



## Impact assessment of the investment: Educating health professionals (AL16007)

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Previous page image courtesy of AL16007 project output 'State of the Science'.

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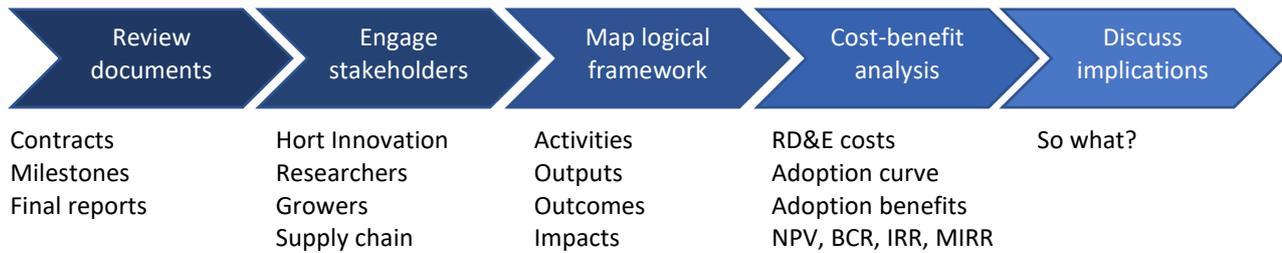
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## Executive summary

### What the report is about

Ag Econ conducted an independent analysis to determine the economic, social, and environmental impact resulting from the delivery of the almond project *AL16007 Educating health professionals*. The project was funded by Hort Innovation over the period May 2018 to July 2021 using the almond research and development levy and contributions from the Australian Government.

The analysis applied a five step analytical process to understand the impact pathway and collect supporting data.



### Research background

The delivery of AL16007 continued the almond industry's program (started in 2008) of seeking to increase the knowledge and attitudes of a range of health care professionals (HCPs) regarding the benefits of consuming almonds to support several common and important health ailments. This resulted in an increased likelihood of HCPs delivering recommendations to their patients to consume almonds in support of their health. The HCP engagement was supported by several initiatives, including workshops, communication updates and outreach at industry events.

### Key findings

The present value of investment costs was \$1.85 million (2022-23 equivalent value). Through the development of a logical framework and consultation with a range of stakeholders (see *Stakeholder Consultation*) the impact pathway was mapped with two primary impacts identified:

**Increased consumption and demand increasing industry revenue.** A recorded increased likelihood of HCPs to recommend almonds to their patients as a result of project engagement activities has the potential to increase demand for almonds by stimulating a revenue response for industry through increased sales.

**Increased consumption improving health and wellbeing with reduced healthcare management costs.** Consuming the recommended serving of nuts per day (including almonds) has been associated with reducing the risk of coronary heart disease (29%) cardiovascular disease (21%), type 2 diabetes (13%), total cancer (15%), and improved weight management (Nuts for Life 2019 and KPMG 2023).

Additional spillover impacts relating to improved regional community wellbeing and improved social licence were also identified.

The domestic supply per capita of almonds increased over the project term, rising from 1.07kg in 2017-18 to 2.35 kg per capita in 2021-22, from a base of just 0.68kg in 2008 when educational initiatives towards HCPs commenced. However, while the project monitoring data recorded an increased likelihood of HCPs recommending almonds to their patients at the conclusion of the project, supporting evidence identifying the extent to which this intent was realised in increased advice, and subsequent increased consumption was not captured.

The lack of empirical data connecting HCP intent to recommend almonds and actual consumption changes, combined with the complex interaction of factors impacting demand (Kelly et al. 2020) meant there was insufficient evidence to confidently estimate the attributable impact of AL19004. Discussions with project and industry stakeholders confirmed the challenges associated with quantifying and valuing impacts of this nature given the available evidence base. Through the impact assessment analysis, recommendations were made to enable future research to address these data gaps.

