Potato grower

STRATEGIC INVESTMENT PLAN

2017-2021

Hort Innovation
Strategic levy investment

POTATO – FRESH FUND

Content

Communications Manager
Hort Innovation
Level 8, 1 Chifley Square
Sydney NSW 2000
Australia
Email: communications@horticulture.com.au
Telephone: 02 8295 2300

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.

Hort Innovation is the not-for-profit, grower-owned research and development (R&D) and marketing company for Australia's $9 billion horticulture Industry.

As part of the role Hort Innovation plays as the industry services body for Australian horticulture, the organisation is tasked by the Australian Government with working alongside industry to produce a strategic plan for investment of levies in industry R&D and marketing activities.

The process in preparing each SIP was managed by Hort Innovation and facilitated in partnership with Industry Representative Bodies and Strategic Investment Advisory Panels (SIAP). Independent consultants were engaged to run the consultation process, to gather the advice from stakeholders impartially, and produce a plan against which each levy-paying industry can be confident of its strategic intent.

Hort Innovation has valued the support, advice, time and commitment of all stakeholders who contributed to producing the SIPs, especially potato growers.

The potato grower SIP

This document presents the SIP for the potato grower category, previously known as the unprocessed category. The potato grower SIP includes all forms of potato growing: fresh, processed and seed.

Potato growers pay levies to the Department of Agriculture and Water Resources (DAWR), which is responsible for the collection, administration and disbursement of levies and charges on behalf of Australian agricultural industries.

Agricultural levies and charges are imposed on primary producers by government at the request of industry to collectively fund R&D, marketing, biosecurity and residue-testing programs. The levy rate on fresh potato is 50 cents per tonne.

Hort Innovation manages the proportion of levy funds growers pay directed to R&D (48 cents per tonne). Separately, Plant Health Australia (PHA) manages plant health programs (2 cents per tonne). In 2015/16, total potato grower R&D levy receipts were approximately $600,000.

Hort Innovation has developed this SIP to assist in strategically investing the collected potato grower levy funds in the priority areas identified and agreed by potato growers.

This plan represents the Australian potato grower industry's collective view of its R&D needs over the next five years (2017 to 2022).

This plan has been developed in consultation with Australian potato growers/levy payers through a synthesis of direct consultation with research providers and industry thought leaders, and two workshop sessions with Hort Innovation's fresh potato SIAP. The stakeholders consulted are listed in ***Appendix 2***.

The potato grower 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 on the potato industry SIAP constituency, please visit Hort Innovation's website at www.horticulture.com.au.

Tomato potato psyllid (TPP) was detected in Western Australia for the first time in February 2017 prompting a comprehensive biosecurity response.

It had not previously been found in Australia. National agreement has been reached on a management plan for TPP by federal and state governments, and the horticulture industry.

The Transition to Management Plan is a significant cost, and associated with delivery, may require industry to invest significant levy to undertake R&D initiatives to support the management plan.

The Transition to Management Plan will improve the capacity of the horticulture sector to manage TPP, and build confidence around the status of the bacterium *Candidatus Liberibacter solanacearum* (CLso) associated with the psyllid.

Development of the Transition to Management Plan follows the National Management Group decision earlier this year that TPP is not technically feasible to eradicate, and efforts should focus on effective management.

TPP has had a significant impact on Western Australian growers, limiting interstate trade for a range of host or carrier plants and produce. There have been no detections of CLso in Western Australia to date.

Other states will also implement surveillance for the pest.

Potato grower

STRATEGIC INVESTMENT PLAN 2017-2021 AT A GLANCE

POTENTIAL IMPACT OF THIS PLAN

$34.6 Million

Based on an estimated investment of $4.96 million over the next five years

OUTCOMES	STRATEGIES
Industry profitability is improved by increasing the value of product sold on the domestic market	Collaborate with retailers to better understand the opportunities to build category value
	Build capability in servicing regional and niche market channel opportunities
	Develop new fresh potato product concepts
	Support development of higher value products
	Support R&D around improving waste-stream use
Export markets have grown resulting in increased average returns to growers	Develop a five-year export market development strategy covering fresh, processing and seed potatoes
	Provide the necessary R&D support for priority market access and market improvement business cases
	Support exporter capability building and knowledge of prime prospect markets
	Establish improved intelligence for export markets

OUTCOMES	STRATEGIES
Average yields have improved resulting in reduced cost of production	Run subject-specific professional development workshops for consulting agronomists (jointly with processing program)
	Leverage the potato extension program into establishing regional grower development groups
	Integrate precision ag, integrated pest management (IPM) and soil health as core elements of the potato extension program
	Establish an appropriate prioritised regional extension program to address pest and disease challenges/threats
	Support industry-wide efforts to improve the performance of certified seed across the supply chain
Increased innovation and agility in potato businesses has resulted in a sustainable industry that can adapt to highly dynamic markets	Improve industry engagement with a revised communication program
	Introduce an annual scholarship to support overseas study tours for young growers
	Introduce Next Gen leadership development program, including internships and scholarships for growers, farm managers, scientists and advisors (in collaboration with processing SIP)
	Develop an IT self-assessment benchmarking tool
	Develop an online knowledge database for growers that translates the latest research into practical information

Potato grower
STRATEGIC INVESTMENT PLAN 2017-2021
AT A GLANCE

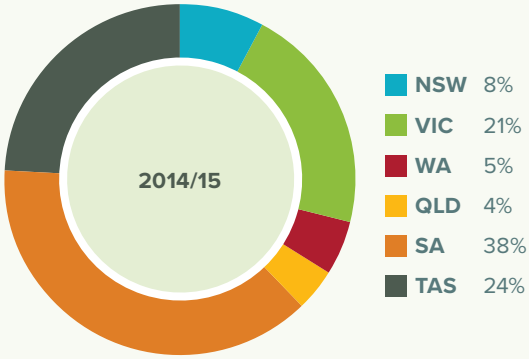
Major opportunities

- Development of new consumer products
- Leveraging 'brand Australia' product integrity in export markets
- Technology advances
- Targeted application of agronomy skills to suit the three potato markets – fresh, seed and processed
- Development of new (non-food) uses to achieve a greater return for waste and by-products
- Increased adoption of R&D, in particular precision agriculture
- Internationally recognised standard of seed.

Major challenges

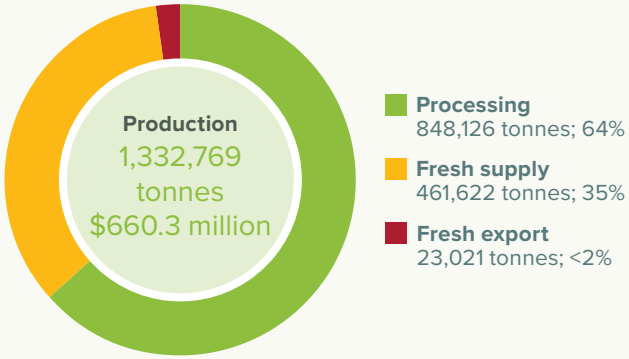
- Negative health perceptions and declining consumption
- Poor industry understanding of consumer needs
- Market access restrictions in northern Asian markets
- Lack of industry cohesion
- High cost of production and supply chain costs
- Low adoption of available R&D on-farm
- Inconsistent seed quality across growing regions
- Inconsistent agronomic advice and lack of extension specialists
- Increasing imports (frozen)
- Biosecurity risk and disease incursions
- Pressure on water availability.

Potato industry size and production distribution



2015/16 Approximately 880 growers

Potato supply chain and value 2014/15



1

SECTION ONE

Context

The Australian potato industry

Industry overview

The potato grower SIP includes production of potatoes for the domestic and export markets: for both frozen and crisping forms, and seed potatoes. ***Table 1*** provides estimates of the breakdown across all of these categories.

Table 1: Industry snapshot for year ending June 2015
(Source: ABS; Australian Horticulture Statistics Handbook 2014/15; IHS Global Trade Atlas; Processed potato SIP 2006, 2012; Fresh Intelligence analysis, 2016)

Production	1,332,769 tonnes 123,000 tonnes (seed)
Hectares under production	29,414 hectares (ABS)
Domestic fresh market	323,000 tonnes
Number of enterprises	880 (ABS)
Exports fresh (value)	$17.9 million
Exports fresh (volume)	23,021 tonnes (excluding seed)

Potatoes are the dominant vegetable crop grown in Australia and, by volume, the largest vegetable category.

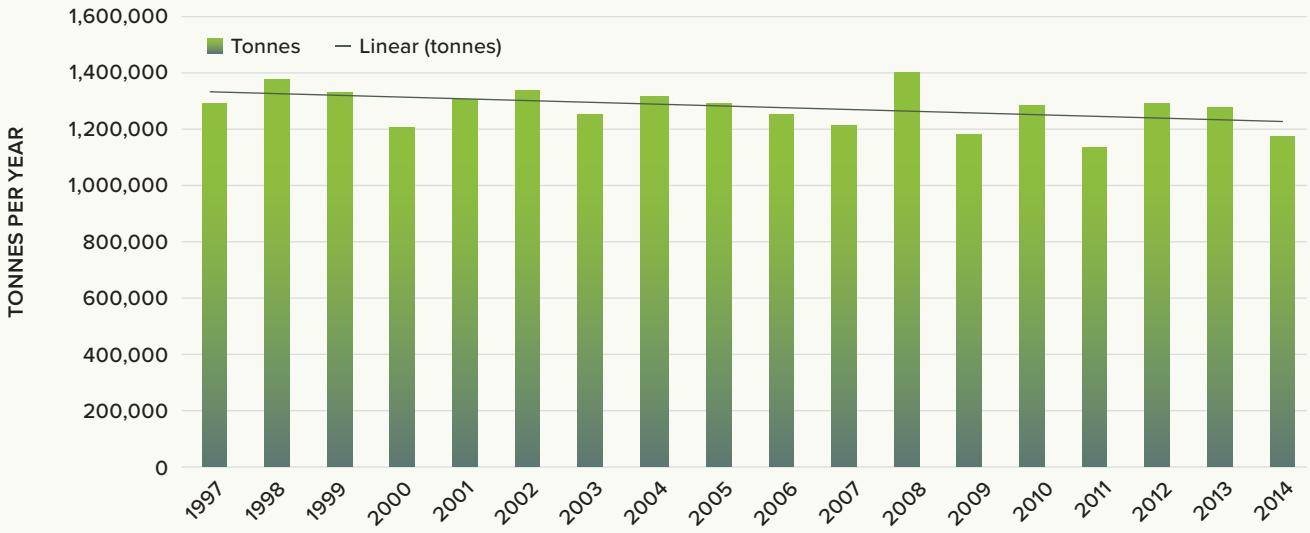
ABS estimates that there were 880 potato producers in Australia in 2014/15, planting 29,414 hectares and producing 1,154,503 tonnes of potatoes at an average yield of 39.3 tonnes per hectare[1]. The *Australian Horticulture Statistics Handbook 2014/15* estimates 2014/15 production to be 1,332,769 tonnes, with a Value of Production of $660 million. Australia is a small producer in global terms compared to China's production of 73 million tonnes[2].

Australia is a net importer of frozen processed potatoes. In the year ending 2014/15, Australia imported 133,681[3] tonnes of frozen product and exported only 14,605 tonnes[4].

Potatoes are the dominant vegetable crop grown in Australia and, by volume, the largest vegetable category.

1 ABS (2016). 71210DO003_201415 Agricultural Commodities, Australia, 2014/1
2 *Victorian Potato industry strategic plan 2015–20*
3 *Australian Horticulture Statistics Handbook 2014/15*
4 *Processed potato SIP 2016*

Figure 1: Australian potato production [trend] *(Source: ABS data via FAOSTAT; Fresh Intelligence analysis)*



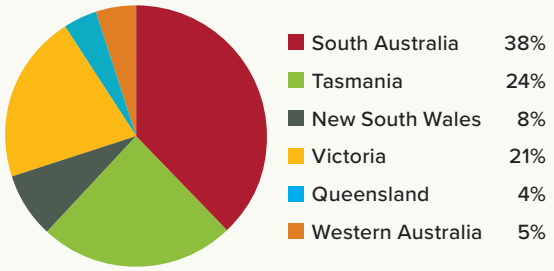
Potato supply factors

Production

Figure 1 provides the best estimates of the 17-year history of potato production in Australia to 2014. It shows that annual production fluctuates around 1.2 million tonnes, with significant year-to-year shifts due to seasonal factors. The most important point to note is that the production trend is moving steadily downward over the longer term. Processing and seed potato production remains fairly constant in volume terms, as do exports.

As ***Figure 2*** shows, the majority (62 per cent) of Australia's potatoes are grown in South Australia and Tasmania, although there are production areas Australia-wide where suitable soil, water and microclimates exist[5]. Potatoes are produced year-round in all states, with peak production from March to July in most states, while in South Australia, it is almost all year-around[6].

Figure 2: Production percentage by state and key growing areas *(Sources: Australian Horticulture Statistics Handbook 2014/15)*

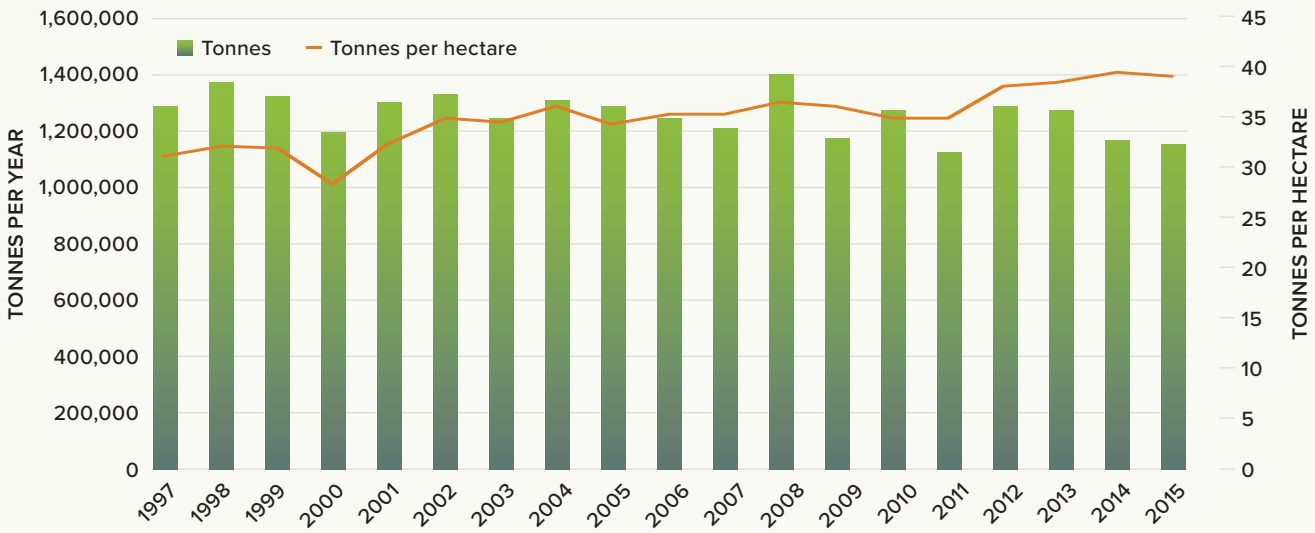


(Sources: ABS; AUSVEG[7])

(Sources: ABS; AUSVEG[8])

5 *Australian Horticulture Statistics Handbook 2014/15*
6 *Australian Horticulture Statistics Handbook 2014/15*
7 *Australian Horticulture Statistics Handbook 2014/15*
8 *Australian Horticulture Statistics Handbook 2014/15*

Figure 3: Production tonnes and yield *(Source: ABS data via FAOSTAT; Fresh Intelligence analysis)*



As ***Table 2*** shows, there were 880 commercial potato growers in 2014/15, down slightly from the year before. This number includes potato production for all types of usage, including fresh, processing and seed potato. Many growers supply more than one of these channels, although seed producers typically specialise in that form alone. The industry consultation (***Appendix 3***) reported the view that the industry is continuing to undergo a period of rationalisation, particularly in the washed, prepacked and processing sectors. This is reflected in the figures below.

Table 2: Number of potato growers
(Source: ABS data; Fresh Intelligence analysis)

	2013/14	2014/15
NSW	139	110
VIC	231	196
QLD	96	125
SA	99	86
WA	74	60
TAS	279	303
National	**918**	**880**

Yields

Figure 3 charts national production against average yield. It shows that average yields have been steadily trending upwards while, logically, the corresponding production area is trending downwards. Industry members indicate that this upward trend in yield is being driven by a combination of improved genetics and agronomy.

While this is not a reflection of all growers, Australian yields are, on average, lower than comparable producing nations. ABS data does not separate yields by type of potato or production use, therefore ***Figure 4*** includes ware, French fry and crisping potatoes, all of which have differing yield benchmarks by nature. As noted in the industry consultation, the average trend masks significant variation by region, season, time of year, grower, and even across a particular paddock.

Figure 4: Potato yields per hectare by state, 2013/14
(Source: ABS 2015 and ABARES (2014) Australian vegetable-growing farms. An economic survey 2012–13. Haydn Vale research report 14.15.)

