

# Nashi

## STRATEGIC INVESTMENT PLAN

2019-2024



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# Introduction

**This Strategic Investment Plan (SIP) is the roadmap that helps guide Hort Innovation's oversight and management of individual levy industry investment programs. The SIP lays the foundation for decision making in levy investments and represents the balanced interest of the particular industry from which the levy is collected. The very important function of the SIP is to make sure that levy investment decisions align with industry priorities.**

## The nashi SIP

A statutory research and development (R&D) levy was established for the nashi industry at its request more than 20 years ago. Nashi producers paid levies to the Commonwealth Department of Agriculture, which is responsible for the collection, administration and disbursement of levies and charges on behalf of Australian agricultural industries. Funds raised from this levy were entrusted to the Horticultural Research and Development Corporation, later known as Horticulture Australia Limited and now Hort Innovation, for investment in R&D activities.

The nashi levy is payable on nashi produced in Australia and either sold by the producer or used by the producer in the production of other goods. However, since 2011, the levy rate has been reduced to zero.

In February 2019, the nashi industry moved to begin investing unspent funds left over from earlier levy collections. Approximately \$1 million is available for investment. Hort Innovation has developed this SIP to assist in strategically investing the collected nashi levy funds in the priority areas identified and agreed by the nashi industry.

This plan represents the Australian nashi industry's collective view of its R&D needs over the next five years (2019 to 2024). The nashi Strategic Investment Advisory Panel (SIAP) has responsibility for providing strategic investment advice to Hort Innovation. Both Hort Innovation and the panel will be guided by the strategic investment priorities identified within this plan. For more information, see Hort Innovation's website at [www.horticulture.com.au](http://www.horticulture.com.au).

# Nashi

## STRATEGIC INVESTMENT PLAN

2019-2024 AT A GLANCE

### IMPACT OF THIS PLAN

Decreased  
PRODUCTION  
COSTS  
.....  
Increased  
CONSUMER  
DEMAND

OUTCOMES	STRATEGIES
Industry profitability is improved by reducing the average cost of production <b>Strategies</b>	Benchmark within and across enterprises to fully understand cost of production
	Identify innovations that reduce the cost of managing fruit set, such as automation from other industries, thinning and budding
	Improve pest and disease management by trialling more resistant varieties and extending identified management best practices
Industry profitability is improved by supplying a higher quality product to the market <b>Strategies</b>	Identify and trial new varieties that may be more robust and resistant to scuffing and bruising and/or suited to waxing
	Prepare a whole-of-value-chain handling, storage and merchandising manual for nashi fruit
	Identify better and more sustainable packaging and storage options
	Develop improved devices to remove nashi stems

OUTCOMES	STRATEGIES
Demand for nashi is increased by developing new products <b>Strategies</b>	Create value-add products such as nashi-based spirits and chips
	Evaluate new variety options with specific quality attributes
	Establish nutritional and pharma benefits of nashi
	Produce organically-grown nashi
Demand for nashi is increased by developing new markets <b>Strategies</b>	Identify new varieties that are more suited to domestic and export markets
	Undertake reviews of potential export markets
	Undertake market research to better understand consumer preferences and segments

# Nashi

## STRATEGIC INVESTMENT PLAN

### 2019-2024 AT A GLANCE

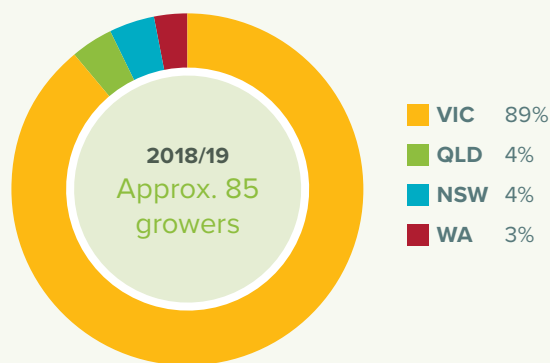
#### Major opportunities

- New/better varieties, especially to increase resilience
- Technology, including automation
- More efficient thinning – identified by pear R&D community internationally
- Better packaging, especially for sustainability
- Better storage
- Addressing of fruit darkening
- Benchmarking
- Organics
- In-store merchandising/training
- New products (such as juice) and varieties
- Different distribution channels
- New export markets
- International linkages (in everything – such as R&D and marketing)
- Linkages with other industries
- Best practice review and packages in production and packing
- Market research

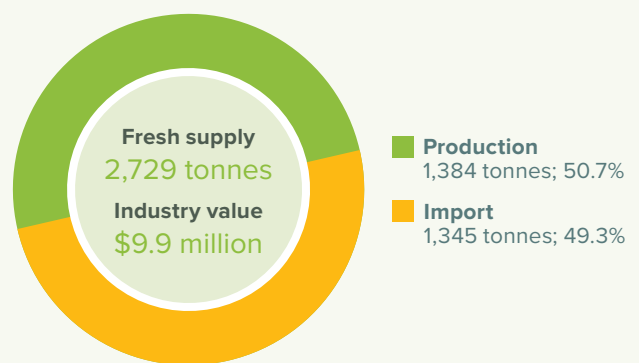
#### Major challenges

- Not enough data/transparency
- Product is easily damaged and needs a protective sock
- Product is 'boring' compared to other 'unusual fruits' such as black apples
- High labour costs
- Lack of consumer awareness/understanding
- Lack of access to certain markets
- Poor performance in perception of retailers
- Poor performance of retailers in marketing the product
- Lack of value-add opportunities such as juice
- Lack of critical mass may hinder ability to take advantage of opportunities