Despite the challenges in quantifying the overall economic impact of HCP education, discussions with industry stakeholders stressed that this program served a valuable component of market development. The Australian domestic market has evolved to be considered an established market with a mature growth trajectory by stakeholders, with this maturity attributed in part to the role of the HCP education. Stakeholders commented that the legacy of AL16007 and previous projects focusing on HCP education domestically will be leveraged to support market development in emerging high growth

Asian markets through future investments, where there remains a strong opportunity to motivate consumption with increasingly health-conscious populations.

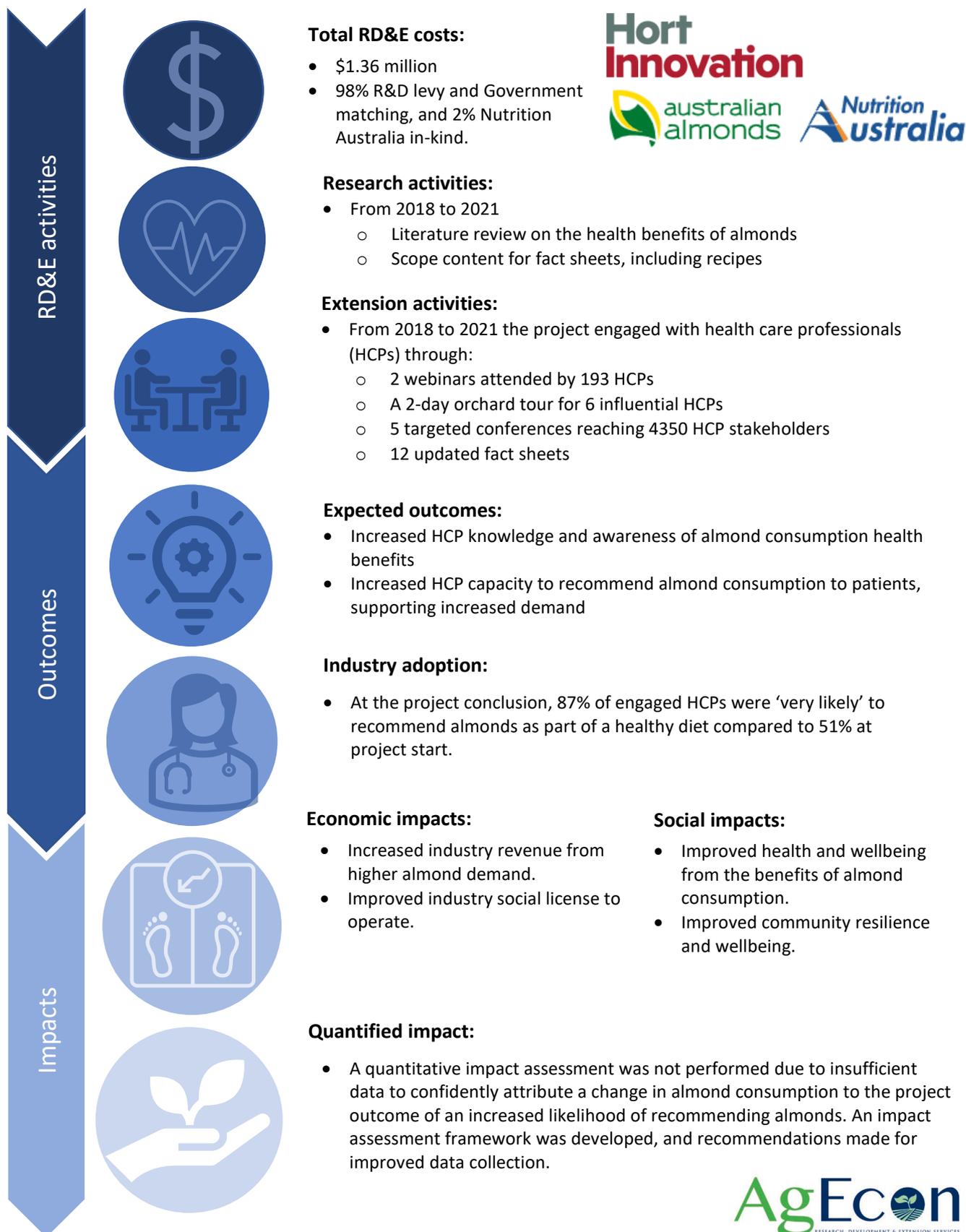
The key findings of the AL16007 impact assessment are summarized in Figure 1 below.