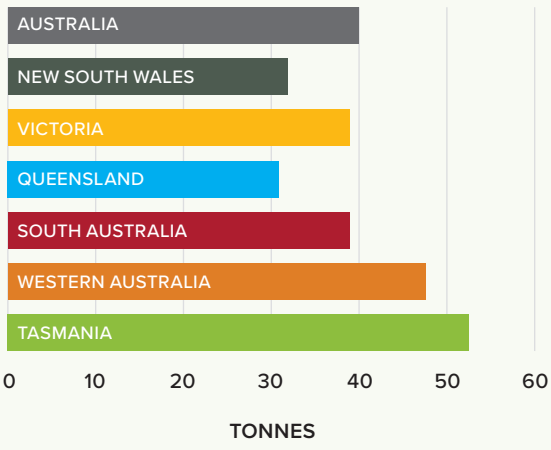
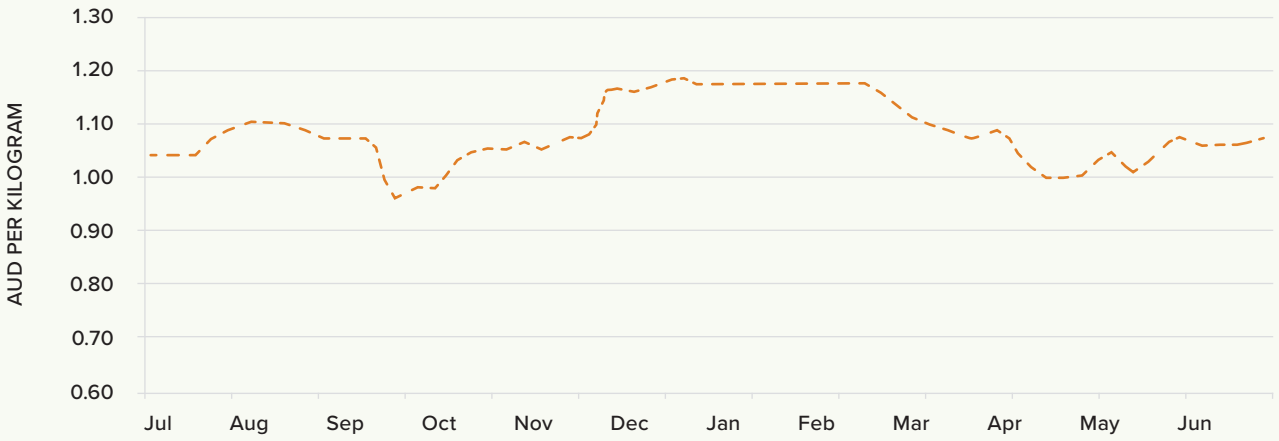


Figure 5: Average potato wholesale prices *(Source: Potato Market Profile, March 2014)*



Overall yields are highest in Tasmania due to better growing conditions and the fact that the state's growers predominantly produce for frozen processing, where the varieties used have higher yields than fresh or crisping potatoes. Official average yield for all potatoes (ware and processing) in 2013/14 was 40 tonnes per hectare, but some growers in Tasmania and Ballarat (Victoria) are achieving 60 to 70 tonnes per hectare and more. The average yield is around 55 tonnes per hectare for frozen processing potatoes, which is significantly behind comparable North American and New Zealand performance. Crisping growers tend to achieve a lower average yield (40 tonnes per hectare) because of factors such as: the cultivars, the quality required for the crisping process, the wide range of country that they are grown in, plus the fact that they need to be grown year-round and there is a wider use of in-ground storage. Certified seed growers achieve an average yield of 20 tonnes per hectare[9].

The key factors affecting yield variability include:

- Soil health and types
- Breeding
- Quality of seed (health and vigour)
- Pest and disease load
- Fertiliser management
- Water management
- Access to agronomic expertise
- Grower skill
- Weather/climate change.

Processors indicate that there is a major opportunity to lift average yield in overall potato production in Australia, in particular, reducing yield variability through better management practices.

The wholesale prices presented in the Potato Market Profile 2014 have been generated using a weighted price in each state to produce a national weighted average. For the year ending June 2012, potatoes had a wholesale price range of $0.99 to $1.34 per kilogram, with an average price of $1.16 per kilogram. In the following year, an average price of $1.08 per kilogram (note: wholesale market prices include freight to market and agent commission/profit), a decrease in average price of 6.6 per cent. Potatoes exhibit very steady wholesale pricing, due to their relatively consistent supply and demand[10].

Supermarkets secure their potato supply under long-term contractual arrangements, under which growers produce to a weekly supply program. Most of the supermarket contracts have 'rise and fall' pricing clauses linked to wholesale market prices. This means oversupply on the speculative wholesale markets can influence prices for contracted supermarket production.

Based on industry anecdotal information, farm-gate prices have remained stable over the past 10 years. If this is correct, given the substantial cost of production increases, it means that prices have therefore declined significantly in real terms.

9 Verbal information, ViCSPA, 2016
10 *Potato Market Profile March 2014*, prepared by Freshlogic

Figure 6: Unit value of potato exports *(Source: ABS data; Fresh Intelligence analysis)*

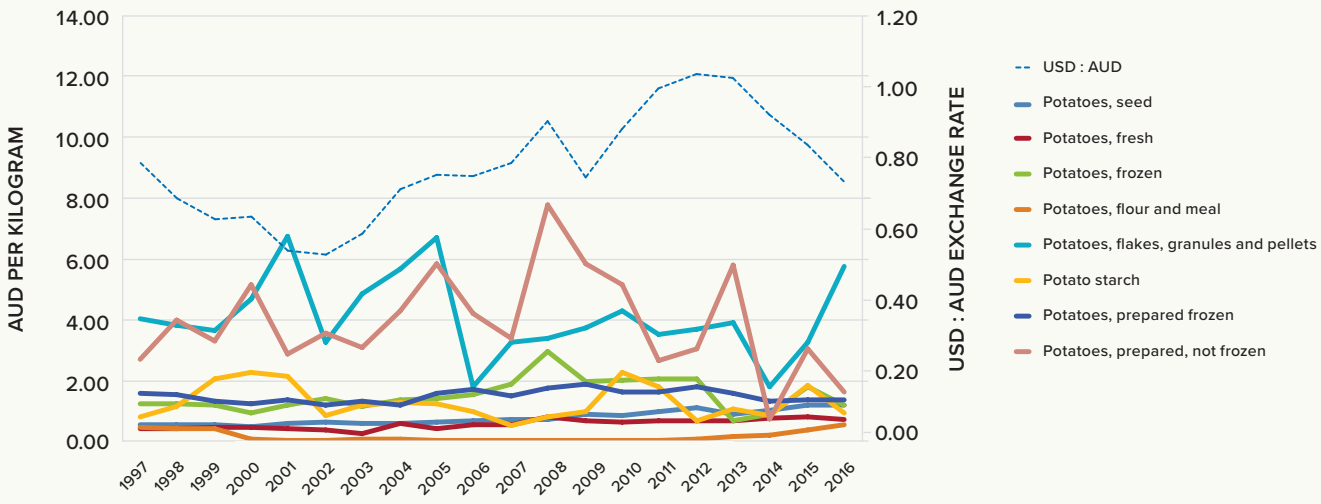


Figure 6 compares the Free On Board (FOB) export prices for the various forms of potatoes over the past 20 years and their relationship to Australian dollar movements. Obviously, the prices received for processed potatoes include the processing costs. As the diagram indicates, the vast majority of exports comprises processing (crisping) potatoes exported in bulk and seed potatoes. Although there is significant year-to-year variability, in most years net export prices are superior to domestic fresh prices. The other point to note here is that the unprocessed export potatoes (particularly crisping and seed potatoes) are less sensitive to the exchange rate.

Cost of production

The publicly available data on cost of production is sparse and of doubtful accuracy. The consultants have been given access to detailed cost of production data from anonymous industry sources. It indicates that the cost of production of processing potatoes falls within a range of $12,000 to $14,000 per hectare, depending on the area. This range includes all costs, including depreciation and land.

In the global context, Australian production costs are substantially higher than the other major potato-producing countries. Australia's average cost of potato production is up to 50 per cent higher than the United States and Europe. Because the major processors are part of multinational businesses, they are benchmarked against their counterparts globally. This enables them to report that the cost of raw processing potatoes is higher in Australia than most other countries (note: the supply situation in China differs to other markets in that there is a shortage of raw potatoes, so it is more cost effective to import finished product from the United States). Various studies have also been conducted in Australia on the cost of processing potatoes. ***Table 3*** outlines relative cost differences, as supplied by one of the global processing companies.

Table 3: Average processor price
(Source: ABS data; Fresh Intelligence analysis)

Country	Processor price USD	Comments
United States	(160–170) 208	Typical, but with some open market variation
India	147–190	Open market extremely volatile, and frozen processors must contract 100 per cent
China	230–300	Prices vary, depending on end market. Mostly grown to contract. QSR raw potatoes are in short supply so growers are paid a premium. Grower input costs are higher due to the greater need for chemicals
Europe	176	Extremely volatile, depending on weather during growing season. A large volume of non-contract product, so prices are influenced by open market trade
Australia	230–250	All contracted; price varies a little according to tuber quality

Factors that contribute to Australia's higher cost of production are explained in ***Table 4***.

Table 4: Contributors to the high cost of potato production in Australia

Cost area	Issue
Labour	Australia's labour costs are more than double those of competitor countries when penalty rates and flow-on costs are included. Furthermore, the smaller scale of potato production in Australia results in lower rates of labour productivity.
Yield	Although Australia's best growers are achieving yields similar to the best overseas, the average is considerably less and varies greatly seasonally, regionally, and even within paddocks.
Input cost	Australia has substantially higher input costs, largely due to lack of scale and the amount of competition in the supply of key inputs such as chemicals, fertiliser, fuel and equipment.
Seed	Seed is 20 per cent of the cost of production, but has huge bearing on yield. 80 per cent of processing growers are using certified seed. Seed cost in Australia is higher than in other countries, and availability is often an issue because of seasonal conditions.
Scale	Australian average acreage is smaller than New Zealand, United States and Canada. The economies of scale in potato production are substantial, particularly with equipment utilisation and the ability to justify the biggest and best technology.
Farming models	In Europe, the small-scale disadvantage is offset by factors such as use of contractors, machinery collectives, collective farming, cheaper land, and more-accessible water. Australian growers are reluctant to adopt other business models, such as those used in Europe.
Geography	A large proportion of potatoes are grown in areas of undulating hills (such as Tasmania and Ballarat) that are subject to high rainfall, limiting the ability to use large-scale equipment, slowing the speed of operation, and adding substantially to cost.

Adding to the pressure of the high cost of labour are the following associated workforce issues[11]:

- An ageing workforce
- Competition for labour and skills from the higher paying mining sector
- A poorly marketed industry sector, in terms of employment opportunity
- A workforce with lower levels of qualifications
- An increasingly sophisticated, highly technical workplace requiring a more highly skilled and educated workforce
- An overall decrease in the intake of students into agricultural courses at secondary and tertiary levels
- Reliance on backpackers in the absence of local casual labour
- Challenges securing 457 visas
- A high burden of compliance on OH&S and other labour issues.

Australia's significantly higher cost of production is an issue on two fronts: export competitiveness; and import replacement of processing potatoes. For exporters, Australia competes head to head with lower-cost producers (notably China, Europe and the United States) in most potential open markets. In processing potatoes, the Australian market is exposed to imports of both frozen and crisping form. French fries, being relatively cheap to sea freight, have become an internationally traded commodity. QSR restaurants have driven this global trade. They are highly price driven, negotiating down to decimal points of cents per kilo for supply contracts. The two major Australian processors, Simplot and McCain Foods, are multinational operators with processing facilities around the world so they can readily source supply to service these QSR contracts from their lowest cost factory at the time. Imports are also highly sensitive to the exchange rate.

Realistically, Australia will never be a serious contender in processed potato exports because of this cost disadvantage, but it remains important to reduce costs, at least to remain in line with the gains being made in other major producing countries and to guard against import replacements to the best extent possible.

Industry profitability

The data on industry profitability is sparse and of doubtful accuracy. The following analysis is intended to give some indication of the current situation.

A simple calculation to establish an indicative cost of production can be made by establishing a break-even price. At a supposed cost of production of $12,000 per hectare, divided by the average industry yield of 40 tonnes per hectare, the break-even price would need to be $300 per tonne, or 30 cents per kilogram. However, for fresh potatoes the yield data does not take into account the fact that on average, only about 70 per cent of the harvested tonnage is of a marketable quality, effectively making the marketable yield 28 tonnes per hectare. This would mean the break-even price would be more like $429 per tonne. The equivalent break-even price for a $14,000 per hectare cost would be $500 per tonne bulk, unpackaged and without factoring freight to market. Based on these figures, there would be many growers who would be at best only marginally profitable. This crude calculation does not take into account the fact that many growers would have higher per hectare costs and would achieve lower-than-average yields.

The situation for processing growers is significantly better, even though costs of production are similar. The average deliverable yield for French fry growers is 55 tonnes per hectare, which equates to $218 per tonne at a production cost of $12,000, and $254 per tonne for a $14,000 per hectare cost. The indicative contract prices for processing are considerably higher than this, suggesting reasonable gross profits.

11 http://www.potatoessa.com.au/industry/workforce-planning.html

Figure 7: Total potato supply versus trend [including imported processed] *(Source: ABS data; Fresh Intelligence analysis)*

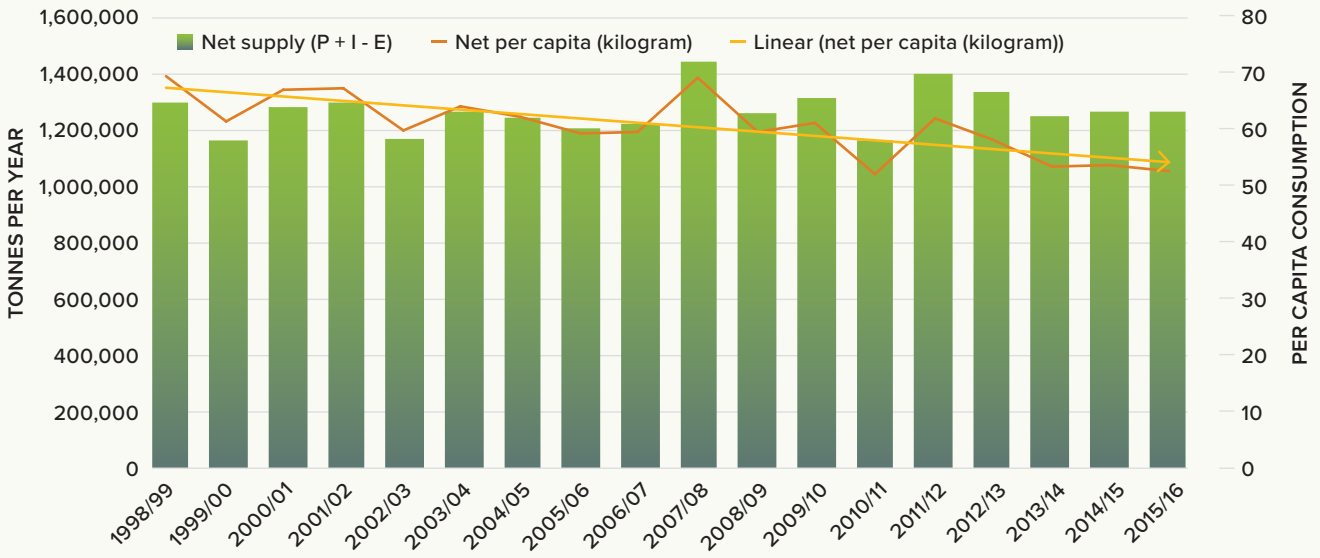
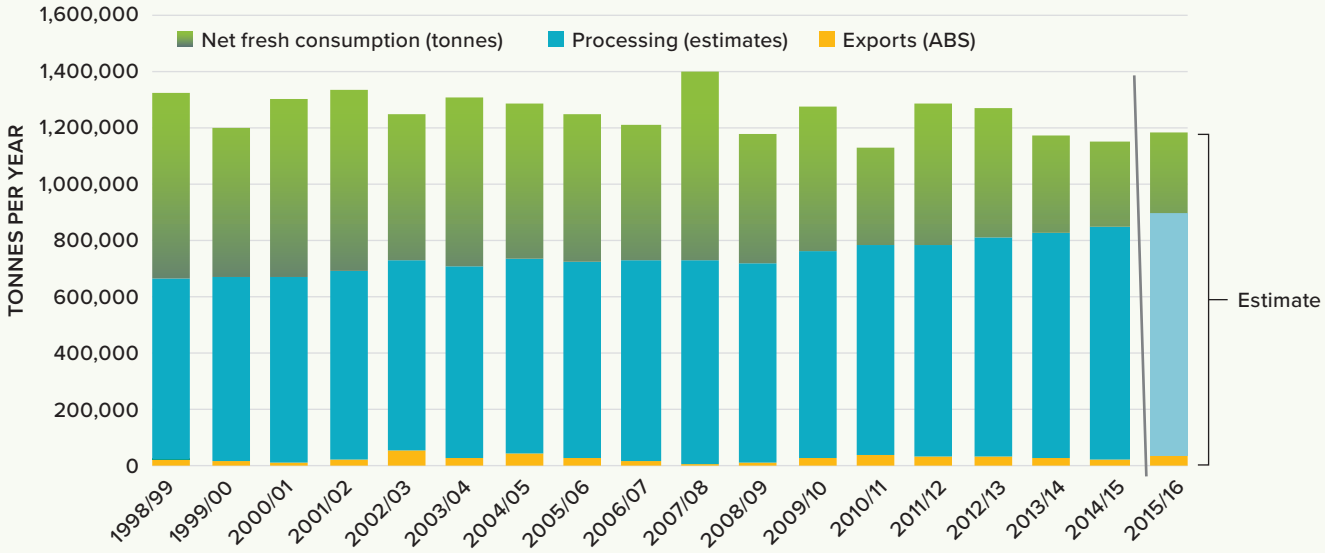


Figure 8: Australian potato production dispersals *(Source: ABS data; Australian Horticulture Statistics Handbook 2014/15; Processing Potato SIP 2006 & 2012; Fresh Intelligence analysis)*



Markets

Dispersal by channel

The *Australian Horticulture Statistics Handbook 2014/15* estimates production in 2014/15 to be 1,332,769 tonnes. Of this, 461, 622 tonnes went to fresh supply, 23,021 went to export, and 848,126 to processing. The Potato Processing Association of Australia (PPAA) indicates that the processing intake in 2015 was 860,000 tonnes, based on data provided by its members.