#### Industry size and production distribution



#### Nashi supply chain and value 2018/19





## SECTION ONE

# Context

## The Australian nashi industry

### Nashi industry overview

The nashi is native to northern Asia. It is one of two types of pear (the other being the European pear that is more familiar in Australia), hence it is sometimes referred to as Asian pear, Japanese pear, apple-pear or Oriental pear. The nashi was introduced to Australia by Chinese gold miners in the 1850s. It has been in commercial production in Australia for around 35 years.<sup>1</sup>

Key industry dimensions are shown in **Table 1**.

**Table 1: Nashi industry snapshot, 2019**

(Source: Australian Horticulture Statistics Handbook 2018/19)

Volume of production	1,384 tonnes
Value of production	\$4.2 million
Wholesale value of fresh supply	\$9.9 million

Annual production volume and value since 2001 is shown in **Figure 1**. (Note that data are not available for 2010-2012.)

As shown in **Figure 1**, production volume has steadily declined since 2001, except for 2018 which saw an increase in production volume from 1,463 tonnes to 2,370 tonnes and farm gate value from \$4.4 million to \$7.0 million. This returned to previous levels in 2019, decreasing to a production volume of 1,384 tonnes and a farmgate value of \$4.2 million.

As for pears generally, Australian nashi production is heavily concentrated in Victoria, with 89 per cent being grown in the Goulburn Valley, see **Figure 2** (Note that the statistics have not captured output from South Australia or Tasmania, where there are small areas of production). There are about 20 commercial growers nationally, including one major producer.<sup>2</sup>

The major cultivar of nashi in Australia is Nijisseiki, which is the most popular variety worldwide<sup>3</sup>, although a lesser one by production volume (8 per cent) in Japan.<sup>4</sup> Numerous other varieties have been released in Australia at various times since 1980.<sup>5</sup>

Reliable statistics on global production of nashi is not available. Clearly though, China is the dominant global producer. In 2002, its production of 'Asian pear' was reported to be around 7.25 million tonnes from 0.94 million hectares of orchard, making it third in importance after apple and orange.<sup>6</sup> Japan produced 247,300 tonnes of 'Japanese pear' in 2015, 6.8 per cent of its total fruit crop.<sup>7</sup>

It should be noted that the Chinese varieties such as Tsu Li and Ya Li differ in appearance from Japanese and Korean varieties in that they have a distinct 'neck'. The Japanese and Korean varieties are typically round, more like the shape of an apple.

All Australian nashis are sold into the domestic market for fresh consumption. In 2019, 8 per cent of Australian households purchased fresh nashi, buying an average of 415g per shopping trip.<sup>8</sup>

1 Australian Nashi Growers Association, [www.nashiaustralia.com.au/faq.html](http://www.nashiaustralia.com.au/faq.html)

2 Australian Nashi Growers Association, [www.nashiaustralia.com.au/growers.html](http://www.nashiaustralia.com.au/growers.html)

3 Pennsylvania State University, <https://extension.psu.edu/asian-pears-in-the-home-orchard-variety-selection>

4 Saito, T 2016, 'Advances in Japanese pear breeding in Japan', *Breeding Science* 66(1): 46-59

5 New South Wales Department of Primary Industries, [www.dpi.nsw.gov.au/agriculture/horticulture/pomes/other/nashi](http://www.dpi.nsw.gov.au/agriculture/horticulture/pomes/other/nashi)

