change.	There will be an online training module developed as part of the certification process by the management agency (KVH). KVH also intends to support access to tools that help with ease of compliance (e.g. online staff training video and alignment with the OnSide app that helps properties manage visitors, biosecurity, and health and safety).

COMPOST, MULCH, SOIL: There are specific rules under the Pathway Plan that require all compost, mulch, and soil to be free of leafy kiwifruit plant material and high-risk organisms.					
Compost, mulch, and soil All persons or businesses supplying compost, mulch, or soil for use on a kiwifruit orchard	Responsibilities include ensuring that any compost, mulch, or soil being moved onto an orchard must not contain leafy kiwifruit plant material and must be free from high-risk pests and diseases.	This builds on an existing requirement, but is outcome based and requires freedom from a range of high-risk organisms which has not previously been required. This will likely be achieved through current composting procedures where temperatures will exceed the threshold of which most organisms could survive.	KVH will audit compost providers and issue permissions.	Considering that there is little change to the status quo, it is expected that there will be no cost to businesses supplying compost, mulch, or soil.	Considering that there is little change to the status quo, it is expected that there will be little support required for persons or businesses supplying compost, mulch, or soil.
Other audiences considered but not included as there were no significant changes from the status quo: Landowners with wild kiwifruit; Researchers; Regional Councils; Transporters.					

Appendix 2: Options to fund the costs of the Pathway Management Plan

Two options to fund the costs of the proposed National Pathway Management Plan are explained below, including a description of the option and explanation of any issues.

Option 1: Costs funded through Biosecurity (Readiness and Response - Kiwifruit) Levy

Under this option KVH would fund the Pathway Management Plan through the existing Biosecurity (Readiness and Response - Kiwifruit) Levy. KVH would do this in a way that maintains current levels of KVH funding and is cost-neutral to growers. This would be achieved as follows:

- the actual rate of the Biosecurity (Readiness and Response - Kiwifruit) Levy would be increased by 2/10th of a cent per tray equivalent to bring it to a total of 1 and 6/10th of a cent; and
- the Biosecurity (National Psa-V Pest Management Plan) Levy would be set at zero for the 2022 year and start of the 2023 year, with the Levy Order expiring on 17 May 2023.

The rationale for this option is recognition that pathway management is a core readiness activity that contributes to reducing risks associated with organisms that:

- are not present in New Zealand
- are present but not established, and can be eradicated or contained
- are present and having different effects or there are new control methods and it is possible to eradicate or contain them (and they are not the subject of an existing pest management plan); and
- are present and there is potential to reduce their impacts by slowing their further spread (through pathway management activities, such as hygiene).

The relevance of pathway management to both organisms that are 'not present' (as far as we know), and 'present', in New Zealand is illustrated using the examples of '*Ceratocystis fimbriata*' and '*Neonectria*' in Appendix 3.

Both MPI and KVH recognise the relevance of pathway management to new and emerging and endemic organisms.

Both MPI and KVH agree the rationale for this option (above) is sound in principle and aligns with how the biosecurity system works in practice and how the scope of GIA is currently defined. However, both also recognise this option may not align with the current legislation.

KVH and MPI have identified the following issues with the current legislation (Biosecurity Act 1993) that may prohibit Option 1:

Issue 1: Narrow legislative purpose and misalignment

Explanation:

Pathway Management Plans currently fall under Part 5 of the Biosecurity Act 1993. As such, they are constrained by the purpose of this Part, which is as follows:

> *The purpose of this Part is to provide for the eradication or effective management of harmful organisms that are present in New Zealand by providing for—*
>
> *(a) the development of effective and efficient instruments and measures that prevent, reduce, or eliminate the adverse effects of harmful organisms on economic wellbeing, the environment, human health, enjoyment of the natural environment, and the relationship between Māori, their culture, and their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga; and*
>
> *(b) the appropriate distribution of costs associated with the instruments and measures* (refer section 54 of the Biosecurity Act 1993).

The definition above precludes 'readiness activities', which are defined under a separate part of the Act (Part 5A) as follows:

> *A* readiness activity *means an activity undertaken to prepare to prevent or reduce the impact that an unwanted organism that is not present in New Zealand would have if it were to enter New Zealand* (refer section 100Y of the Biosecurity Act 1993).