Total potato consumption is declining marginally at 1.6 per cent per year, compared to net fresh potato consumption, which is declining at a faster rate of 6.1 per cent per year. This means that consumers are eating more processed potatoes, either produced domestically or imported. The processed potato segment includes all fast food potatoes, such as French fries, from QSR outlets as well as imported products such as potato wedges. It also includes retail frozen products.

Figure 8 provides a 15-year history of dispersals between fresh and processing potatoes that have been extrapolated from various sources. It indicates that processing intake has been steadily increasing, whereas the domestic fresh market has been in steady decline. Exports have fluctuated at a very low level.

Fresh domestic market overview

The majority (approximately 80 per cent) of fresh potatoes are distributed through retail outlets. Supermarkets (approximately 70 per cent) hold the majority of retail market share[12] [13]. Relative to overall fruit and vegetable market share, independent green grocers undertrade in potatoes[14], which indicates, perhaps, that consumers see potatoes as a commodity with price being an important purchase factor. An estimated 15 per cent of fresh production is sold through food service channels, and five per cent is exported.

Domestic fresh supply chain trends

Over the past 20 years, the supermarket channel has transitioned into a closed-loop supply chain, with most of the product being sourced directly from growers through contractual arrangements based on long-term supply programs linked to a forecasted weekly demand. Accordingly, the volume of potatoes sold through central wholesale markets has steadily declined. The role of markets has shifted from being the mainstream supply channel to a secondary channel plus a clearinghouse for product that is surplus to supermarket requirements, or does not meet the supermarkets' tight quality standards.

The trading dynamic has been intensely price competitive between the two major supermarkets. The entry of the super-discounters Aldi and Costco has brought another wave of downward pressure on prices of processed and fresh products.

This supermarket dominance has driven a period of consolidation within the washed sector. Industry sources estimate that 70 to 80 per cent of washed potatoes are provided by the three integrated grower/washer/packer/marketer companies that are large enough to offer the supermarkets national, year-round supply contracts and the required service levels. As well as growing to order on their own farms, some of these vertically integrated potato businesses source from contract growers. This closed-loop trading environment has made it difficult for small- to medium-enterprise (SME) growers to achieve economies of scale because they cannot get access to the volume inherent in a supermarket contract.

The supermarkets have driven the introduction of tighter quality standards and tolerances, resulting in a higher rejection rate on fresh potatoes. This has put more cost pressure on the industry.

A large and increasing proportion of washed potatoes traded in the supermarket channel are Plant Breeders Rights (PBR) varieties, many of which are marketed through exclusive trademark deals between the marketer and retailer. While these varieties have differentiating features, marketers have not managed to leverage these PBR varieties into brand propositions.

The commodity status of potatoes, the strong competition in the market place, and the power of supermarkets have driven industry returns down to the point where some SME businesses that do not have the required scale, or cannot access the PBR varieties that offer production and consumption advantages, have become unprofitable.

As from October 2016, the Western Australian Potato Corporation was deregulated, which is expected to result in a further period of industry consolidation in that state, with many smaller growers already indicating that they plan to exit the industry or retire.

Consumer behaviour

Potatoes are an Australian staple with an 87 per cent household penetration (*Australian Horticulture Statistics Handbook 2014/15*). The average purchase weight is 1.5 kilograms, and consumption per capita is believed to be 19.4 kilograms (based on the volume supplied).

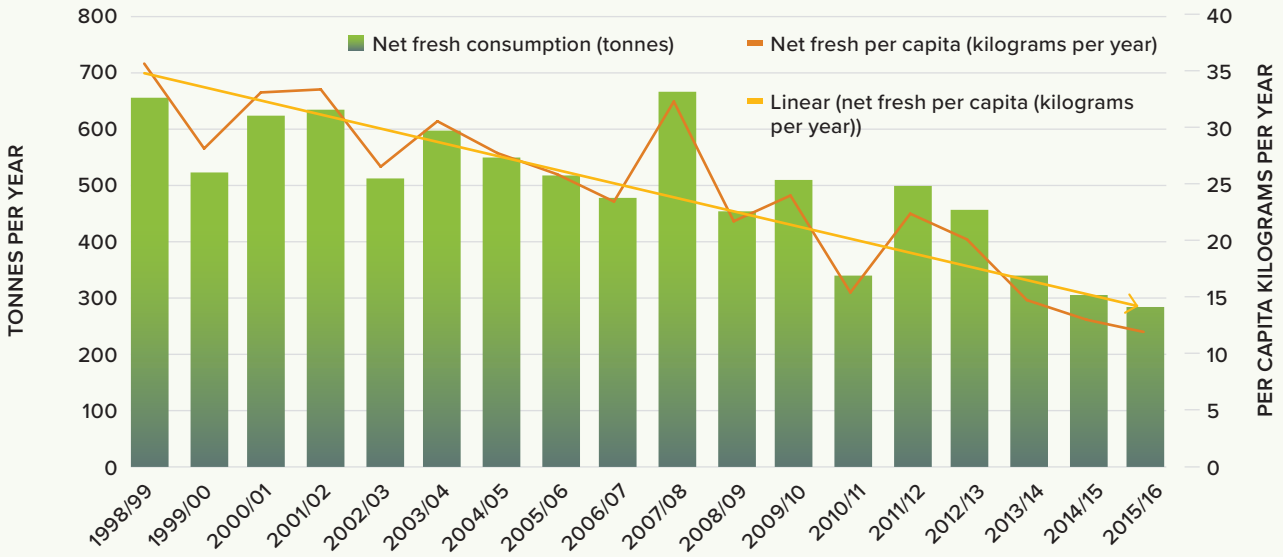
Figure 9: Key consumer metrics
(Source: Australian Horticulture Statistics Handbook 2014/15)

In the year ending June 2013, potatoes were the third most frequently purchased fresh vegetable, based on weekly purchase patterns, and were consistently in the top three vegetable products over the past 12 months[15]. However, as indicated in ***Figure 10***, over the longer term, Australia's decline in consumption is similar to that of Europe's. The FAO estimates that between 1995 and 2005, annual per capita consumption of potatoes decreased from 55 kilograms to 53 kilograms.

12 *Potato Market Profile March 2014*
13 *Horticulture Statistics Handbook 2014/15*
14 *Potato Market Profile March 2014*
15 *Potato Profile March 2014*, prepared by Freshlogic for DEDTA

Figure 10: Net Australian fresh potato consumption

(Source: ABS, Australian Horticulture Statistics Handbook 2014/15, Processing Potato SIP 2006 & 2012; Fresh Intelligence analysis)



Consumption decline

Industry believes that the key explanation for the decline in consumption is the shift towards low-carbohydrate diets in response to rising obesity and diabetes. It must also be assumed that the multicultural nature of Australian cuisine means that rice, pasta and the wider variety of bread products now available also influence consumption because they compete with potatoes for 'share of stomach'.

The industry has undertaken a number of consumer studies over recent years to shed light on the consumption downturn. Consumer research by Potatoes South Australia reveals that potatoes are seen as unhealthy and inconvenient, and no longer the side dish of choice[16]. Research in 2012 by Western Potatoes Ltd on the Western Australian market found low awareness of varieties, and that purchase decisions were based on basic criteria, such as skin colour or whether they are washed or brushed. How the potato looks is vital. The consumer is looking for potatoes that are smooth, evenly shaped, firm, non-sprouting, without blemishes and without deep eyes. Potatoes are still seen as a cost-effective accompaniment to the evening meal[17].

Younger groups in particular are eating fewer serves of potatoes per week as they are presented with a plethora of other more convenient carbohydrate options. Consumption is skewing to an older ageing population, a trend that is a threat to the industry in the long term.

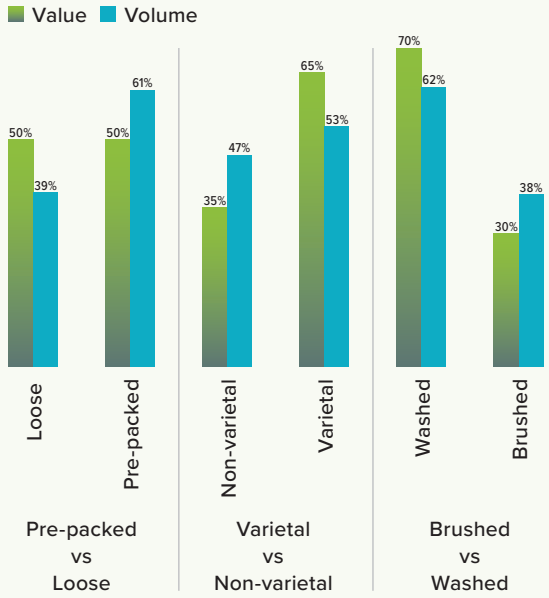
Research 2012 by Western Potatoes Ltd on the Western Australian market found low awareness of potato varieties. Industry consultation confirms the view that awareness of the various potato varieties and their fitness for purpose (such as roasting, mashing, salads, curries and gnocchi) is low. The eating experience could be vastly enhanced by improving consumer knowledge about the potatoes that are best for a particular purpose.

Industry has tended to promote potato use in relatively traditional European recipes, such as soup or a side dish to a traditional meat-and-three-vegetable meal (such as potato salad, leek and potato soup, potato dauphinoise). This is only part of the modern Australian diet. More emphasis needs to be placed on promoting dishes that the next generation of Australians are eating, for example, single-serve salad bowls, patatas bravas, skordalia, vegetarian curries, gnocchi, croquettes and frittata. One of the fastest growing demographics in Australia is Indian, which is due to international student migration. Potatoes are widely used in Indian cuisine in curries, dosas and samosas.

With vegetarianism on the increase in Australia, there is the opportunity to promote potatoes heavily in vegetarian recipes.

16 Potatoes South Australia http://www.potatoessa.com.au/consumers.html
17 Potatoes South Australia http://www.potatoessa.com.au/consumers.html

Figure 11: Retail sales contribution by variety and type
(Source: Potato Market Profile March 2014)



Consumer purchase behaviour

According to Potato Market Profile 2014[18], there is a high frequency of promotional activity for potatoes, attributed to the relative security of year-round potato supply and that potatoes are a staple product for many households. Potatoes had the highest share of retail promotions for fresh vegetables in 2012/13, comprising 14 per cent of all fresh vegetable advertisements[19].

Figure 11 provides a breakdown of retail sales of each potato type by value and volume. It shows that prepacked potatoes account for 61 per cent of volume but 50 per cent of value, indicating that prepacks are sold at a lower average price. A more significant point is that potatoes sold by variety sell at a significant premium over non-branded. The split between washed and brushed potatoes shows a clear consumer preference for washed at 62 per cent of volume sold and returning 70 per cent of the value. This clearly indicates the extent of the consumer move away from brushed.

Aside from Western Australia, a broad range of potato varieties is available in most states, but only a few are marketed with an attempt at differentiating their offer. The same research (***Figure 11***) indicates that where varietal names are used, higher margins are earned[20]. While some independent retail outlets provide information on fit-for-purpose potatoes, the perceived difference is not warranting a premium, so growers do not have an incentive to grow specialist products, as this is deemed riskier than producing all-purpose products[21].

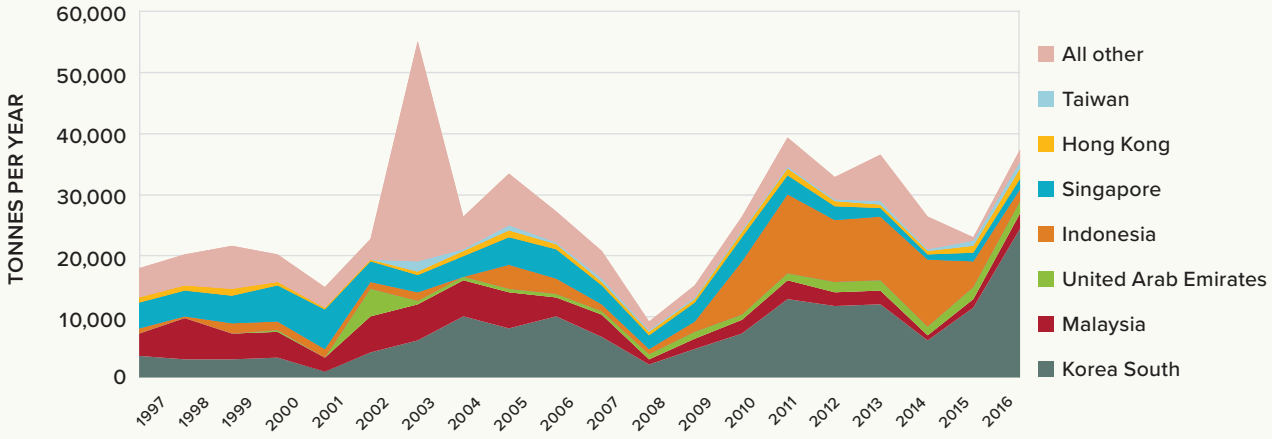
Industry research indicates that potato presentation is a vital purchase feature, which is why supermarkets have driven the appearance criteria in their specifications, perhaps at the expense of eating experience. The consumer is looking for potatoes that are smooth, evenly shaped, firm, non-sprouting, without blemishes and without deep eyes.[22]

18 *Potato Market Profile 2014*
19 *Potato Market Profile March 2014*
20 *Potato Market Profile March 2014*
21 *Potato Market Profile March 2014*
22 Potatoes South Australia

Key trends: French fries and frozen categories

- The frozen potato sector is growing modestly, whereas the crisping sector is growing strongly
- Simplot Australia and McCain Foods are the two main producers of French fries. Product grown by Simplot in Tasmania supplies its factory at Ulverstone. McCain Foods has processing facilities at Smithton, Tasmania and Ballarat, Victoria. In addition to local sourcing, McCain Foods also procures product from the Penola region in South Australia and Riverina, New South Wales. There are also a number of other smaller but significant operators
- Although total consumption of potatoes in Australia is in long-term decline, frozen processed potatoes are growing in share largely because they are convenient. The share breakdown of frozen products across main market channels is food service 79 per cent (predominantly quick service restaurants (QSR)), retail 19 per cent, and export four per cent
- Frozen potato product categories are extremely price sensitive and highly competitive as they are primarily sold through quick service restaurants and supermarkets
- Market growth is at twice the rate in value growth than volume growth, indicating a shift from commodity fries to higher value specialty products, such as coated products and wedges. Private label still accounts for 19 per cent of retail share and is growing at the expense of branded product
- McDonalds and Yum! Brands Inc dominate QSR. These global players have exacting standards and tender for regular supply, therefore, Australian companies must be price competitive with the rest of the world because French fries can be easily and cheaply sea-freighted. It is often cheaper to ship frozen products from overseas than within Australia. The main supply companies for these QSR giants in Australia are Simplot and McCain Foods. Both have processing facilities around the world and frequently source product from the most cost-effective country to fulfil Australian contracts. Some smaller European producers are also taking market share at the lower end of the fast food market (for example, fish and chip shops, and small independent hamburger chains). As a result, import share of total frozen potato products is growing while exports are relatively flat. Australia faces strong competition on the domestic French fry market from imports from New Zealand, North America and Europe
- Despite the consumer shift to the higher value specialty products, private label still accounts for 31 per cent of sales volume, exemplifying the price competitiveness in this category. Although much of the private label product is imported, the two major Australian retailers are consciously shifting more private label contracts to domestic suppliers because of consumer pressure and in light of forecasts of a low Australian dollar. Even the recent pressure on supermarkets to support 'Australian grown' does not apply to frozen potato categories to the same extent as frozen vegetables
- Since 2006, Australia has been an importer of frozen products. Imports are growing strongly as exports decline. New Zealand is the biggest supplier, followed by the United States and Europe. Oversupply in Europe often leads to dumping of low-cost frozen products on the Australian market. Strategic investment by the Belgian government in frozen food processing has made this country a powerhouse in frozen categories. Many smaller processors are more agile than the major processors so can pick up niche markets in Australia relatively easily with cheaper product
- Despite overall market growth, Australian market share is relatively flat as imports are growing. The frozen sector is losing market share to imports from New Zealand, North America and European producers who are all at a lower cost. However, the crisping sector has less exposure to import competition because of higher freight costs and shorter product shelf life. Because crisping products are usually retail products, they cannot be as easily dumped on export markets the way frozen, food service French fries can
- Australia's substantially higher per hectare and per tonne cost of processing potatoes is due to:
  - Lower average yield
  - Higher input costs
  - Smaller scale
  - Lower capital utilisation
  - More difficult growing conditions
  - High labour costs
- With limited prospects to lower costs, R&D focus needs to be on growing yield per hectare, placing emphasis on consistency in yield across properties and within fields
- Realistically, given Australia's cost disadvantage, opportunities to grow exports of processed potatoes are limited (except for near-Pacific neighbours). In this respect, the focus of the strategy must therefore be on protecting the domestic market from import replacements
- There are about five significant crisping processing factories throughout Australia, mostly along the east coast in Sydney, Brisbane, Adelaide and a smaller facility in the Yarra Valley, Victoria. Because it is less desirable to store crisping potatoes, they are sourced from a wide geographic growing area nationwide. They have an extended growing season because industry needs to source freshly harvested potatoes year-round
- The crisping category is also highly competitive although less exposed to import replacement due to a higher cost of shipping. Being a lightweight but very bulky product, crisps are costly to ship. Generally, most snack products are produced close to where they are consumed (except for specialty snacks)

Figure 12: Fresh potato exports by market, 1997 to 2016 [20 years]
(Source: ABS data via IHS Global Trade Atlas; Fresh Intelligence analysis, 2016)



- The snack market is growing strongly in volume and value. Potato snacks are predominantly sold through supermarket and route trade channels, such as petrol stations, convenience stores and cafés. A significant part of the market is speciality snacks, such as Kellogg's Pringles. Kellogg's holds over 10 per cent market share yet does not process in Australia
- Total imports of potato products have increased steadily over the last 20 years, mainly from Europe, the United States and Malaysia. The increase is mainly due to multinational intercompany trade, while exports have remained relatively static. Because volumes are sensitive to exchange rates, imports of crisping potatoes peaked in 2013 when the Australian dollar was above parity.