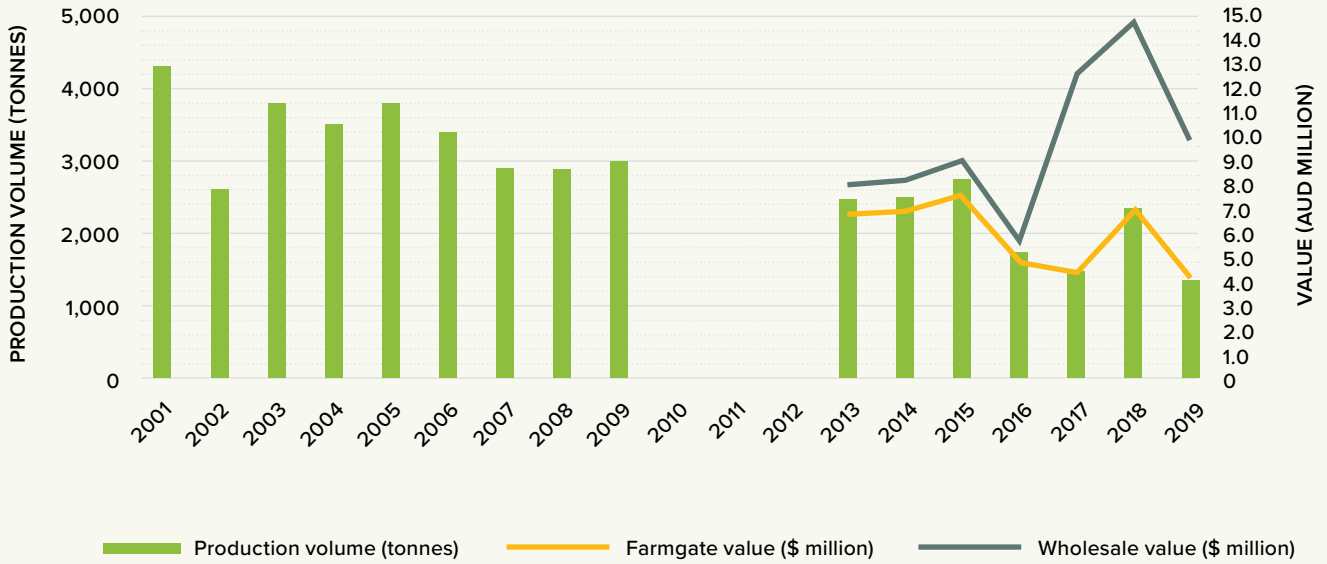
6 Jun, W and Hongsheng, G 2002, 'The production of Asian pears in China', *Acta Horticulturae*, 587: 71-80, [www.ishs.org/ishs-article/587\\_4](http://www.ishs.org/ishs-article/587_4)

7 United States Department of Agriculture 2018, 'Global Agricultural Information Network report', 30 October

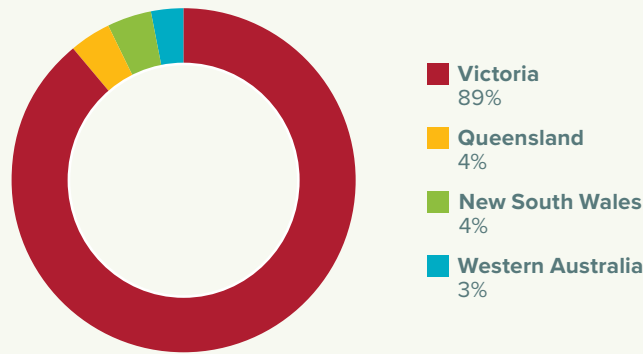
8 Hort Innovation 2020, 'Australian Horticulture Statistics Handbook 2018/19'

**Figure 1: Nashi production volume and value 2001-2019**

(Source: Australian Bureau of Statistics, 2001-2008; Australian Horticulture Statistics Handbooks 2009-2019)



**Figure 2: Share of nashi production by state, 2019** (Source: Australian Horticulture Statistics Handbook 2018/19)



## Operating environment

An industry workshop identified the following strengths, weaknesses, opportunities and threats relating to the nashi industry in Australia.

The nashi industry	
<b>Strengths</b>	<ul style="list-style-type: none"> <li>• Core group of committed growers (although decreasing)</li> <li>• Active industry association</li> <li>• Very good quality product</li> <li>• Product takes on other flavours readily</li> <li>• Not in oversupply</li> <li>• Synergies with pear industry</li> <li>• Nashi varieties are excellent pollinators of European pears</li> <li>• One major company 'holds the price'</li> <li>• One major company holds good production and financial data</li> <li>• Significant corpus of R&amp;D levy funds and levy in place (currently zero-rated)</li> </ul>
<b>Weaknesses</b>	<ul style="list-style-type: none"> <li>• Not enough data/transparency</li> <li>• Product is easily damaged and needs a protective sock (sustainability issue)</li> <li>• Product is 'boring' compared to other 'unusual fruits' such as black apples</li> <li>• High labour costs (thinning, harvesting, packing)</li> <li>• Lack of consumer awareness/understanding</li> <li>• Lack of access to certain markets (where treated differently to pears for sanitary and phytosanitary purposes)</li> <li>• Poor performance in perception of retailers</li> <li>• Poor performance of retailers in marketing the product</li> <li>• Lack of value-add opportunities such as juice</li> <li>• Lack of critical mass may hinder ability to take advantage of opportunities</li> </ul>



The nashi industry	
<b>Opportunities</b>	<ul style="list-style-type: none"> <li>• New/better varieties, especially to increase resilience</li> <li>• Technology, including automation</li> <li>• More efficient thinning – identified by pear R&amp;D community internationally</li> <li>• Better packaging, especially for sustainability</li> <li>• Better storage</li> <li>• Addressing of fruit darkening</li> <li>• Benchmarking</li> <li>• Organics</li> <li>• In-store merchandising/training</li> <li>• New products (such as juice) and varieties</li> <li>• Different distribution channels</li> <li>• New export markets</li> <li>• International linkages (in everything – such as R&amp;D and marketing)</li> <li>• Linkages with other industries</li> <li>• Best practice review and packages in production and packing</li> <li>• Market research</li> </ul>
<b>Threats</b>	<ul style="list-style-type: none"> <li>• Increasing competition from other ‘unusual’ fruits such as black apples</li> <li>• Imports – especially from China</li> <li>• Consumer negativity/lack of knowledge</li> <li>• Environment/water</li> <li>• Losing competitiveness for shelf space</li> <li>• Losing critical mass</li> <li>• Biosecurity breaches, disease – mite (endemic), nashi black spot (exotic), fruit fly</li> <li>• Maximum residue limit (MRL) breaches</li> <li>• Fruit fly management strategies</li> <li>• Climate change</li> <li>• Bureaucracy</li> </ul>