Notably the definition of 'readiness activities' under the Act is also at odds with the scope of 'Government Industry Agreements for Readiness & Response' (GIA), where the GIA Deed defines the scope of GIA as including:

> *Joint decision-making and sharing of costs for agreed readiness and response activities, including for unwanted organisms that: are not present in New Zealand; are present but not established, and can be eradicated or contained; or are present and having different effects or there are new control methods and it is possible to eradicate or contain them, and they are not the subject of an existing pest management plan* (refer section 2.3.2 of the GIA Deed).

The constraint and misalignment described seriously constrains the value of pathway management plan instruments and generates potential confusion and disconnect between the GIA Deed (which primary industries have legally signed up to) and the legislation.

Potential options to address this issue for consideration:

A. Broaden the purpose of Part 5 to such that pathway management plans also provide for readiness activities; or
B. Provide for Pathway Management Plans under a new Part of the Act (with broader purpose); and
C. Amend the definition of 'readiness activity' under Part 5A (section 100Y) to align with the intent and stated scope of GIA (refer to definition above).

Issue 2: Greater levy flexibility needed

Explanation:

Industry bodies need to fund a range of biosecurity activities that span across the system, including pre-border, border and post-border readiness, pathway management, response and pest management activities.

Multiple, segmented levies under the Biosecurity Act represent a barrier to achieving effective funding for industry biosecurity programmes.

Convincing a Grower/Farmer to pay one biosecurity levy is challenging. Convincing them to fund multiple levies is exceptionally challenging if not problematic for most industries. Administering multiple levies is also less efficient (higher transaction costs for both industries and government).

There is a reasonable case for funding the national pathway plan through the Biosecurity (Readiness and Response - Kiwifruit) Levy, given pathway management is a core readiness activity (refer above) and in practice is a focus under GIA.

However, there appear to be legal barriers to this because of their inclusion within Part 5 of the Biosecurity Act 1993 (with narrow purpose, as above) and because of the narrow definition of 'readiness activity' within Part 5A of the Act (refer above).

Potential options to address this issue for consideration:

A. To address Issue 1 above; and
B. To explore whether a more flexible levy mechanism is legally possible, whereby a single Biosecurity Act levy could be used for different specified purposes and with differential rates set specifically in relation to those purposes. Taking KVH as an example, is it possible to have

a single Biosecurity Act levy with a rate specific to 'GIA readiness and response', the 'National Psa-V Pest Management Plan' and a 'National Pathway Management Plan'?

Note that KVH has identified additional issues in relation to pest and pathway management under the Biosecurity Act 1993, which do not specifically relate to how the costs of this Pathway Management Plan proposal would be funded. These wider considerations are documented in a KVH submission on the Biosecurity Act Overhaul and include:

- Providing for a more integrated approach to pest and pathway management;
- Improving flexibility or a new regulatory tool for addressing emerging threats and for managing transitions;
- Providing for traceability programmes, including compulsory registration;
- Providing for, or removing barriers to use of, infringement offences;
- Funding; and
- Providing for system governance (and support for existing pest management leadership roles).

Option 2: Costs funded through Biosecurity (National Kiwifruit Pathway Management Plan) Levy

Under this option the costs of administering and implementing this plan are through a Biosecurity Levy as set out in sections 13 and 15 of this proposal.

Appendix 3: Case studies – the role of pathway management in relation specific threats

Two case studies are set out below.

The first is in relation to an organism already present in New Zealand, which is aligned to the current purpose of the Pathway Management Plan instrument as it stands under Part 5 of the Biosecurity Act 1993.

The second is in relation to an organism not present in New Zealand (as far as we know), which is not aligned to the current purpose of the Pathway Management Plan instrument as it stands under Part 5 of the Biosecurity Act 1993. Rather, this is an example of how pathway management contributes as a readiness activity, be it outside the scope of Part 5, to reducing risk associated with organisms that are 'not present' (as far as we know). This is relevant to Option 1 in Appendix 2 and serves as an example to illustrate why changes to the 'Pathway Management Plan' instrument should be considered within the Biosecurity Act Overhaul.

Case study 1: *Neonectria microconidia* example (present in NZ)

KVH investigated an emerging pest management issue in 2018/19 of symptoms identified in kiwifruit orchards, which resulted in the identification of *Neonectria microconidia*. In summary, the investigation revealed this organism was first identified in China in 2011 (collected from a wide range of woody shrubs and trees) and had since been detected in NZ associated with kiwifruit; the first isolation in 2015 on kiwifruit in Kerikeri, with subsequent MPI investigation demonstrating that kiwifruit isolates from Te Puke in 2013 were the same organism, and a further isolation in 2018 on kiwifruit in Motueka. Further investigation revealed this organism has been in New Zealand since at least 2002.