Export overview

Relative to other horticultural categories, potato is a small export category, with only approximately two to three per cent of production being sent offshore (***Figure 12***). In 2015/16, Australia exported 39,472 tonnes, comprising 37,212 tonnes of fresh potatoes (predominantly for crisping) and 2,260 tonnes of seed[23]. The value of fresh potato exports in 2015/16 was $25,940,498[24]. South Korea accounts for 65 per cent of Australia's fresh potato exports, all of which are for processing. In fact, Australia's market access to South Korea is only for processing potatoes, which move through a quarantined closed-loop supply chain. Australia can be competitive in the South Korean market only for a two-month window in the American counter season (January, February), at which time the tariff is temporarily lifted. For the rest of the year, the tariff is prohibitive. The South Korean crisping market is showing strong growth.

Imports of fresh potatoes are negligible, comprising small amounts of seed for propagation.

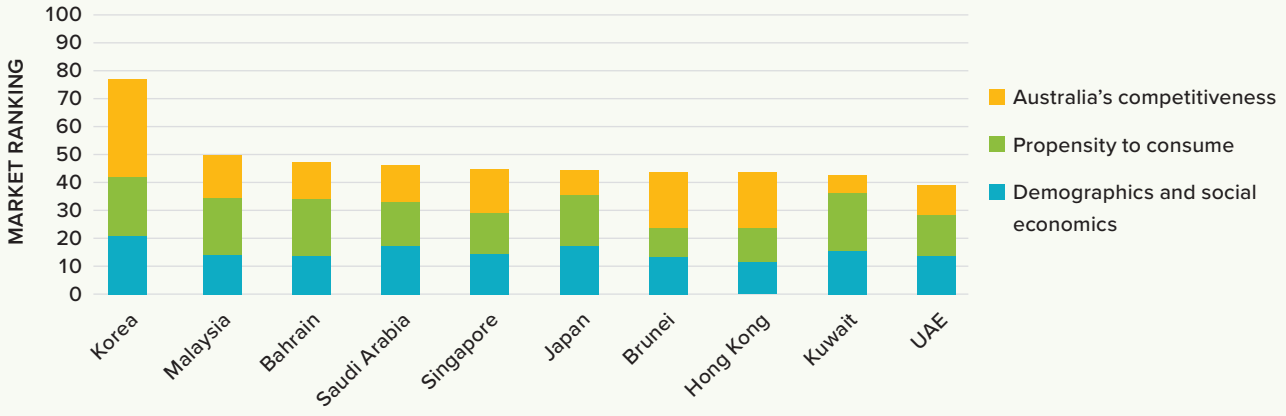
Australia also exports relatively small and declining quantities of potatoes across the South East Asian region to markets including Malaysia, Indonesia, Singapore, Hong Kong, and small volumes into the United Arab Emirates and Taiwan. As essentially open markets, they are highly price sensitive because these countries have the ability to source from lower-cost producing countries, particularly China and the United States whose landed prices are considerably lower than Australia. In these markets, Australian product can be competitive only in high-end, niche supermarket and food service channels that are prepared to pay a significant premium for the perceived quality and product integrity. Predominantly, this product is prepacked chat and other gourmet lines.

There is anecdotal evidence of growing trade (seed and crisping) into Indonesia to service the Frito-Lay processing facility that was relocated from Western Australia. The industry opinion is that the while the seed market to Indonesia may be sustainable, potentially the crisping potato demand will reduce once the local growers have built capability.

Potato exports are extremely volatile from year to year, largely because of seasonal conditions, crop failures in other markets, and domestic pricing. Aside from the South Korean crisping contracts, much of the export trade is opportunistic, rather than regular supply.

23 *IHS Global Trade Atlas*
24 *IHS Global Trade Atlas*

Figure 13: Market potential index rating – potatoes *(Source: Horticulture Innovation Vegetable Industry Export Market Development Strategy 2016)*



Future export potential

Based on the analysis in the Hort Innovation Vegetable Export Market Development Plan, there are some limited export opportunities for Australian potatoes, primarily in processing and seed, but also for fresh potatoes in niche, super-premium markets.

The best prospect markets are outlined in the Market Potential Index (MPI) chart (***Figure 13***). The index is a methodology developed by McKinna et al. to rate and rank export markets. A fuller explanation of the index can be found in the Vegetable Industry Market Development Export Strategy. In summary, it is based on a standardised algorithm that includes a number of weighted factors that have proven to be key export drivers. Broadly speaking, these are grouped into three subsets:

1. Demographics and socio-economics, for example, population size and distribution, affluence, affordability, development of supermarket sector
2. Propensity to consume, for example, size of market, per capita consumption, fit with diet and eating styles, reliance on imports
3. Australia's competitiveness in this market, for example, price competitiveness and whether other non-price factors exist, such as location, quality and seasonality.

The MPI by country is followed by a brief summary of each export market. More details on each market from the industry export strategy are presented in ***Appendix 5***. The scores in the index should be interpreted as follows:

- Scores 50 or above = Australia can be competitive in mainstream markets
- Scores 40 to 49 = Australia can compete only in higher end niche markets and/or in seasonal windows
- Scores below 40 = Australia is not competitive except for short-term, opportunistic market gaps.

South Korea

All of Australia's exports to South Korea are processing potatoes for crisping and snacks. Local Korean varieties are not as suitable for processing. Only Australia and the United States have market access to South Korea for potatoes. Despite a disadvantage with shipping relative to the United States (because of seasonality), Australia can be competitive here during the seasonal window when the tariff is temporarily removed, because growers are able to supply directly from harvest, whereas the United States has to ship product from storage. Fresher potatoes have better processing characteristics and conversion rates. Potatoes are shipped loose in containers, which greatly reduces the freight and handling cost. Australia is not competitive in this market in the other months when the full tariff applies. Potatoes from Victoria, Western Australia and Queensland are prohibited from this market on phytosanitary grounds.

There are no real opportunities for ware potatoes in South Korea because of the high tariffs and its self-sufficiency in fresh varieties. This situation will not change under the Korea–Australia Free Trade Agreement (KAFTA).

Malaysia

Malaysia accounts for six per cent of Australia's potato exports, making it a niche market. Because it is also an open market, Australian exporters compete with Chinese suppliers who have a significant cost advantage. Australia's trade is in higher-end supermarkets, much of which is prepacked, washed chat potatoes. Trading is opportunistic rather than ongoing, regular supply contracts. At present, this is an unregulated market, but there is an expectation that phytosanitary import requirements may be applied in the near future.

Bahrain

Bahrain is a small, niche market for Australia, with product currently sold to higher end segments. Australia's market share is miniscule. This market is price driven because of low-cost product from Lebanon and Pakistan being available. Although Australia has a minute share of the market, it is growing strongly.

Table 5: Indonesia import of fresh potatoes (070190) *(Source: BPS Statistics Indonesia via ITC Trade Map; Fresh Intelligence analysis 2016)*

	2011	2012	2013	2014	2015	5 year trend	2015 share
	tonnes	tonnes	tonnes	tonnes	tonnes		
Germany	5,272	2,298	7,238	6,606	13,560	27%	36%
Canada	11,928	9,296	21,000	5,992	11,450	-1%	30%
Egypt	0	2,228	4,950	8,020	5,968	++	16%
United States	316	6,176	8,181	5,264	3,784	86%	10%
Australia	9,414	11,521	11,647	10,979	1,746	-34%	5%
China	40,206	10,207	2,157	1,410	500	-67%	1%
All other	11,283	4,862	1	1,736	1,028	-45%	3%
World	**78,419**	**46,588**	**55,174**	**40,007**	**38,036**	**-17%**	**100%**

Saudi Arabia

Saudi Arabia is also a small, niche market for Australia with product going to higher end outlets. Australia's market share is miniscule. The price in this market is set by local and low-cost product from Lebanon.

Singapore

Singapore is a mature market showing almost no growth. As a niche player, Australia holds only 2.4 per cent of the market, which is mostly prepacked, washed product, largely chats. Being an open market, Singapore is probably the most competitive in the world. Although the market is flat, the premium segments have been growing strongly, driven by promotions by the US Potato Board, which has been at the expense of Australian product.

Brunei

Brunei is a small, flat market of which Australia has a 14 per cent share. Australia's trade is in high-end outlets where demand is driven by the fact that customers distrust the Chinese product.

Hong Kong

Australia holds three per cent share of this market, which is predominantly prepacked product going to high-end supermarkets. This trade is seasonal. Hong Kong sources potatoes from all over the world, making it highly competitive. The market is flat.

United Arab Emirates

Australia holds less than two per cent of the United Arab Emirates market, which is declining. Australia is not price competitive against the lower cost product from Lebanon and Egypt. Exports to this market are highly seasonal.

Japan

Japan has been noted as a market with great potential for crisping potatoes. The size of this market opportunity is estimated by industry to be 20,000 tonnes, valued at about $10 million per annum. At present, Australia has no market access into Japan. However, a strong case could be made on the basis that the biosecurity threat to Japan is minimal. Processing potatoes move through a strictly controlled supply chain through approved processing plants, on the same basis that Australia has access into South Korea. The United States has market access, with identical protocols as for South Korea.

Indonesia

Indonesia did not score as well in the MPI index for fresh potatoes, even though market access is available. There are several reasons: a high level of self-sufficiency; the high (25 per cent) tariff; and the fact that the trade is subject to import quota and market access restrictions. Between 2010 and 2015, Australia held about 25 per cent market share but it has dropped away sharply. As indicated in Figure 13, market share has been lost to the United States and Germany, which is surprising given their location disadvantage and freight costs relative to Australia.

The industry consultation suggested that reasons for the decline in the Indonesian market were largely due to commercial decisions by exporters, such as low returns and a difficult trading environment. Industry speculates that the United States and Germany are dumping low-priced potatoes into this market.

The best opportunities in the Indonesian market would appear to be in seed and crisping. Seed is duty free but subject to stricter market access requirements. Seed potatoes from areas other than Western Australia must be free from tomato spotted wilt virus and grown in an area not subject to potato cyst nematode (PCN). Potatoes from areas known to have PCN, such as Victoria, are subject to treatment such as fumigation and washing. Seed potatoes grown in Western Australia must be from certified seed potato growers.

Market access

Figure 14 provides the market access status for potatoes as at the time of drafting this SIP. It should be noted that market access is extremely fluid; it can change at any time. The vast majority of the markets for potatoes have reasonably open access, except for Japan, the United States, New Zealand, India and China. Australia's access to Thailand is for processing potatoes only; fresh are prohibited. Victoria and Western Australia are prohibited from South Korea and Taiwan.

As was highlighted earlier, a market access negotiating priority is access for processing potatoes to Japan, which represents an opportunity estimated at 20,000 tonnes and which, because of the precedent in South Korea with the United States, should be relatively easy to negotiate.

Figure 14: Australian potato export vs key competitors by market (Export volume (tonnes) 2015)

(Source: ABS data via ITC Trademap, Fresh Intelligence analysis)

		Competitor exports			
	Australia (tonnes)	China (tonnes)	United States (tonnes)	Egypt (tonnes)	New Zealand (tonnes)
UNREGULATED MARKETS					
Malaysia	1,619	121,892	12,956	1,853	*129*
Singapore	1,589	15,874	4,762	-	*255*
Hong Kong	1,045	51,210	3,543	354	*7*
Sub Total	**4,253**	**188,976**	**21,261**	**2,207**	**391**
REGULATED PROTOCOL MARKETS					
Korea South	14,182	-	26,054	-	-
Indonesia	1,310	424	3,339	7,477	-
Taiwan	1,148	-	14,745	-	-
Vietnam	-	80,164	25	-	-
Thailand	-	16,045	4,906	-	-
Japan	-	136	16,743	-	-
United States	-	-	-	-	-
New Zealand	-	-	-	-	-
India	-	-	-	-	-
China	-	-	-	-	-
Sub Total	**16,640**	**96,769**	**65,812**	7,477	-
OTHER MARKETS – PHYTOSANITARY					
MIDDLE EAST					
United Arab Emirates	2,212	7,278	625	51,011	-
Bahrain	40	971	-	2,900	-
Kuwait	3	169	81	33,100	-
Qatar	98	502	252	11,122	-
Saudi Arabia	11	840	1	4,025	-
Oman	-	141	25	16,262	-
Sub Total Middle East	**2,364**	**9,901**	**984**	118,420	-
EUROPE					
Belgium	-	-	-	-	-
France	-	-	20	-	-
Germany	-	-	-	13,840	-
Greece	-	-	-	49,702	-
Italy	-	-	-	57,342	-
Netherlands	-	9	455	227	-
Norway	-	-	-	-	-
Sweden	-	-	-	34	-
United Kingdom	-	-	-	9,296	-
Sub Total Europe	**-**	**9**	**475**	130,441	-
Russia	-	64,319	-	238,130	-
all other	565	40,107	301,066	104,316	*27,254*
WORLD	**23,822**	**400,081**	**389,598**	**600,991**	**27,645**

Success factors for export

In summary, the following factors are considered critical for export success in all Australian vegetable industries:

1. Having a clear understanding of the market requirements, customer preferences and the rules of doing business
2. Having a non-price point of competitive advantage, be it perceived quality or product integrity, variety, packaging, seasonal window, or location
3. Having workable market access protocols
4. Reducing cost at every level of the supply chain
5. Having an efficient supply chain that can land a product that meets customer expectations, on time, with the right service level, and as cost effectively as possible
6. Having businesses that are export capable relative to the prime target markets.

Seed

Seed market size

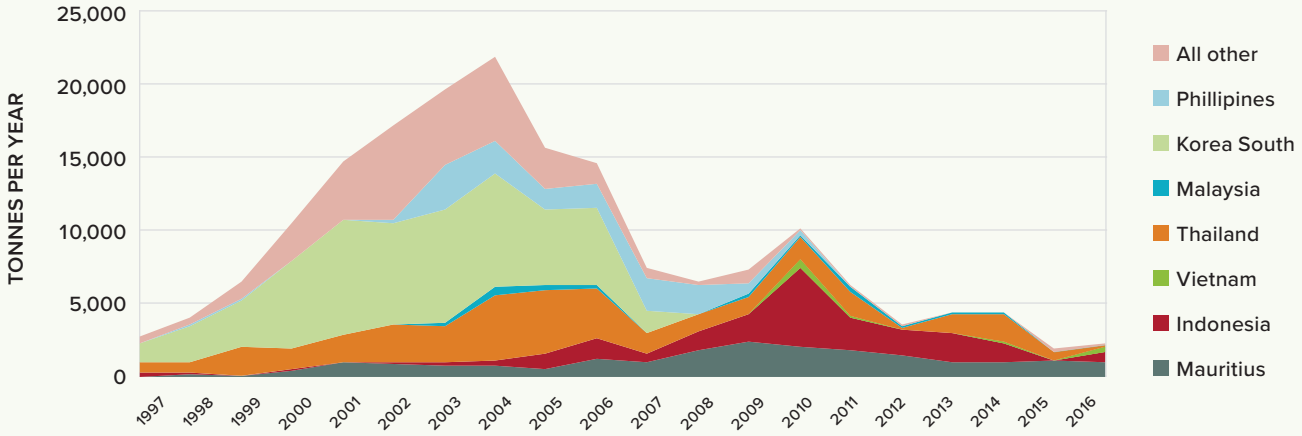
Published information on seed potatoes is sparse. Victorian seed industry body ViCSPA estimates seed production in 2016 to be 66,000 tonnes. The ABS data that estimates the tonnage to be 123,000 tonnes is considered less accurate because it uses the figure of eight per cent of total production to reach an estimate, the provenance of which is unknown. ***Table 6*** provides production estimates for certified seed by Nigel Crump, ViCSPA General Manager. The tonnages are based on an average yield of 20 tonnes per hectare. These estimates put seed production at a figure substantially less than ABS, which could be explained by the fact that the ViCSPA figure is for certified seed. On the other hand, the ABS data also includes non-certified seed, but the basis of the ABS calculation is unclear.