**In summary:**

- Nashi is an excellent product and the industry comprises a committed group of growers
- Nashi has been a profitable crop, but margins have declined through static prices and rising input costs
- Declining profitability is affecting investment confidence
- Nashi is a delicate fruit, requiring very careful handling and transport to avoid damage, which creates increased costs and a sustainability threat because of the sock used to protect it
- Costs, especially of thinning, harvesting and packing are very high – automation is seen as a high priority
- There is a risk that retailers will discontinue stocking nashi because, although it is unique, there is an increasing number of other unusual fruits in the market; nashi is difficult to handle; and consumers have low awareness of it
- Imports from lower cost countries (especially China) are also a risk, as are climate change, loss of access to chemicals and biosecurity breaches
- Ensuring the high quality of the Australian nashi product is a priority.



## SECTION TWO

# Nashi industry outcomes

The aim of this SIP is to create a sustainable Australian nashi industry which is profitable at each link in the value (supply) chain. Unless profitability is achieved at each stage in the value chain, the industry (producers, input suppliers, wholesalers, retailers) will not prosper.

For reasons explained in the above analysis, this SIP is focussed on stabilising the industry as distinct from increasing its size. It will seek to achieve this by:

- Reducing per unit cost
- Improving quality and price per unit

- Exploring new markets and new products
- Ensuring that retailers stock the product and consumer demand increases.

To prosper, the industry believes that aiming for production increase now would be counterproductive because product quality and costs need to be addressed first.

OUTCOME 1: Industry profitability is improved by reducing the average cost of production	
RATIONALE	OPPORTUNITIES
<p>The wholesale price of nashi has not kept pace with the high costs of production inputs (labour, chemicals, fertiliser, packaging). This therefore is making nashi production less competitive compared to other horticultural pursuits.</p> <p>Automation is required to overcome high labour costs. Thinning, alone (which is important for production of quality fruit), costs in the vicinity of \$6,000 to \$9,000 per hectare.</p> <p>Due to the small size of the nashi industry, it is not able to fund some of this fundamental work but should seek to 'harvest' new ideas and technologies from other industries – domestically and internationally.</p>	<p>Some of the opportunities available in this area include:</p> <ul style="list-style-type: none"> <li>• Benchmarking within and across enterprises to fully understand cost of production – this could potentially be measured as \$/kg, \$/Ha, \$/ML water, and more</li> <li>• Identifying innovations that reduce the cost of thinning and budding, such as automation from other industries</li> <li>• Identifying and trialling new varieties that may be more resistant to pests and diseases, whilst producing quality fruit.</li> </ul>

OUTCOME 2: Industry profitability is improved by supplying a higher quality product to the market	
RATIONALE	OPPORTUNITIES
<p>Nashi is a premium-tasting product and has good consumer demand when in season (especially amongst some ethnic groups), however, it not easy to grow, handle, store or display. Fruit can bruise easily, although the bruise is often not evident to the consumer until purchase has been made and when the product is consumed. To reduce risk of damage to the fruit, they are usually individually wrapped in a polystyrene sock which creates environmental (and cost) issues.</p>	<p>Some of the opportunities available in this area include:</p> <ul style="list-style-type: none"> <li>Identifying and trialling new varieties that may be more robust and resistant to scuffing and bruising and/or suited to waxing</li> <li>Preparing a whole-of-value-chain handling, storage and merchandising manual</li> <li>Identifying better and more sustainable packaging options</li> <li>Working with retailers to ensure product is available in key markets at key times of the year</li> <li>Developing improved devices to remove nashi stems.</li> </ul>

OUTCOME 3: Demand for nashi is increased by developing new products	
RATIONALE	OPPORTUNITIES
<p>In the current increasingly health-conscious market, consumer demand can grow quickly for products that are not only enjoyable to eat and nutritious but that also contain health-enhancing properties. Examples of these are avocados and almonds.</p> <p>Importantly, there is also increasing consumer demand for unique food and drink experiences – the rise of craft beers and boutique distilled gin illustrates this point.</p> <p>To expand consumer demand for nashi, the industry needs to explore product differentiation and market opportunities.</p>	<p>Some of the opportunities available in this area include:</p> <ul style="list-style-type: none"> <li>Creating value-add products such as nashi-based spirits and chips (note: some work has been done in this area previously and should be re-examined – a review of previous research reports would be required)</li> <li>Evaluating new varieties of nashi that have specific quality attributes (note: this may require an MOU with Japan to access germplasm)</li> <li>Establishing nutritional and pharma benefits of nashi</li> <li>Producing organically-grown nashi.</li> </ul>