Whether *N. microconidia* is pathogenic or is merely an opportunistic secondary invader is currently unknown, with research commissioned by KVH to determine pathogenicity. KVH is also implementing surveillance to further delimit distribution of this pathogen, including some targeted surveillance (e.g., inclusion of *Neonectria* surveillance in both the 2018 Psa-V monitoring round and for orchards collecting budwood in hotspots close to where canker symptoms have been detected) and wider monitoring by growers with associated education (e.g., local workshops and guidance material).

The most likely pathway identified for spread of *N. microconidia* is through budwood movements. Pollen is considered an unlikely pathway for spread of *N. microconidia*, although may be technically possible if pollen was collected after rainfall when spores are present. Presumably young and mature plants are also a potential pathway, in particular if these are grafted plants given risk associated with budwood transmission.

For an emerging pest or pathogen issue, such as, *Neonectria* KVH needs access to a regulatory tool that provides it with ability (where voluntary agreement cannot be achieved for whatever reason) to:

- enter any property and take samples for the purpose of confirming whether *N. microconidia* is present or absent;
- access information for tracing purposes;
- access information for research purposes and to otherwise learn more about the risk posed by, and risk management options for, the organism;
- control risk associated with high risk properties from which *N. microconidia* could spread, including the ability to restrict movements of any risk goods that could spread *N. microconidia (*e.g., restrictions on budwood, plants, equipment etc.);

- take immediate action (e.g., removing heavily infected vines and any diseased material) to mitigate risk of spread of *N. microconidia* from the place;
- issue directions if needed (e.g., to monitor and report, carry out tool hygiene, remove infected material etc.), for example, to growers and contractors working in areas with *N. microconidia* infection; and
- control budwood movements across the Cook Strait to manage risk associated with *Neonectria*.

The current regulatory tool KVH uses to manage budwood movements looks at this pathway through a single organism lens; that is, a "Psa-V" lens under the National Psa-V Pest Management Plan. It manages this single organism risk by restricting North to South Island movements. However, this does not help with issues such as *Neonectria* where the potential risk movements are from the South Island to the North Island. The irony is that South Island to North Island movements have been allowed without any restrictions because of the single organism lens. And this is the opportunity the national pathway plan presents; by giving KVH ability to manage risk associated with budwood based on the full range of known risk organisms, on any new or emerging risks KVH becomes aware of over time, and taking account of the unknown (i.e. risk organisms that we don't know about/are new to science that could arrive and spread for some time before they are detected).

Case study 2: *Ceratocystis fimbriata* example (not present in New Zealand)

Ceratocystis fimbriata is a soil-borne fungal pathogen that is emerging worldwide as a major plant pathogen. A specific strain of this pathogen in Brazil has caused significant damage to kiwifruit orchards. The first reports of a wilt disease in kiwifruit in Brazil appeared in 2010. In the following years, significant vine losses occurred, with some orchards losing 20 - 40% of vines. Over the last five years, some growers have reported 50% vine loss.

There are no efficacious control options available, and once the soil is contaminated, the replanting or re-grafting of new kiwifruit is not sustainable as the new vine will become infected. This pathogen is considered a serious biosecurity threat.

Pre-border and border measures are critical to keep *C. fimbriata* out of New Zealand, including controls on risk goods such as, plant material, soil, sawdust and frass and wood packaging (e.g., through Import Health Standards and border inspection).

Surveillance is critical to detect *C. fimbriata* early should it arrive. Early detection preserves response options, including to give the best possible chance of successful eradication. KVH encourages kiwifruit growers and nurseries to look out for and report potential symptoms of Brazilian wilt.

Pathway management is also critical to limit "silent spread" of *C. fimbriata* within NZ (should it arrive) before it is detected. This is because there is inevitably a "lag phase" between the time a new pathogen arrives in New Zealand and when it is detectable, which can vary from days to years. Effective pathway management reduces the risk of *C. fimbriata* spreading during this lag phase and therefore, also contributes to preserving response options and giving the best possible chance of successful eradication at lowest cost.

In summary, key pathway management activities that contribute to reducing risk associated with *C. fimbriata* include:

- Maintaining hygiene and sourcing clean plant material;
- Appropriate disposal and disinfection of plant material and equipment; and
- Education campaigns to raise awareness and encourage reporting of symptoms.