Table 6: ViCSPA certified seed production estimates, 2016
(Source: Nigel Crump, ViCSPA, 2016)

State	Estimated area (hectares)	Estimated tonnes
Victoria	1400	28,000
South Australia	700	14,000
Tasmania	600	12,000
Western Australia	400	8,000
New South Wales	200	4,000
TOTAL	**3,300**	**66,000**

Anecdotal reports from the seed industry suggest that only 30 to 40 per cent of commercial potato crops are planted from certified seed (growers dispute this figure). A common practice is for growers to buy certified seed and multiply it out for several generations until the performance drops to unsatisfactory levels. It is understood that many farms in Queensland multiply their certified seed, but this is more a timing issue because all the seed is grown in the southern states, and fresh product is not available when the Queensland growers need it.

Figure 15: Seed potato exports by destination, 1997 to 2016 (20 years) *(Source: ABS data via IHS Global Trade Atlas; Fresh Intelligence analysis)*



Seed exports

Figure 15 provides a 20-year history of seed potato exports; it has been a steady decline.

Seed exports peaked in 2004 when they reached 22,000 tonnes, after which they have steadily declined. In the late 1990s, Australia had strong markets for seed in South Korea, India, Malaysia and The Philippines.

Until recently, only Western Australia could export to Indonesia, but some in the industry report that trial shipments have recently been made from Victoria and South Australia into Indonesia. The industry, particularly Western Australian growers, is optimistic about the future opportunities in Indonesia.

There have also been market access issues into Vietnam but the Vietnam market has opened up.

It is understood that one of the big factors influencing Australia's drop in sales of seed is the change in practices by processing companies, particularly the crisping processers that have changed to imported seed because of price and quality factors. It is clear, however, that the biggest issue for Australia's seed exports is price competitiveness.

Industry feedback suggests there is optimism about the fact that recent export recovery is sustainable. With the prospect that the Australian dollar will remain in a favourable range for the life of this plan and with improved market access in the South East Asian markets, there are prospects for some recovery.

Currently, the biggest markets for seed exports are Mauritius, Indonesia, Vietnam and Thailand, as illustrated in ***Figure 14***.

Environmental scan

The purpose of the environmental scan is to identify the factors in the external operating environment that could affect the industry's opportunities and risks. The analysis is based on a PESTEL framework that systematically reviews the external market forces through the following lenses: political, economic, social, technological, environmental and legal.

Economic impacts

FACTOR	IMPLICATIONS	RISK/OPPORTUNITY
1. Domestic economy delicately balanced		
High levels of household debt	Reduction in consumer spending	*Erosion of industry profitability at every level of the supply chain*
Increasing current account deficit	Strong likelihood that Australia's AAA credit rating will be downgraded	
Economy not responding to low interest rates	If central banks change strategy and increase interest rates, the cost of borrowing will increase and credit become harder to secure	
Heavy reliance on Chinese economy	Disruption to trade if Chinese economy falters or policy changes	
2. Rising costs		
Rising costs of doing business	Difficult to pass on price increases in current environment	*Reduced profitability and viability of farming businesses*
3. US economy is recovering		
Employment rate rising	USD likely to appreciate	*AUD likely to depreciate again which will deter United States imports of processed potatoes* *The cost of machinery, equipment and other imported inputs will rise*
GDP growth improving	Increased local demand	*Reduced supply improves prices*
Increased business confidence	Greater investment in capacity	*Increased investment in plant and equipment will reduce operating costs*
4. European political system and economy is faltering		
Major economies in Europe delicately balanced	Further devaluation of Euro	*Depreciation against AUD will drive imports and create more competition in export markets*
5. Food deflation		
Food prices have declined in real terms in most categories: **• Global oversupply** **• Supermarket power** **• Impact of cheap imports**	Returns to producers at every level of the supply chain are not keeping up with cost, causing declining profitability	*More industry rationalisation as unviable growers exit the industry*

FACTOR	IMPLICATIONS	RISK/OPPORTUNITY
6. Supermarket dynamic		
Dominance of major retailers and new entrants	Aggressive price war	*Increased downward pressure on selling prices*
Growth of private label	Erosion of brand loyalty and brand power	*Increased imports of processed potatoes* *Less brand loyalty*
7. Concentration among global agribusiness supply/technology companies		
Recent merger and acquisitions: **• Bayer and Monsanto** **• Dow and DuPont** **• China National Chem Corp and Syngenta**	Inputs and technology will become more expensive and availability more restricted Shift from chemicals to genetics to control pest and disease	*Higher import costs* *Australia may get secondary access to latest technology*
8. Sea freight rationalisation		
Overcapacity in global sea freight has led to bankruptcy amongst shipping companies such as Hanjin	Rationalisation within the sea freight sector Increased shipping costs	*Increased freight costs will deter imports of processed potatoes* *Could potentially give Australia an advantage in Asian markets*

Social impacts

FACTOR	IMPLICATIONS	RISK/OPPORTUNITY
1. Social licence		
Changed community attitudes empowered by social media are demanding more accountability from corporate Australia	Greater accountability required in: • Use of chemicals • Labour practices • Workplace safety • Food miles • Environmental sustainability	*Adverse social media reaction can be potentially extremely damaging*
2. Provenance		
Consumers are interested in where their food comes from: **Where it was grown/made; who by; and how?** **The story behind it**	Pressure for more detailed food labelling Pressure for increased whole-of-chain traceability Growth of organics	*Added cost and regulation burden* *Increased support for Australian grown*
Growth of private label	Erosion of brand loyalty and brand power	*Increased imports of processed potatoes*

FACTOR	IMPLICATIONS	RISK/OPPORTUNITY
3. Declining national health		
Australia is in the middle of a health epidemic: • **Obesity** • **Type 2 diabetes** • **Cardiovascular disease** • **Increased cancer rates**	Increasing pressure by governments to change lifestyle and eating habits because of the spiralling health costs	*Increased pressure against heavily processed, high-fat and high-sugar foods*
Growing concern around high-carb diets	Reduced consumption of processed snack foods and medical advice against potatoes	*Consumption per capita likely to continue to decline*
Increased prevalence of 'free from' diets	Diets such as celiac are growing as the diagnosis of allergens improves	*Potatoes have an opportunity in carbohydrate-alternative products for celiac sufferers*
4. Changed eating habits		
The Australian diet is as multicultural as its community	There is now no such thing as a typical Australian diet Recent migration trends mean Chinese, Indian and Middle Eastern cultures are the fastest growing	*Further downward pressure on potato consumption*
Australians are eating out more	Around 40 per cent of food in Australia is consumed 'out of home' Time poor consumers are either eating out more or purchasing 'ready meals' or meal components (e.g. pasta sauce)	*Growth is likely in the food service channel and processed or value-added potato* *Downward pressure on potato consumption*

Technological impacts

FACTOR	IMPLICATIONS	RISK/OPPORTUNITY
1. Emerging technologies		
Game-changing technologies: • **Sensing** • **Big data** • **Robotics** • **Drones** • **Radio frequency identification (RFID)** • **Near infrared (NIR)** • **Smart packaging**	Will drive efficiency and speed of change	*Opportunity for Australia to improve its global competitiveness by reducing labour cost or increasing productivity and yield* *Failure to keep up with technology will increase import threats for processed potatoes*
2. Disruptive technologies		
IT is allowing the entry of disruptive technologies: • **Smartphone connectivity** • **Direct-to-consumer and business-to-business**	Disruption to traditional business models Increased competition Regulators cannot keep up with the pace of change	*Increased competition* *Greater scrutiny and accountability*

Environmental impacts

FACTOR	IMPLICATIONS	RISK/OPPORTUNITY
1. Climate change		
Less reliable rainfall	More reliance on irrigation	*Higher cost*
Higher temperatures	More crop failures Changed pest and disease profile	*Higher risk of issues such as psyllid* *Need for new varieties*
More extreme weather events	More catastrophic crop failures	*Increase in isolated summer storms with heavy rain/hail/wind could damage crops*
2. Water cost and availability		
Impacts of climate change: **• Less runoff** **• Environmental water buy-backs** **• Lowering of underground water table** **• Declining water quality** **• Stricter Catchment Management Authority (CMA) regulations**	Restricted water availability Higher cost of water	*In some catchments, water may be too expensive for growing potatoes*

Legal impacts

FACTOR	IMPLICATIONS	RISK/OPPORTUNITY
1. Increased red tape		
Increased red tape and compliance burden: **• Public pressure** **• Political correctness** **• Social accountability**	Increased cost of doing business	*Threat to viability of marginal agribusinesses* *Reduces Australia's competitiveness*
2. Food labelling regulations		
Tighter food labelling and consumer protection regulations	Stricter regulations and accountability on food labelling from government	*Declining purchase of retail processed potato products because of health warnings on packs*
3. Increasingly litigious society		
Rising legal costs and risk of brand damage	Supermarkets are increasingly cautious about legal issues arising from food safety	*Growers will wear the cost of supermarket concern about food safety with tighter QA measures*

Operating environment

The potato grower industry	
Strengths	• Appropriate soils and climate for potato production • Long growing season due to geographic spread • National standard for seed certification • Quality of potatoes from majority of producers • Versatility of potatoes as a consumer product • Geographic isolation provides a biosecurity barrier • Geographic location advantageous in servicing Asian markets • Clean green image of Victorian/Australian production in export markets • Good science capability available to support growers • Counter-seasonal supply to northern hemisphere • Access to levies to support research.
Weaknesses	• Declining consumption • Poor image of potatoes and wide health concerns • Market access restrictions into lucrative northern Asian markets • Lack of industry cohesion; fragmented between sectors, with low engagement • No collective industry marketing • Lack of channels to market for SME producers • High cost of production and supply chain costs results in poor global competitiveness • Geographic isolation adds to cost of exports • Poor application of available research on-farm • Poor understanding of consumer needs • Labelling • Relatively poor marketing and supply chain skills • Inconsistency of seed quality across all growing regions • Inconsistency of agronomic advice across all growing regions.
Opportunities	• Development of new consumer products, such as ready-to-eat • Further leverage of 'brand Australia' product integrity in export markets • Advances in technology • More targeted application of agronomy skills to suit the three different potato markets: fresh, seed and processed • Ability to negate perceptions about health fears • Develop new (non-food) uses to achiever a greater return for waste and by-products • Standard of seed is internationally recognised • Increased adoption of research, particularly precision agriculture.
Threats	• Greater demand for washed product affects dry brushed growers • Increased imports (frozen) • Biosecurity risks • Availability of skilled researchers • Lack of extension specialists • Shortage of skilled labour • Pressure on water and irrigation • Shortages of suitable land for potatoes • Disease incursions • Poor biosecurity communication affects exports/markets.

The strategic importance of improving yield

Realistically, Australia will never be the lowest cost producer of processing potatoes because of high input costs, particularly labour. The best chance of remaining viable and reducing the import threat is by improving yield, which will substantially lower production cost per tonne. There is a limited ability to reduce unit cost of inputs.

Yield improvement of this magnitude, which is achievable, will be critical in maintaining the economic viability of the Australian frozen potato industry. If Australia lags behind its competition in agronomic performance, it will be under threat from more imports.

Although the issue of global competitiveness is less critical for snacking products (because of freight economics and reduced shelf life), similar yield improvements off a lower base will improve the prosperity of the industry and possibly make Australia competitive in South East Asia.

Yield growth must not be at the expense of potato quality or it will be counterproductive.

Performance issues

Following a process of filtering the previous strategic analysis, the following factors have been identified as being the most critical performance issues facing the potato industry and, as such, have formed the strategic response in the SIP:

1. Declining consumption of potatoes, generally due to the commodity approach to trading
2. Australia's low global competitiveness, particularly important in frozen processed, seed and fresh for export and import replacement
3. The need to grow exports to reduce the oversupply dynamic on the domestic market
4. Grower profitability (returns have not kept pace with increases in the cost of production)
5. The continual need to reduce production costs to recover margin by addressing:
   - Yield (lagging behind Europe and the United States)
   - Labour
   - High input costs
   - Scale and capital utilisation
   - Pest and disease pressures
   - Soil health
   - Seed quality
6. The inconsistency of agronomic advice nationwide
7. The biosecurity threat, particularly from psyllid implications
8. The need for greater industry engagement, better communications, and more involvement in R&D and extension activity
9. Future competition for land suitable for potatoes
10. Grower skills and professionalism, in farm business skills and supply-chain knowledge as well as production skills
11. Continued grower rationalisation
12. SME growers are locked out of volume contracts and need access to other markets and varieties
13. The need for more-detailed data on the seed industry
14. The lack of harmonisation of certification frameworks, and the lack of rigour in compliance
15. The need to implement best practice management of seed along the entire supply chain.

SECTION TWO

2

Potato grower industry outcomes

Industry outcomes

OUTCOME 1

Industry profitability is significantly improved by increasing the value of product sold on the domestic market

- Per capita consumption of potatoes is in long-term decline because of health concerns, a trend to low-carb diets, and competition from other carbohydrates such as pasta and rice
- The biggest factor contributing to declining industry profitability of the industry is the erosion of category value. This is being driven by the dominance of supermarkets, the high frequency of price promotions, and the fact that potatoes have become heavily commoditised with low levels of consumer engagement
- Because supermarkets are the dominant channel in the domestic fresh market, it is important that the industry has an ongoing dialogue with them, focused on seeking opportunities to build category value for all parties in the supply chain
- The practice by supermarkets of central purchasing through closed-loop supply chains has closed off this important channel to the SME producers, even to the point of locking them out of servicing local markets. There is, therefore, the need and opportunity to support SME producers to adjust their business model in response and develop other market channels
- The independent retailer channel offers an opportunity to showcase premium, specialty and gourmet varieties. It also presents an opportunity as an alternative channel for SME suppliers. Therefore, it would be highly valuable to seek out opportunities to increase value and drive increased consumer satisfaction and engagement via this channel
- Although there is no marketing levy for potatoes, it is quite legitimate to conduct R&D work, such as market research and category development, for growers to have a better understanding of the consumer need and what they can do to respond to it
- The most effective way to build category value is through de-commoditising the category, creating differentiated products by using genetics, quality assurance, packaging, labelling, provenance and other approaches. Although this has been done to some extent with the PBR varieties, there is an opportunity to take it to the next level
- There are also opportunities to build category value through new product development. The heavily processed end of the market has ample innovation resources in the major food companies. However, the increasing consumer preference for minimally processed foods presents an opportunity to develop ‘pan ready’ products, as has been successfully done in the United States and Europe
- With increasing quality standards being imposed by retailers, there is a significant proportion of production in any year that is not suitable for marketing as a fresh first grade, which creates significant waste streams. The economics of the fresh sector would be improved by creating increased value uses of this waste for food products, animal feed or pharmaceuticals.

OUTCOME 2

Export markets have grown, resulting in increased average returns to growers

- Market returns from fresh potatoes are declining because of the oversupply on the domestic market and lower consumer demand
- Even a relatively small increase in potato exports has the potential to significantly improve the average wholesale price obtainable from the domestic market
- With the expectation that the Australian dollar will stay in a favourable range for the life of this SIP, there are good prospects to increase Australian exports of fresh, crisping and seed potatoes in Asian and Middle Eastern markets
- Because Australia is a substantially higher cost producer relative to our nearest competitors (China and the United States), Australian growers cannot compete head to head on price. They must pursue a strategy targeting niche markets where customers are prepared to pay a premium for a perceived non-price benefit, such as quality, product integrity, seasonality, volume or service
- Investment in export market development must be guided by a well-planned export development strategy targeting prime prospect markets with activities that will have the greatest impact because resources are limited
- Although most of the markets are relatively open (subject to a phytosanitary certificate), some prospects are stronger but market access is not available, such as the Japanese market for crisping potatoes. In some markets, the need is for market improvement protocols to allow more workable access for potatoes from some states, particularly those with PCN
- It is also important that industry builds export capability, and shifts from a culture of being a speculative trader to a long-term marketer. This requires a change of attitude supported with skill, capability development and an understanding of the market, customer needs and preferences as well as the cultural and business aspects
- It is critical to success in exporting to have good-quality market intelligence with information about customer needs and preferences, competitive pressures and local market dynamics.

OUTCOME 3

Average yields have significantly improved, resulting in reduced cost of production

- In parallel with the programs to build industry value, the industry requires an ongoing process of continuous improvement and cost reduction because of the high-level exposure to trade risk. In the processing sector, the ongoing threat of imports from low-cost countries requires relentless attention to continuous improvement in order to be competitive at world's best standards
- The parallel strategy to reducing costs is increasing yield, with the aim being to produce a higher marketable yield for a given input cost. Although the best producers in Australia are achieving world-class yields, the industry average is well below international standards because of a range of factors explained in the industry analysis section of this document
- One of the consistent themes to emerge from the industry engagement process was concern about the variability in the quality of agronomic advice across the country. In most areas, there is concern that the consulting agronomists are not keeping up to date with the latest scientific knowledge from the larger potato-producing countries
- Further to the issue of getting better advice to growers, it is also important that the learnings generated by industry's investment in R&D are communicated in a practical and user-friendly manner that makes information accessible to growers at a local level
- The PreDicta PT soil-testing system has proven to be invaluable to the seed industry and processing sector, but is not widely used by growers. Part of the problem is that the science has not yet been perfected to cover all soil-health issues for all areas, but also because its value is not well understood. Extended use of this technology and further advancements in interpreting soil DNA would make a major contribution to reducing costs and improving yields
- The performance of seed, for vigour and disease resistance, has been identified as an industry issue. Industry has concerns about the seed certification system, about a high level of non-certified seed being used, and also about the way that seed is managed once received on-farm. Because seed is primarily bought through agents, there is a lack of transparency and knowledge in the provenance. Therefore, there is a need for an integrated R&D program to improve seed handling throughout the supply chain as well as the outcomes.