OUTCOME 4: Demand for nashi products is increased by developing new markets	
RATIONALE	OPPORTUNITIES
<p>Currently, demand for nashi products is wholly based on domestic sale. To better assess this domestic retail market, greater consumer knowledge is required. A stronger understanding on ‘what drives consumers to purchase nashi’ and equally, ‘what deters consumers from purchasing nashi’ is required.</p> <p>Australia’s geographic proximity to many Asian markets provides further opportunities, although, new approaches for handling and storage may be required.</p>	<p>Some of the opportunities available in this area include:</p> <ul style="list-style-type: none"> <li>Identifying new nashi varieties that are more suited to domestic and export markets</li> <li>Undertaking reviews of potential export markets</li> <li>Undertaking market research to better understand consumer preferences and segments.</li> </ul>

# 3

## SECTION THREE

# Nashi industry priorities

In this SIP, the Australian nashi industry is seeking to re-establish itself as a profitable industry by improving quality, increasing demand and reducing costs. The main objective of this SIP is to provide a roadmap that helps guide Hort Innovation’s oversight and management of the industry’s R&D levy program towards the forementioned aims. That said, it is recognised that the funds available from the statutory levy are very limited. As a result, a key strategy to be employed by the industry will be to learn from others and harness new technologies or new knowledge from other industries.

OUTCOME 1: Industry profitability is improved by reducing the average cost of production	
STRATEGIES	POSSIBLE DELIVERABLES
<p><b>1.1</b> Benchmark within and across enterprises to fully understand cost of production</p>	<ul style="list-style-type: none"> <li>Improved data on cost of production across enterprises of different scale</li> <li>Identification of areas where costs can be removed</li> <li>Provision of information for research, development and extension (RD&amp;E) priorities</li> </ul>
<p><b>1.2</b> Identify innovations that reduce the cost of managing fruit set, such as automation from other industries, thinning and budding</p>	<ul style="list-style-type: none"> <li>Identification of new technologies and knowledge from other industries</li> <li>Application of such technologies to the nashi industry</li> <li>Reduced cost of production</li> <li>Improved quality through better thinning</li> </ul>
<p><b>1.3</b> Improve pest and disease management by trialling more resistant varieties and extending identified management best practices</p>	<ul style="list-style-type: none"> <li>Improved fruit quality</li> <li>Reduced costs through reduced chemical use and labour</li> <li>Greater opportunities to produce organically grown produce</li> </ul>

OUTCOME 2: Industry profitability is improved by supplying a higher quality product to the market	
STRATEGIES	POSSIBLE DELIVERABLES
2.1 Identify and trial new varieties that may be more robust and resistant to scuffing and bruising and/or suited to waxing	<ul style="list-style-type: none"> <li>Higher quality, more robust fruit</li> <li>Improved demand for nashi fruit</li> </ul>
2.2 Prepare a whole-of-value-chain handling, storage and merchandising manual for nashi fruit	<ul style="list-style-type: none"> <li>Whole-of-value-chain best management practice manual</li> <li>Enhanced fruit quality and merchandising methods</li> </ul>
2.3 Identify better and more sustainable packaging and storage options	<ul style="list-style-type: none"> <li>More sustainable packaging</li> <li>Cheaper packaging</li> <li>Improved fruit quality</li> </ul>
2.4 Develop improved devices to remove nashi stems	<ul style="list-style-type: none"> <li>Easier removal of stems</li> <li>Reduced labour</li> </ul>

OUTCOME 3: Demand for nashi is increased by developing new products	
STRATEGIES	POSSIBLE DELIVERABLES
3.1 Create value-add products such as nashi-based spirits and chips (note: some work has been done in this area previously and should be re-examined – a review of previous research reports would be required)	<ul style="list-style-type: none"> <li>Availability of new products</li> <li>Greater opportunities to sell lower-quality fruit</li> <li>Increased demand for nashi products</li> </ul>
3.2 Evaluate new variety options with specific quality attributes (note: this may require an MOU with Japan to access germ-plasm)	<ul style="list-style-type: none"> <li>Higher quality fruit</li> <li>Improved demand (see Outcome 2.1)</li> </ul>
3.3 Establish nutritional and pharma benefits of nashi	<ul style="list-style-type: none"> <li>New information on nashi nutritional and pharma properties</li> <li>New nashi products</li> <li>Increased demand for nashi</li> </ul>
3.4 Produce organically-grown nashi	<ul style="list-style-type: none"> <li>Increased demand for nashi</li> <li>Higher prices</li> </ul>

OUTCOME 4: Demand for nashi is increased by developing new markets	
STRATEGIES	POSSIBLE DELIVERABLES
4.1 Identify new varieties that are more suited to domestic and export markets	<ul style="list-style-type: none"> <li>Higher quality fruit</li> <li>Increased demand for fruit</li> </ul>
4.2 Undertake reviews of potential export markets	<ul style="list-style-type: none"> <li>Potential for new for new export markets</li> </ul>
4.3 Undertake market research to better understand consumer preferences and segments	<ul style="list-style-type: none"> <li>New information to better target consumers for nashi products</li> <li>Increased demand for fruit</li> </ul>

Because the nashi fund is limited in size, there will be insufficient resourcing to implement all of the aforementioned strategies. The specific projects that are commissioned will be selected on the basis of expected benefit/cost ratio, technical and commercial risk and other factors.

**The priority order for outcomes and strategies are:**

- Outcomes 1 and 4 are top priorities – especially
  - » Outcome 1: 1.2 (reduce cost of managing fruit set) > 1.3 (resistant new varieties) > 1.1 (benchmarking)
  - » Outcome 4: 4.1 (new varieties) and 4.3 (market research) > 4.2 (export market reviews)
- Outcomes 2 and 3 are lower priorities
  - » 2.2 (value chain manual) and 2.3 (more sustainable packaging) the highest priorities within these outcomes.

# 4

## SECTION FOUR

# Nashi industry monitoring and evaluation

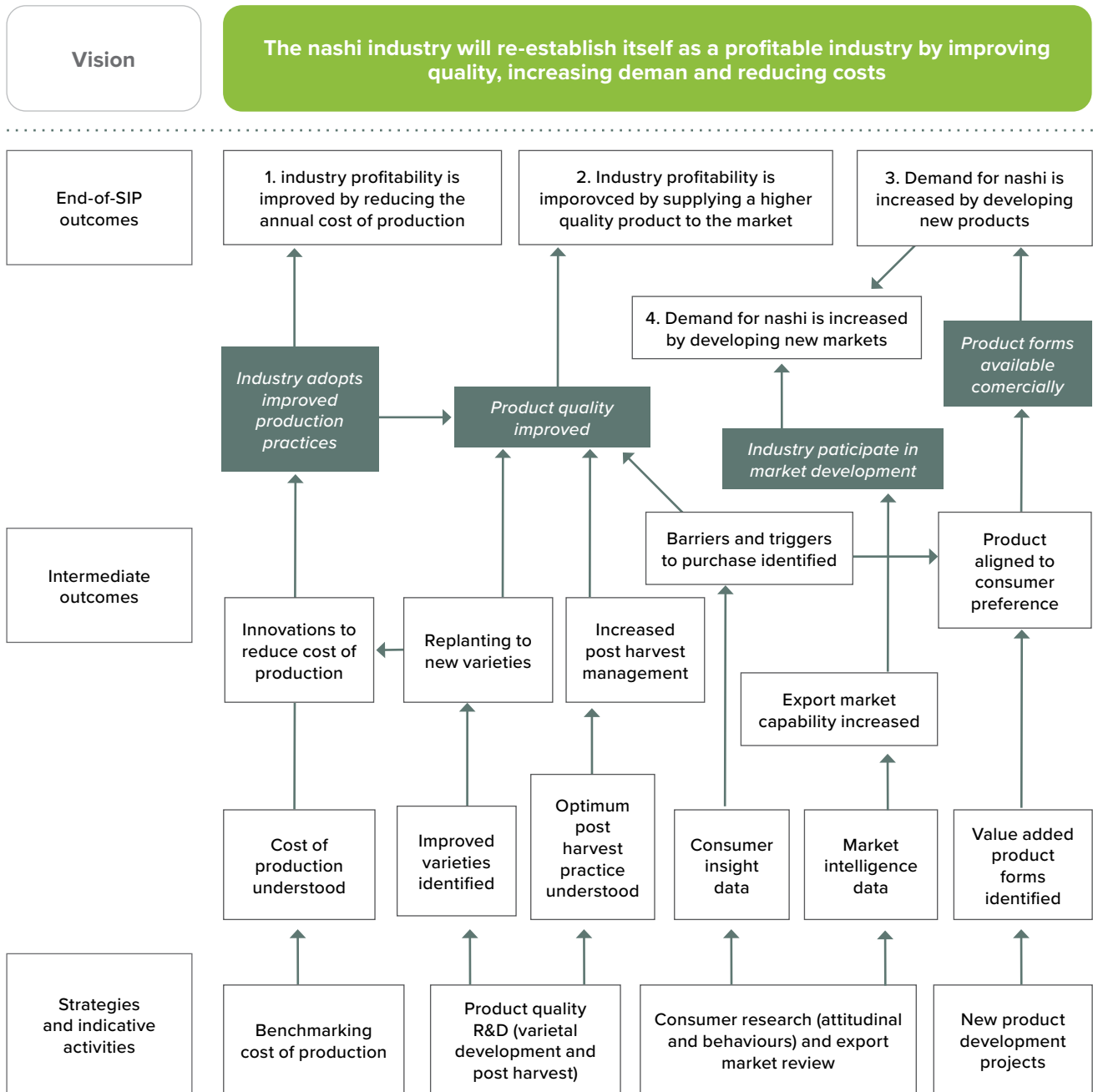
A SIP program logic and monitoring and evaluation (M&E) plan has been developed for the nashi SIP. These are informed by the Hort Innovation Organisational Evaluation Framework. The logic maps a series of expected consequences of SIP investment. The M&E plan shows the performance measures that will be measured to demonstrate progress against the SIP and what data will be collected.