OUTCOME 4

Increased innovation and agility in potato businesses has resulted in a sustainable industry that can adapt to highly dynamic markets

- Critical to the long-term prosperity and international competitiveness of the Australian potato industry is equipping industry at large with the knowledge base and agility to respond to the highly dynamic global environment in which it operates
- The consultation suggested that industry engagement is not at the level that should be, with many levy payers not participating in the R&D process or directly benefiting from it
- The industry invested a large proportion of the previous SIP R&D budget on the *Potatoes Australia* magazine. Many growers are questioning whether this large investment is justifiable at a time when the nature of the communication channels has changed and given the disappointing level of industry engagement
- One of the best ways to drive industry progress and agility is to ensure that the young and progressive future industry leaders are exposed to new ideas and approaches by first-hand observations of best practices from the leading producing countries. Scholarships for international study tours are a highly effective way to inject new ideas into the industry
- Localised grower development groups are increasingly proving to be a catalyst for industry change. Engaging in such groups can be important for growers socially as well as economically. Similar groups in other industries often include a benchmarking component. There have been several failed attempts at introducing benchmarking schemes across the potato industries. But because growers need better agribusiness skills to survive in increasingly dynamic potato markets, it is too important not to have another go, particularly using new technologies such as web-based and smartphone technologies.

SECTION THREE

3 Potato grower industry priorities

Industry investment priorities

Potato growers aspire to create a sustainable, globally competitive potato-processing industry that is profitable at every level of the supply chain. The main objective of this SIP is to provide a roadmap that helps guide Hort Innovation's oversight and management of the potato grower industry R&D levy program.

OUTCOME 1 – Industry profitability is significantly improved by increasing the value of product sold on the domestic market		
STRATEGIES		**POSSIBLE DELIVERABLES**
1.1	Collaborate with retailers to better understand the opportunities to build category value	A five-year category development plan
1.2	Build capability in servicing regional and niche market channel opportunities	
1.3	Develop new fresh potato product concepts	
1.4	Support development of higher value products	
1.5	Support R&D around improving waste-stream use	

OUTCOME 2 – Export markets have grown, resulting in increased average returns to growers		
STRATEGIES		**POSSIBLE DELIVERABLES**
2.1	Develop a five-year export market development strategy covering fresh, processing and seed potatoes	A five-year export market development plan
2.2	Provide the necessary R&D support for priority market access and market improvement business cases	
2.3	Support exporter capability building and knowledge of prime prospect markets	
2.4	Establish improved intelligence for export markets	

OUTCOME 3 – Average yields have significantly improved, resulting in reduced cost of production		
STRATEGIES		**POSSIBLE DELIVERABLES**
3.1	Run subject-specific professional development workshops for consulting agronomists (jointly with processing program)	Grower development groups Certified seed improvement program commenced
3.2	Leverage the potato extension program into establishing regional grower development groups	
3.3	Integrate precision ag, integrated pest management (IPM) and soil health as core elements of the potato extension program	
3.4	Establish an appropriate prioritised regional extension program to address pest and disease challenges/ threats	
3.5	Support the wider application and adoption of PreDicta PT	
3.6	Support industry-wide efforts to improve the performance of certified seed across the supply chain	

OUTCOME 4 – Increased innovation and agility in potato businesses has resulted in a sustainable industry that can adapt to highly dynamic markets		
STRATEGIES		**POSSIBLE DELIVERABLES**
4.1	Improve industry engagement with a revised communication program	Revised communication plan based on a stakeholder engagement plan Next Gen development program Smartphone self-assessment benchmarking tool Delivery of online knowledge portal
4.2	Introduce an annual scholarship to support overseas study tours for young growers	
4.3	Introduce Next Gen leadership development program, including internships and scholarships for growers, farm managers, scientists and advisors (in collaboration with the processing potato SIP)	
4.4	Develop an IT self-assessment benchmarking tool	
4.5	Develop an online knowledge database for growers that translates the latest research into practical information	

Aligning to Hort Innovation investment priorities

In establishing investment priorities, Hort Innovation analysed both historical and current levy and co-investment portfolios and priorities. From this analysis, we identified 11 cross-sectoral investment themes. We consolidated these themes further and considered their alignment with the Australian Government's Rural RD&E Priorities and National Science and Research Priorities, to arrive at five investment priorities outlined in ***Figure 16***. ***Figure 16*** also shows how each cross-sectoral investment theme relates to the five investment priorities.

Figure 16: Hort Innovation's investment priorities

The alignment of the potato grower SIP outcomes to the Hort Innovation investment priorities and, consequently, the Australian Government's Rural RD&E Priorities and National Science and Research Priorities is shown in ***Table 7***.

Table 7: Potato grower SIP outcomes alignment to the Hort Innovation investment priorities

Hort Innovation investment priorities	Potato grower SIP outcomes
Support industry efficiency and sustainability	**Outcome 4:** Increased innovation and agility in potato businesses has resulted in a sustainable industry that can adapt to highly dynamic markets
Improve productivity of the supply chain	**Outcome 3:** Average yields have significantly improved, resulting in reduced cost of production
Grow the horticulture value chain capacity	**Outcome 1:** Industry profitability is significantly improved by increasing the value of product sold on the domestic market
Drive long-term domestic and export growth	**Outcome 2:** Export markets have grown, resulting in increased average returns to growers
Lead strategically to enhance the development of the Australian horticulture industry through operational excellence	Enabler

4

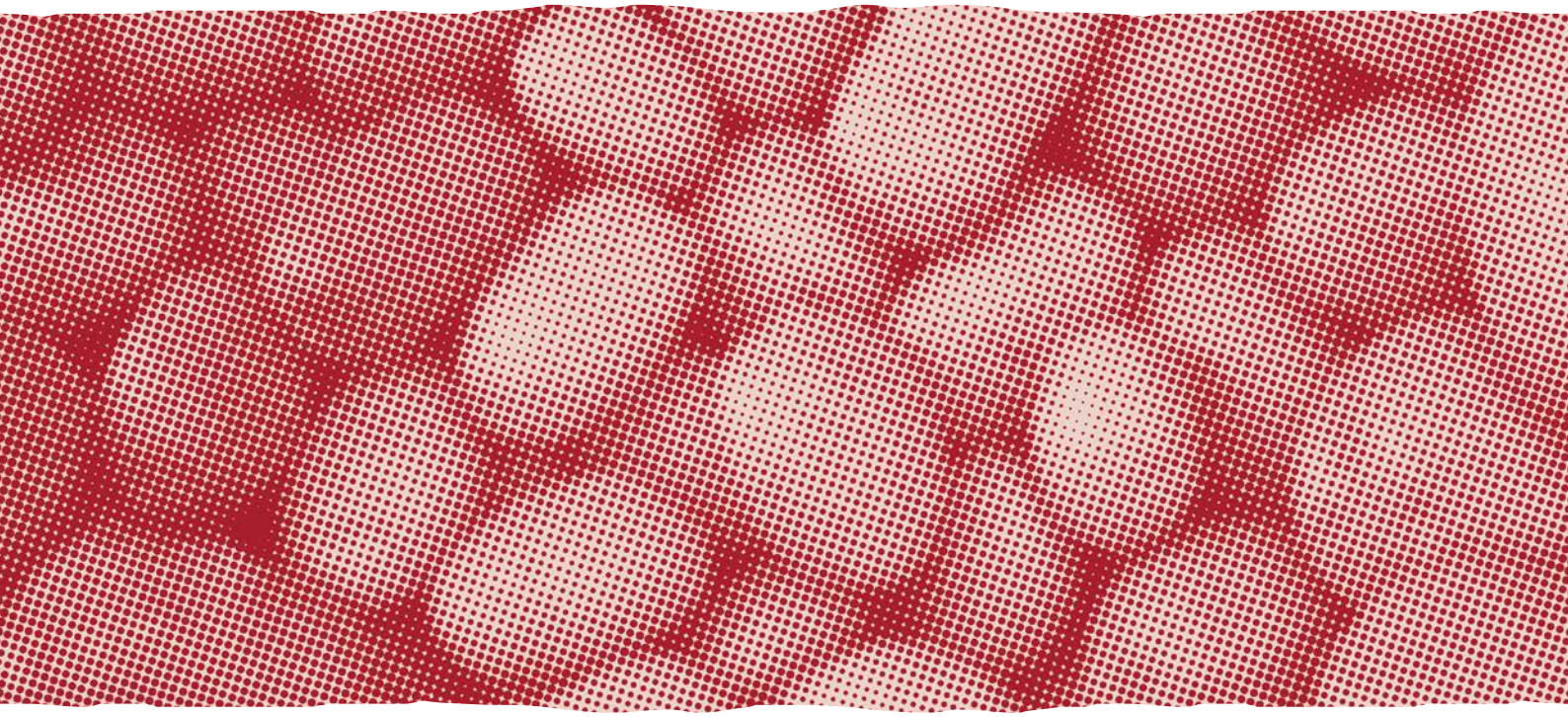
SECTION FOUR

Potato grower industry monitoring and evaluation

Potato grower SIP monitoring, evaluation and reporting

A SIP program logic and monitoring and evaluation (M&E) plan has been developed for the potato grower 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 the data to be collected. Progress against the SIP will be reported in Hort Innovation publications and at industry SIAP meetings.

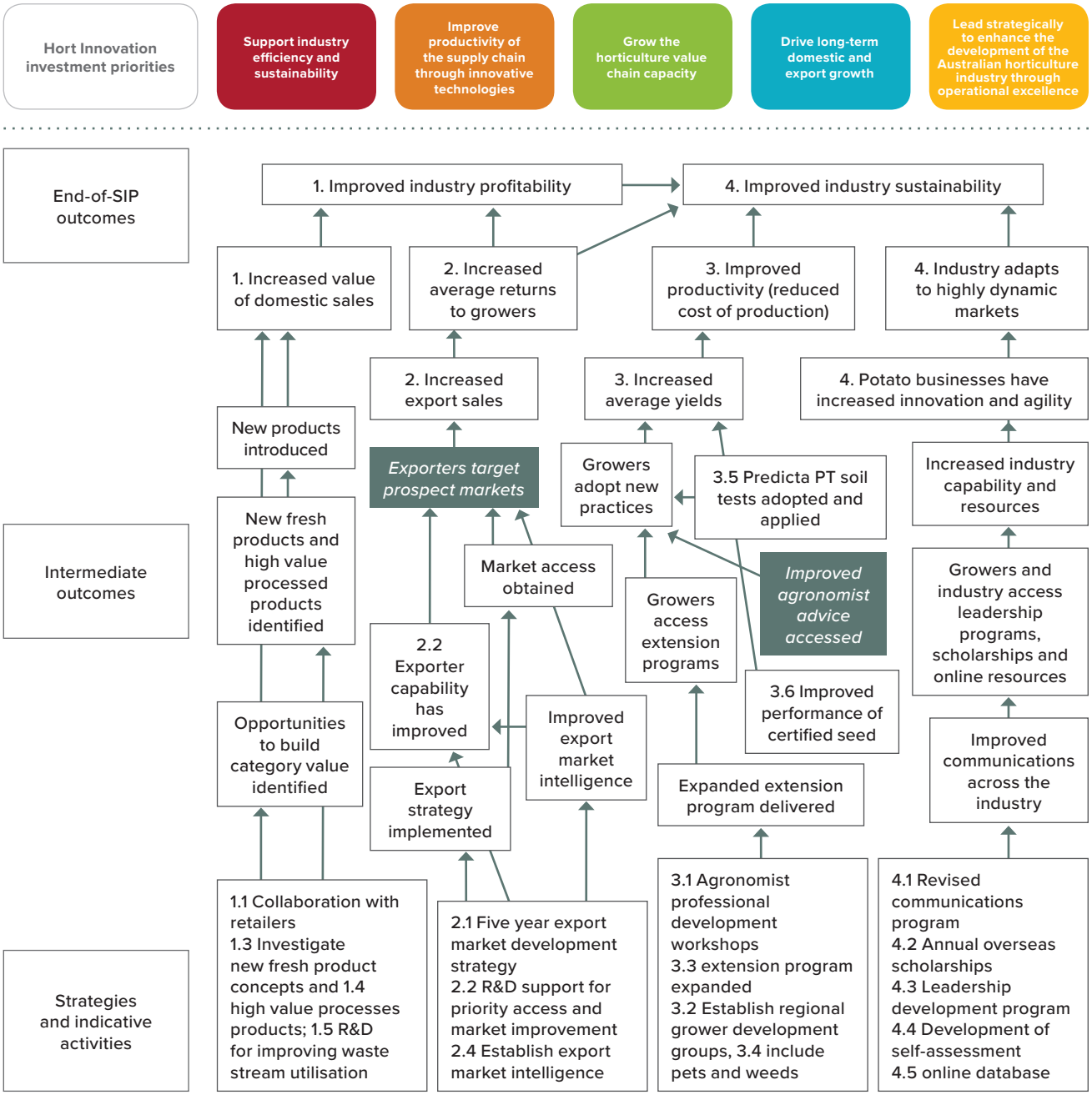
The SIP outcomes and strategies will be used to inform investments in individual projects to deliver on the SIP. The results of M&E will be used to reflect on the results of investments and in decision making. Hort Innovation will facilitate the regular review of SIPs to ensure they remain relevant to industry.



Potato grower SIP logic

An indicative potato grower SIP program logic is shown in ***Figure 17***. The logic is based on the Hort Innovation SIP logic hierarchy (***Appendix 3***). The shaded boxes are not fully explicit in the SIP but necessary conditions for the achievement of expected outcomes.

Figure 17: Potato grower SIP logic

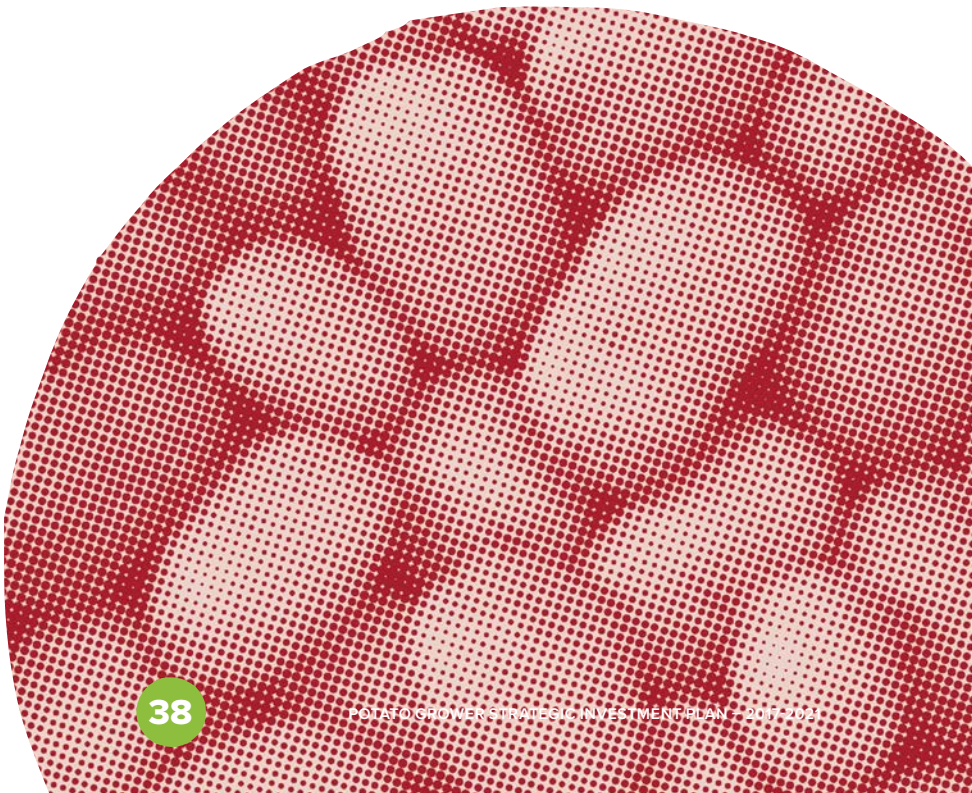


Potato grower SIP M&E plan

The potato grower M&E plan is shown in ***Table 8***. 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 8: Monitoring and evaluation framework for the potato grower SIP

Outcomes	Strategies	KPIs
OUTCOME 1: Industry profitability is significantly improved by increasing the value of product sold on the domestic market	1.1 Collaborate with retailers to better understand the opportunities to build category value	Evidence of increased knowledge/practice change on improved waste-stream use Adoption rate of new products by growers/ value chain Evidence of collaboration with retailers to identify opportunities for category development Measure business performance to identify if resources available are used to generate income and profit Evidence of adoption leading to technical efficiency and increased net margin per hectare
	1.2 Build capability in servicing regional and niche market channel opportunities	
	1.3 Develop new fresh potato product concepts	
	1.4 Support development of higher value products	
	1.5 Support R&D around improving waste-stream use	
OUTCOME 2: Export markets have grown, resulting in increased average returns to growers	2.1 Develop a five-year export market development strategy covering fresh, processing and seed potatoes	Grow total exports to over 45,000 tonnes by 2020 (in line with Industry Export Development Plan, 2016) Number participating in horticulture market export development programs
	2.2 Provide the necessary R&D support for priority market access and market improvement business cases	
	2.3 Support exporter capability building and knowledge of prime prospect markets	
	2.4 Establish improved intelligence for export markets	