Progress against the SIP will be reported in Hort Innovation publications and at industry SIAP meetings. The SIP outcomes and strategies will be used to inform investments in individual projects to deliver on the SIP. The results of M&E will be used to reflect on the results of investments and in decision making.

### Nashi SIP Logic

An indicative nashi SIP logic is shown in **Figure 3**. The logic is based on the Hort Innovation SIP logic hierarchy. The shaded boxes are not explicitly part of the SIP but are necessary conditions for the achievement of expected outcomes.

Figure 3: Nashi SIP logic





### Nashi SIP M&E plan

The nashi M&E plan is shown in **Table 2**. The table includes key performance indicators (KPIs) and data collection methods both at a macro/industry (trend) level and at more specific SIP level/s.

**Table 2: Monitoring and evaluation plan for the nashi SIP**

Objectives	Strategies	KPIs	Data collection methods and sources
<b>OUTCOME 1:</b> Industry profitability is improved by reducing the average cost of production	Benchmark within and across enterprises to fully understand cost of production	<ul style="list-style-type: none"> <li>Decreased cost of production, especially in key areas such as thinning</li> <li>Adoption of practices which decrease production costs</li> <li>Innovations that are adapted from other industries</li> <li>New varieties are identified and trialled</li> <li>The performance of new varieties, in terms of production systems and production outcomes</li> </ul>	<ul style="list-style-type: none"> <li>Industry production data</li> <li>Grower surveys</li> <li>Variety trials</li> <li>Field trials</li> <li>Surveys at field days</li> <li>Benchmark data</li> </ul>
	Identify innovations that reduce the cost of managing fruit set such as automation from other industries		
	Improve pest and disease management by trialling more resistant varieties and extending identified management best practices		
<b>OUTCOME 2:</b> Industry profitability is improved by supplying a higher quality product to the market	Identify and trial new varieties that may be more robust and resistant to scuffing and bruising and/or suited to waxing	<ul style="list-style-type: none"> <li>Increased measurable quality in market, such as brix, for the consumer</li> <li>Increased demand, and therefore prices, due to increased fruit quality</li> <li>Merchandising manual developed and adopted by key value chain stakeholders</li> <li>Increased packaging sustainability, such as recyclable or biodegradable solutions</li> <li>Increased packaging effectiveness in terms of maintaining nashi quality</li> <li>Key markets and seasonal demand identified; supply of product into these markets at these times</li> </ul>	<ul style="list-style-type: none"> <li>Industry production data</li> <li>Variety trials</li> <li>Tracking/traceability data</li> <li>Fruit quality testing along the value chain</li> <li>Consumer research</li> <li>Supply and sales data</li> <li>Total stock loss</li> </ul>
	Prepare a whole-of- value-chain handling, storage and merchandising manual for nashi product		
	Identify better and more sustainable packaging and storage options		
	Develop improved devices to remove nashi stems		
<b>OUTCOME 3:</b> Demand for nashi is increased by developing new products	Create value-add products such as nashi-based spirits and chips	<ul style="list-style-type: none"> <li>Number of viable new products identified and scoped</li> <li>Number of new varieties evaluated and their performance against specified quality attributes</li> <li>Nutritional and nutraceutical benefits of nashi identified</li> <li>Viability of organic nashi is determined</li> </ul>	<ul style="list-style-type: none"> <li>Project reports</li> <li>Variety trials</li> <li>Previous project reports</li> <li>Nielsen data of organics</li> <li>Market research for value-add products</li> </ul>
	Evaluate new variety options with specific quality attributes		
	Establish nutritional and pharma benefits of nashi		
	Produce organically-grown nashi		
<b>OUTCOME 4:</b> Demand for nashi is increased by developing new markets	Identify new varieties that are more suited to domestic and export markets	<ul style="list-style-type: none"> <li>Identify attributes of nashi that are desirable in domestic markets and export markets</li> <li>Identify new varieties which meet these attributes</li> <li>Segment customers, with the end goal of increasing penetration from the current level of 8 per cent</li> </ul>	<ul style="list-style-type: none"> <li>Nielsen homescan data</li> <li>Global Trade Atlas</li> <li>Market research reports (domestic and international)</li> <li>Digital statistics (such as social media)</li> <li>In-store consumer surveys</li> <li>Variety trials</li> </ul>
	Undertake reviews of potential export markets		
	Undertake market research to better understand consumer preferences and segments		

## SECTION FIVE

# Impact assessment

# 5

There are two main pathways which have been identified by the Australian nashi industry as key for industry stability and sustainability. Firstly, improving industry productivity through decreasing costs will help to alleviate the industry-wide trend of increasing costs and increase profitability. Secondly, increasing demand will support increased farm gate profitability by supporting price growth. Note that increasing productivity through increased production is not to be pursued as this could lead to oversupply and decreased prices in the limited domestic market.

The potential impacts attributable to investment through this SIP are identified qualitatively, below. A quantitative assessment of the impacts by outcome area was not completed.