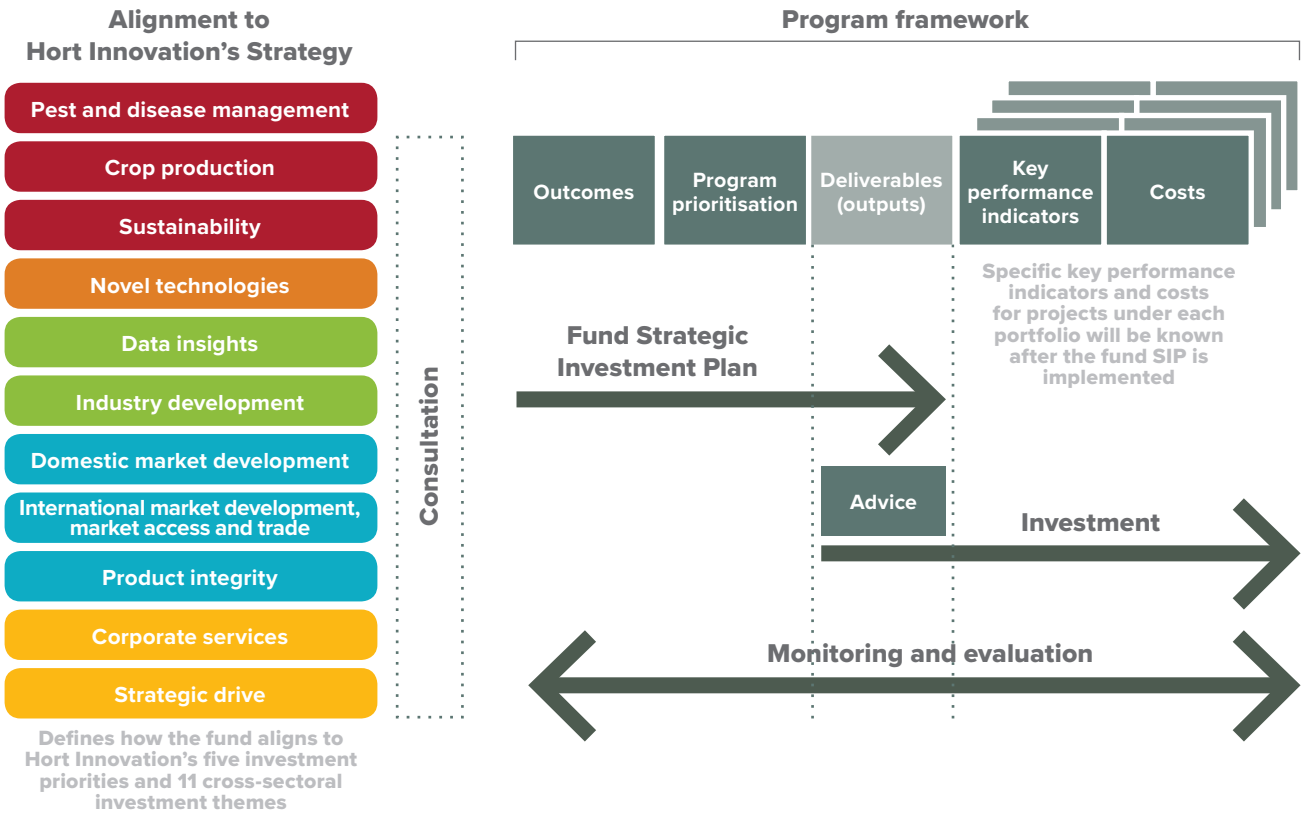
Outcomes	Strategies	KPIs
OUTCOME 3: Average yields have significantly improved, resulting in reduced cost of production	3.1 Run subject-specific professional development workshops for consulting agronomists (jointly with processing program)	Evidence of an increase in marketable yields due to improved crop management practices, with a target of five per cent Adoption rate of IPM improves by five per cent of growers/production base A 'IPM soil health' or similar program implemented Self-assessment benchmarking tool developed with evidence of grower use of the tool
	3.2 Leverage the potato extension program into establishing regional grower development groups	
	3.3 Integrate IPM and soil health as core elements of the potato extension program	
	3.4 Establish an appropriate prioritised regional program to address pest and disease challenges/threats	
	3.5 Support the wider application and adoption of PreDicta PT	
	3.6 Support industry-wide efforts to improve the performance of certified seed across the supply chain	
OUTCOME 4: Increased innovation and agility in potato businesses has resulted in a sustainable industry that can adapt to highly dynamic markets	4.1 Improve industry engagement with a revised communication program	Development of an industry extension/engagement strategy, including a stakeholder engagement plan Next Gen development strategy in place: • Participation rates of 50 per cent for producers or agronomists for any extension/training event/ materials using benchmarking tools • Number of farming workshops per year/region • Industry adoption of precision ag technology (number of growers/per cent production base) • Completion of precision agriculture adoption gap analysis
	4.2 Introduce an annual scholarship to support overseas study tours for young growers	
	4.3 Introduce Next Gen leadership development program, including internships and scholarships for growers, scientists and advisors (in collaboration with the potato processing SIP)	
	4.4 Develop an IT self-assessment benchmarking tool	
	4.5 Develop an online knowledge database for growers that translates the latest research into practical information	

Reporting

The program framework in ***Figure 18*** is the mechanism that links Hort Innovation's strategy and investment priorities to the investment process through the industry SIP. SIPs assist Hort Innovation to prioritise and implement the specific industry R&D, extension and marketing programs.

Hort Innovation will use dynamic reporting against our monitoring and evaluation framework to report on investment progress. The contribution of investments to each industry outcome will be reported regularly, including through industry Annual Reports, Hort Innovation's Annual Report and Hort Innovation's Annual Operating Plan.

Figure 18: Hort Innovation's program framework

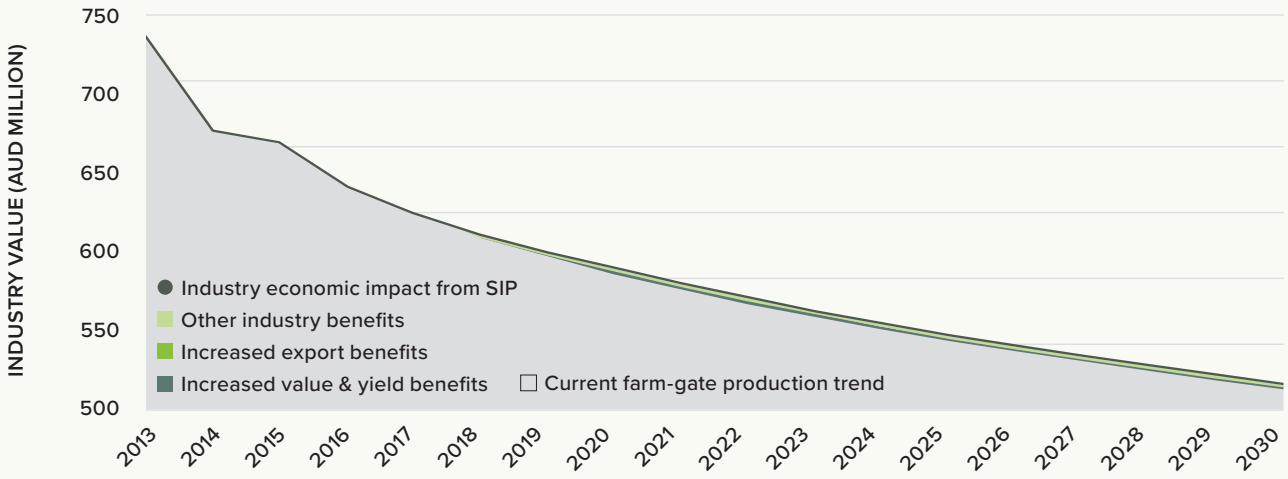


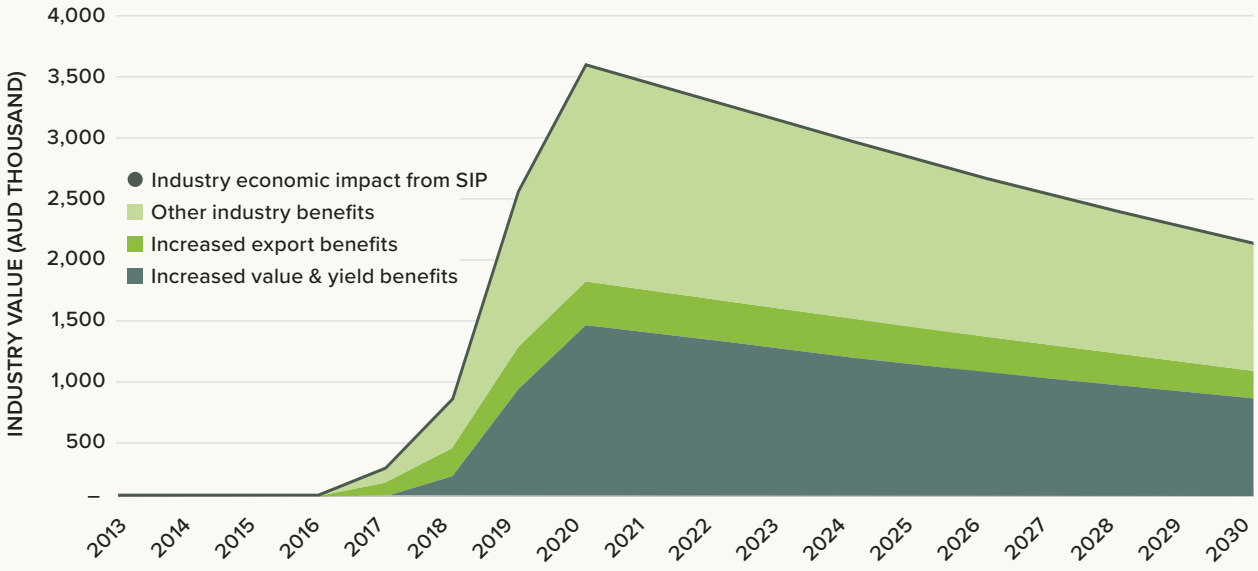
SECTION FIVE

Impact assessment

5

Figure 19: Economic benefit from investment in the potato grower SIP





An independent assessment of the potential economic impacts from investment into the potato grower SIP indicated a positive return on investment for the industry (***Figure 19***). The anticipated investment of $4.96 million over the next five years in R&D and extension activities is expected to generate $34.57 million in net benefits for the industry, representing a benefit cost ratio of 6.97 times to growers and service providers along the value chain.

The assessment draws from a wide range of available data sources, and projects economic impacts over a 15-year period starting from 2016/17. A real five per cent discount rate has been applied and all values are adjusted for inflation and presented in 2016/17 dollar terms. Net economic benefits account for usage costs estimated at 10 per cent of benefits achieved. The assessment takes a highly conservative approach and the presented figures have been adjusted to account for risks associated with achieving research outputs, expected adoption and impacts.

Table 9 provides a summary of the impacts assessed for the SIP, their corresponding outcomes, net economic benefits and benefit cost ratio.

Table 9: Overview of impacts assessed and alignment with SIP outcomes

Outcome	Impacts	Anticipated SIP investment (over five years)	Net benefits (over 15 years)	Benefit cost ratio
Increase the value of product sold on the domestic market	Increase total industry production value	$1,653,041	$11,911,838	7.21
Export markets have grown resulting in increased average returns to growers	An increase in export volumes of fresh potato product to 45,000 tonnes	$1,653,041	$8,078,689	4.89
Average yields have significantly improved resulting in reduced cost of production	Relative cost savings from increased yield	$1,653,041	$14,578,594	8.82
Increased innovation and agility in potato businesses has resulted in a sustainable industry that can adapt to highly dynamic markets	Will aid in delivery of above impacts	Incorporated in above benefits	Incorporated in above benefits	N/A
	All impacts	**$4,959,124**	**$34,569,121**	**6.97**

The impact of Outcome 1 was quantified using:

- An increased total industry value by 10 per cent by 2021.

Outcome 1 assessed the conception, development and successful market entry of new higher value fresh potato products, as well as development of new niche channels and increased collaboration with current downstream value chain members that comprise existing product channels.

The impact of Outcome 2 was quantified using:

- An increase in exports to 45,000 tonnes in 2021.

Outcome 2 assessed the development of new market intelligence and export strategy documents, as well as industry capacity building activities. The impact of additional exports was valued at the difference between projected export value and local farm-gate value to determine the marginal benefit of exporting for the industry.

The impact of Outcome 3 was quantified using:

- An increase in average marketable yield of five per cent across the industry.

Outcome 3 assessed increased marketable yield from the adoption of best-practice farm management techniques across the industry, resulting in a relative decline in the cost of production.

Outcome 4 compliments the adoption and implementation of R&D from Outcomes 1 to 3 and thus contributes to the delivery of all quantified impacts.

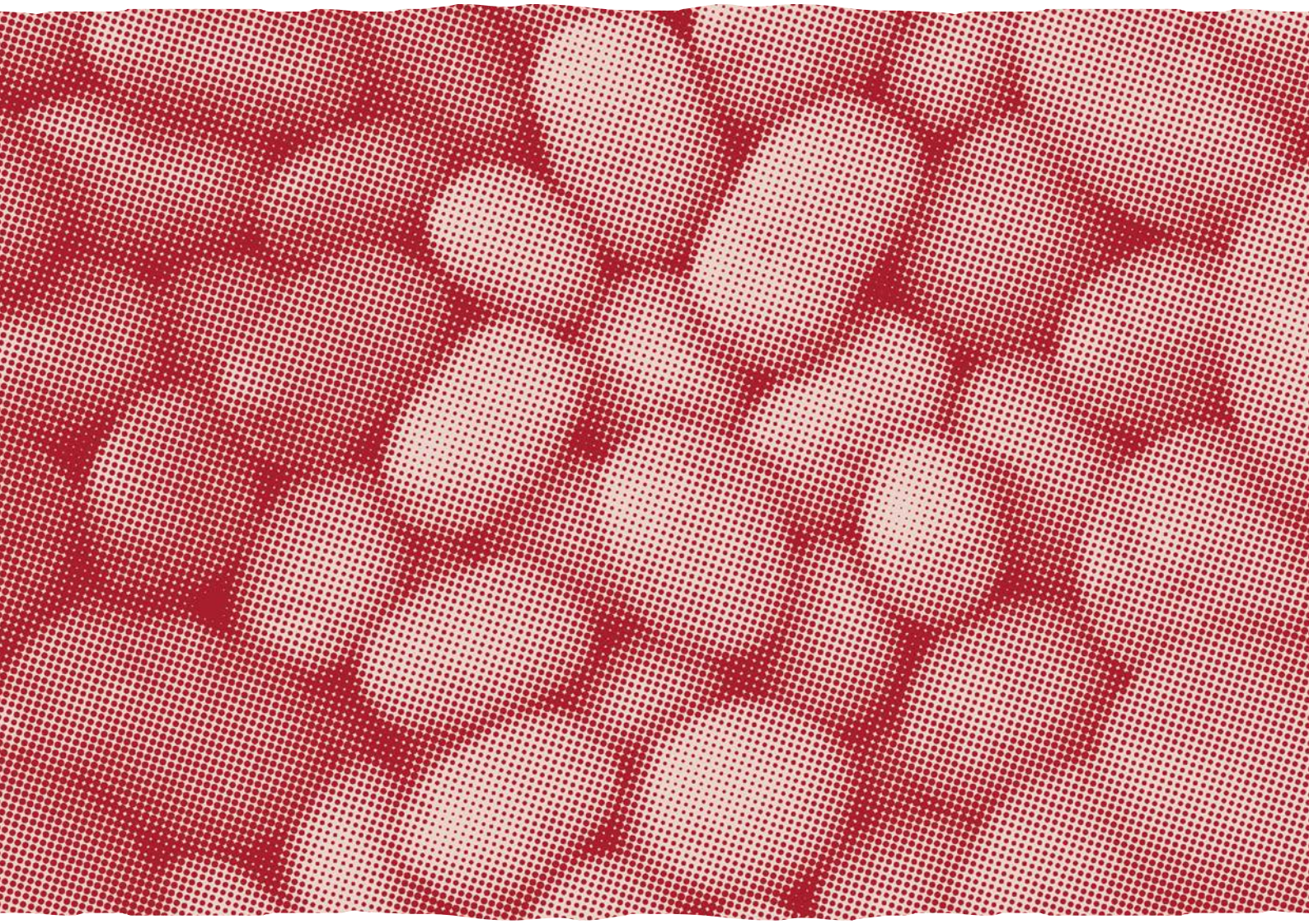
6

SECTION SIX

Risk management

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

No significant or specific risks were found that may qualify this SIP. However, there is a risk of a lost opportunity to leverage industry R&D funds more effectively if this SIP is not effectively aligned with the processing potato SIP.



APPENDIX 1: Process to develop this plan

This process for the development of this SIP was as follows:

1. A presentation was prepared to outline a suggested approach to the SIP and to stimulate discussion on the key external factors affecting the industry
2. A workshop was held with the SIAP to approve the project approach and consultation reach
3. Interviews and discussion groups were conducted with the suggested stakeholders
4. A survey was sent out to industry, and responses were considered
5. The draft SIP was prepared for consideration by the SIAP
6. SIAP members provided more feedback to the draft SIP
7. The final draft was completed.