IMPACT CATEGORY	IMPACT PATHWAY
Decreased production costs	<b>Benchmarking:</b> By defining the cost of production across industry, benchmarking would provide a baseline for input into R&D decisions and M&E of any activities which aim to reduce production costs. For example, benchmarking may show which activities contribute the most to production costs and should be the focus for reduction. Benchmarking has other benefits such as informing the production decisions for individual businesses and acting as a tool for extension and adoption of new practices. Risks of this approach include difficulty in getting cost data, especially as there is one dominant grower, and little value from comparative analysis across the industry due to the small number of growers
	<b>Automation:</b> Labour costs are commonly the highest contributor to production costs and are a significant production risk due its importance in timebound activities such as harvesting. There is the opportunity to replace the labour used in some of these activities with automated processes adapted from other orchard industries. Thinning and budding is an activity identified by industry as being replaced by automation and contributing to increasing production costs.
	<b>New varieties:</b> New varieties may decrease production costs in several ways. For example, disease resistance leads to fewer applications of herbicides and fungicide, or a new variety may require less water. Impact realised from new varieties would be realised over a longer-term horizon, recognising the time required for trees to reach maturity (five to seven years).
	<i>Note that extension and adoption costs would be relatively small as there are only 20 commercial growers to be reached.</i>

IMPACT CATEGORY	IMPACT PATHWAY
<p><b>Increased demand</b></p>	<p><b>Market research:</b> Similar to benchmarking, consumer research is the baseline input for measuring consumer attitudes and behaviours (demand). It informs what the definition of high-quality fruit is, and also when and where demand is greatest. In this way, it can not only inform marketing activities, but can also inform supply decisions.</p>
	<p><b>Higher quality fruit:</b> This outcome can be achieved through improving production practices and/or the supply chain. Changing production practices includes utilising better-tasting and novel new varieties. Improving quality through the supply chain includes reducing the time from harvest to consumer, improving handling processes and adopting improved packaging.</p>
	<p><b>New markets:</b> By entering new markets, new customers can be found, increasing total demand for nashi. Nashi could potentially be processed into new products, which will both attract new customers and add value to nashi.</p> <p>Export is another pathway to new markets, providing an opportunity for price premiums and prevents domestic markets reaching oversupply. Export, however, requires a long-term strategy, significant process change to gain market access and large volumes year-on-year to create consistency and build relationships. This would be difficult for a small industry like nashi to achieve with no baseline to work off.</p> <p>Organics is another potential new market where price premiums could be achieved, where total benefits are contingent on price premiums being greater than any costs of altering production and gaining organic certification.</p>
	<p><i>As The large crop from the 2017/18 season can provide an insight into the potential benefits from an increase in demand. During this season, farmgate production volume was 2,370 tonnes, 67 per cent higher than the 2016/17 and 2018/19 season. The farmgate unit price in 2017/18 was \$2,954 per tonne, 2.2 per cent lower than the average farmgate price in 2016/17 and 2018/19 (\$3,021 per tonne). If the unit price was sustained at \$3,021 per tonne in 2017/18, then farmgate production value would have increased from \$7.0 million to \$7.2 million.</i></p>



# 6

## SECTION SIX

# Risk management

The purpose of this risk section is to highlight any unique or specific risks that qualify the Strategic Investment Plan. This is not intended to be an exhaustive risk review of the industry risks which in part are considered in the SWOT. This is also not general investment risks which will be considered in the project investment process.

No significant or specific risks were found to be worth noting in this risk section.

**APPENDIX 1:  
Consultation and validation**

Industry consultation involved a workshop held in Shepparton, August 2019 with an open invitation to all growers. The following people are acknowledged and thanked for their valuable contribution to the Nashi SIP process.

**Table 4: Consultation workshop, 29 August 2019 – industry stakeholders**

Richard Bennett
Cameron Carter
Michael Crisera
Diana Fogliani
Terry Fogliani
Mark Hall
David Hunt-Sharman
John Magarey
Shannan Mehmet
Mark Novotny
Steven Singh
Etienne Theart
Shane Zahmet

**APPENDIX 2:  
Reference documents**

Australian Nashi Growers Association, [www.nashiaustralia.com.au/faq](http://www.nashiaustralia.com.au/faq)

Australian Nashi Growers Association, [www.nashiaustralia.com.au/growers.html](http://www.nashiaustralia.com.au/growers.html)

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Jun, W and Hongsheng, G 2002, 'The production of Asian pears in China', *Acta Horticulturae*, 587: 71-80, [www.ishs.org/ishs-article/587\\_4](http://www.ishs.org/ishs-article/587_4)

New South Wales Department of Primary Industries, [www.dpi.nsw.gov.au/agriculture/horticulture/pomes/other/nashi](http://www.dpi.nsw.gov.au/agriculture/horticulture/pomes/other/nashi)

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Saito, T 2016, 'Advances in Japanese pear breeding in Japan', *Breeding Science* 66(1): 46-59

United States Department of Agriculture 2018, 'Global Agricultural Information Network report', 30 October

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