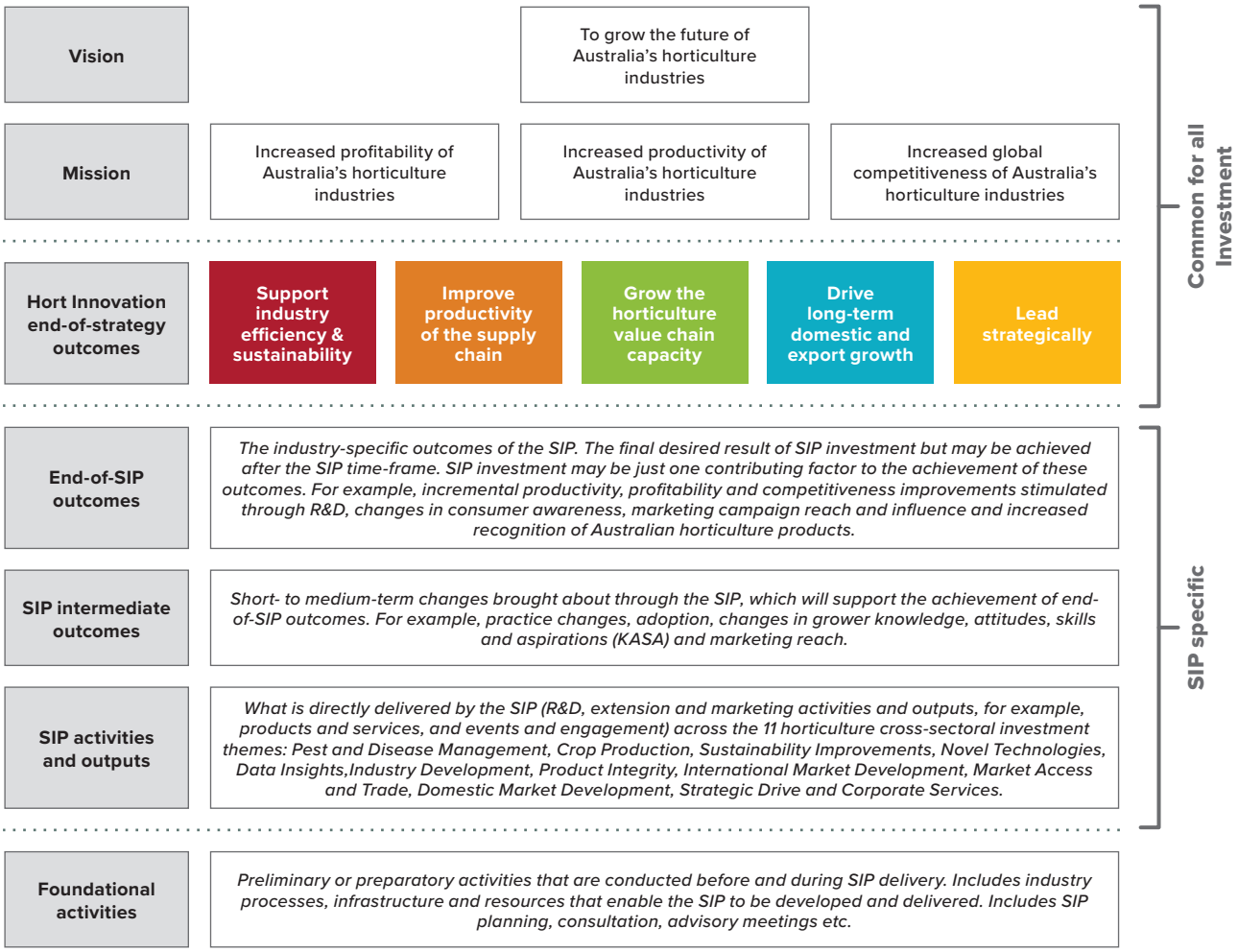
APPENDIX 2: Consultation and validation

In addition to a wide body of consultation with processors during the development of the related potato grower SIP, the following individuals provided direct input during the development of this plan. Their assistance is gratefully acknowledged.

Discussion groups	
South Australia: Potato Growers Dinner (14.10.16)	Queensland: Atherton Discussion Group (27.10.16)
Tasmania: Discussion Group (19.10.16)	Domenico Isabella
James Addison	Pompey Pezzelato
Matt Ryan	Geoff Nix
Stuart Greenhill	Jeanette Keough
Leigh Elphinstone	Geoff Keough
Tim Groom	Brad Jonsson
Scott Hill	Robert Dalgety
Darren Long	Petrece Dalgety
Beau Gooch	Nino Quadrio
Daryl Lohrey	
Victoria: Ballarat Discussion Group (24.10.16)	Victoria: Thorpdale Discussion Group (15.11.16)
Scott Dimond	David and Ben Hotchkin
Danny Maher	James Fahey
Greg Murphy	Tony Cummaundo
Kain Richardson	Rod Dorling
Jarred Quick	John Costello
Luke Rolley	Sam Carpinteri
Ken Labbett	Peter Pinkerton
Sam Montett	Gary Willis
Mark Slater	Alan Westbury
Christopher Stevens	Glen Muphy
	David Blackshaw
AUSVEG potato advisory committee (9.11.16)	
Dean Bone	Anne Ramsay
Matt Ryan	Simon Bolles
David Nix	Callum Fletcher (Secretariat)
Simon Moltoni	Jarrod Strauch
Geoff Moar	Peter Hardman

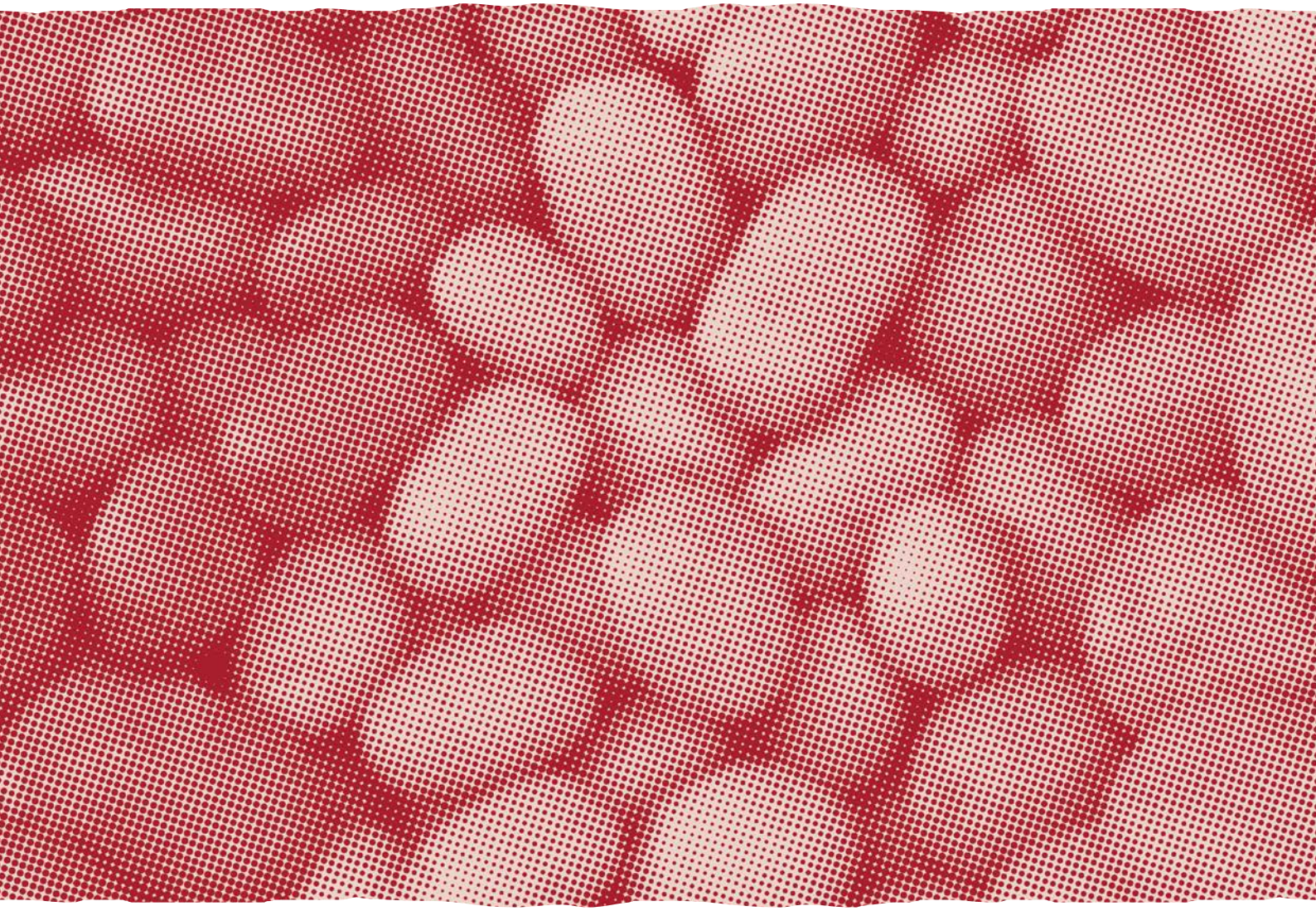
Other	
Name	**Organisation**
Ben Hotchkin	Thorpdale VIC
David Nix	Atherton QLD
Gary O'Neill	Mitolo Group
David Addison	Addison Farm Produce
Mark Kable	Harvest Moon
Pennie Patane	Patane's (WA)
Jamie Roberts	Thomas Foods
Mark Pye	Parilla Premium Potatoes (SA)
Robbie Davis	Potatoes South Australia
Jenny Van de Meeberg	Austrade
Nigel Crump	ViCSPA

APPENDIX 3:
SIP logic hierarchy



Appendix 4: References

Title	Author
A review of knowledge gaps and compilation of R&D outputs from the Australian Potato Research Programs – 2015	Kevin Clayton-Greene
Victorian Potato Industry Strategic Plan 2015–2020	ViCSPA, Victorian State Government
Australian Processed Potato Industry Strategic Investment Plan 2012–2017	Potato Processing Association of Australia, AUSVEG, HAL
Adoption of variable rate technology in Queensland's intensive vegetable production systems – June 2016	Queensland Government
Australian Horticulture Statistics Handbook 2014/15	Hort Innovation, Freshlogic
Vegetable Industry Export Development Plan	Hort Innovation, McKinna et al
ABS data	
Various corporate marketing and data analysis information	Via PPAA and SIAP members
Potato Market Profile March 2014	Prepared by Freshlogic for the Tasmanian Government



Appendix 5:
Potatoes – top 8 export market profiles

Market profile 1: South Korea

Source: Analysis by Fresh Intelligence from various sources, 2016

MPI SCORE	MPI RANK			
77	1			
Total market size tonnes	**Market growth trend**	**Per capita consumption kilogram**	**Reliance on imports**	**Price per kilogram USD**
763,880	15.9% +	15.1	5%	$0.57
Total Australian exports	**Australian market share**	**Australian average price USD**	**Market Access**	**Tariff/quota**
14,345 tonnes	38.6%	S0.54	Protocol restricted to New South Wales, South Australia, Tasmania	304% Zero within quota

South Korea market overview

Key competitors:	USA
Australia's price competitiveness:	**94%** price competitive
Australia's competitive advantage:	Market access, duty free from January to April (Australia's supply window) Unique seasonal window when Australia can supply direct from field (whereas USA supply from storage) so processing quality is superior

Size of opportunity average p.a.	Growth potential	Indicative strategy
18,000 tonnes	Strong	Grow share of processing market

Market profile 2: Malaysia

Source: Analysis by Fresh Intelligence from various sources, 2016

MPI SCORE	MPI RANK			
49	2			
Total market size tonnes	**Market growth trend**	**Per capita consumption kilogram**	**Reliance on imports**	**Price per kilogram USD**
209,913	5.1% +	6.9	100%	$0.36
Total Australian exports	**Australian market share**	**Australian average price USD**	**Market Access**	**Tariff/quota**
3,421 tonnes	1.6%	S0.54	Unregulated	Free

Malaysia market overview

Key competitors:	China, USA
Australia's price competitiveness:	**148%** Competitive only in premium niche markets
Australia's competitive advantage:	Product integrity, which is valued only in high-end niche segments Geographic location

Size of opportunity average p.a.	Growth potential	Indicative strategy
4,000 tonnes	Limited	Target high-end retail and food service segments

Market profile 3: Bahrain

Source: Analysis by Fresh Intelligence from various sources, 2016

MPI SCORE	MPI RANK			
47	3			
Total market size tonnes	**Market growth trend**	**Per capita consumption kilogram**	**Reliance on imports**	**Price per kilogram USD**
23,528	15.1% +	17.1	99%	$0.38
Total Australian exports	**Australian market share**	**Australian average price USD**	**Market Access**	**Tariff/quota**
80 tonnes	0.3%	S0.54	Phyto Cert	Free

Bahrain market overview

Key competitors:	Pakistan, Lebanon
Australia's price competitiveness:	**140%** Competitive only in premium niche markets
Australia's competitive advantage:	Product integrity, which is valued only in high-end, niche markets

Size of opportunity average p.a.	Growth potential	Indicative strategy
200 Tonnes	Limited	Target high-end market segments

Market profile 4: Saudi Arabia

Source: Analysis by Fresh Intelligence from various sources, 2016

MPI SCORE	MPI RANK			
46	4			
Total market size tonnes	**Market growth trend**	**Per capita consumption kilogram**	**Reliance on imports**	**Price per kilogram USD**
497,301	90.1% +	15.8	8%	$0.46
Total Australian exports	**Australian market share**	**Australian average price USD**	**Market Access**	**Tariff/quota**
87 tonnes	0.2%	S0.54	Phyto Cert	Free

Saudi Arabia market overview

Key competitors:	Local, Lebanon
Australia's price competitiveness:	**118%**
Australia's competitive advantage:	Product integrity, which is valued only in high-end, niche markets

Size of opportunity average p.a.	Growth potential	Indicative strategy
200 Tonnes	Limited	Target high-end market segments

Market profile 5: Singapore

Source: Analysis by Fresh Intelligence from various sources, 2016

MPI SCORE	MPI RANK			
45	5			
Total market size tonnes	**Market growth trend**	**Per capita consumption kilogram**	**Reliance on imports**	**Price per kilogram USD**
45,891	0.2% -	8.3	100%	$0.49
Total Australian exports	**Australian market share**	**Australian average price USD**	**Market Access**	**Tariff/quota**
1,160 tonnes	2.4%	S0.54	Unregulated	Free

Singapore market overview

Key competitors:	China, USA
Australia's price competitiveness:	**109%**
Australia's competitive advantage:	Location Gourmet/premium

Size of opportunity average p.a.	Growth potential	Indicative strategy
1,200 Tonnes	Flat	Maintain share

Market profile 6: Brunei Darussalam

Source: Analysis by Fresh Intelligence from various sources, 2016

MPI SCORE	MPI RANK			
44	7			
Total market size tonnes	**Market growth trend**	**Per capita consumption kilogram**	**Reliance on imports**	**Price per kilogram USD**
1,927	0.5% -	4.6	100%	$0.72
Total Australian exports	**Australian market share**	**Australian average price USD**	**Market Access**	**Tariff/quota**
273 tonnes	14.1%	0.54	Protocol: Fumigate	Free

Brunei Darussalam market overview

Key competitors:	China
Australia's price competitiveness:	**75%**
Australia's competitive advantage:	Perceived product integrity

Size of opportunity average p.a.	Growth potential	Indicative strategy
300 Tonnes	Flat	Protect market share

Market profile 7: Hong Kong

Source: Analysis by Fresh Intelligence from various sources, 2016

MPI SCORE	MPI RANK			
44	8			
Total market size tonnes	**Market growth trend**	**Per capita consumption kilogram**	**Reliance on imports**	**Price per kilogram USD**
11,095	0.8% -	1.5	100%	$0.74
Total Australian exports	**Australian market share**	**Australian average price USD**	**Market Access**	**Tariff/quota**
346 tonnes	3.0%	0.54	Unregulated	Free

Hong Kong market overview

Key competitors:	USA
Australia's price competitiveness:	**73%**
Australia's competitive advantage:	Seasonal window

Size of opportunity average p.a.	Growth potential	Indicative strategy
400 Tonnes	Flat	Protect market share

Market profile 8: United Arab Emirates

Source: Analysis by Fresh Intelligence from various sources, 2016

MPI SCORE	MPI RANK			
39	10			
Total market size tonnes	**Market growth trend**	**Per capita consumption kilogram**	**Reliance on imports**	**Price per kilogram USD**
122,040	21.5% -	13.3	93%	$0.24
Total Australian exports	**Australian market share**	**Australian average price USD**	**Market Access**	**Tariff/quota**
2,376 tonnes	1.8%	$0.54	Phyto Cert.	Free

United Arab Emirates market overview

Key competitors:	Lebanon, Egypt
Australia's price competitiveness:	**222%**
Australia's competitive advantage:	Seasonal window

Size of opportunity average p.a.	Growth potential	Indicative strategy
2,500 Tonnes	Declining	Protect share

Hort Innovation
ACN 602 100 149
Level 8, 1 Chifley Square
Sydney NSW 2000
Telephone 02 9295 2300
Fax 02 8295 2399
www.horticulture.com.au