### **Keywords**

Impact assessment, cost-benefit analysis, almond, market development, health care professional, health and nutrition, consumer education, demand creation

Figure 1. Summary of impact assessment findings

# AL16007 Educating healthcare professionals



## Introduction

Evaluating the impacts of levy investments is important to demonstrate the economic, social and environmental benefits realised through investment to levy payers, Government and other industry stakeholders. Understanding impact is also an important step to inform the ongoing investment agenda.

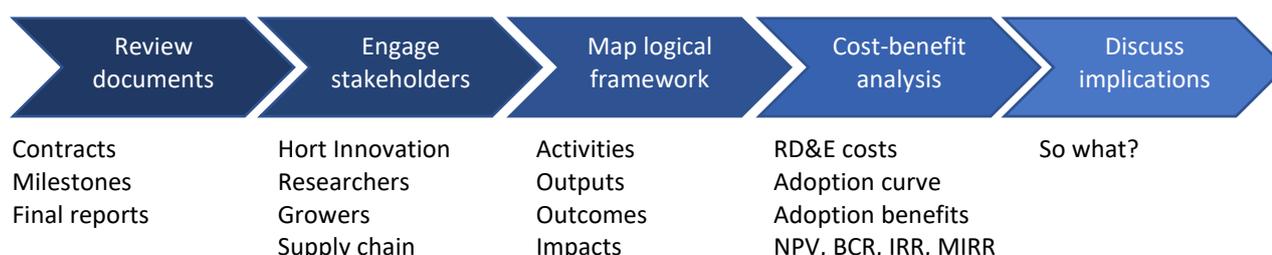
Reflecting its commitment to continuous improvement in the delivery of levy funded research, development and extension (RD&E), Hort Innovation required a series of impact assessments to be carried out annually on a representative sample of investments of its RD&E portfolio. Commencing with MT18011 in 2017-18, the impact assessment program consisted of an annual impact assessment of 15 randomly selected Hort Innovation RD&E investments (projects) each year. In line with this ongoing program, Ag Econ was commissioned to deliver the *Horticulture Impact Assessment Program 2020-21 to 2022-23* (MT21015).

Project *AL16007 Educating health professionals* was randomly selected as one of the 15 investments in the 2021-22 sample. This report presents the analysis and findings of the project impact assessment. The report structure starts with the general method of analysis used, followed by the RD&E background and an outline of the impact pathway in a logical framework, the report then describes the approach used to quantify the identified costs and benefits including any data gaps and limitations to the analysis, and finally discusses any implications for stakeholders.

## General method

The impact assessment built on the impact assessment guidelines of the CRRDC (CRRDC, 2018) and included both qualitative and quantitative analysis. The general method that informed the impact assessment approach was:

1. Review project documentation including project plan, milestone reports, outputs and final report.
2. Discuss the project delivery, adoption and benefits with the Hort Innovation project manager, project researcher/consultant, growers and other stakeholders (see *Stakeholder Consultation*).
3. Through a logical framework, qualitatively map the project's impact pathway, including, activities, outputs, outcomes and principal economic, environmental, and social impacts.
4. Collect available data to quantify the impact pathway and estimate the attributable impacts using cost-benefit analysis (over a maximum 30 years with a 5% discount rate), and then sensitivity test the results to changes in key parameters.
5. Discuss the implications for stakeholders.



The analysis identified and quantified (where possible) the direct and spillover impacts arising from the RD&E. The results did not incorporate the distributional effect of changes to economic equilibrium (supply and demand relationships) which was beyond the scope of the MT21015 impact assessment program. A more detailed discussion of the method can be found in the *MT21015 2021-22 Summary Report* on the Hort Innovation project page [Horticulture Impact Assessment Program 2020/21 to 2022/23 \(MT21015\)](#).

A Stakeholder Case Study was developed to compliment this impact assessment and illustrate how the identified impacts have been realised in a practical setting. The Case Study can also be accessed via the Hort Innovation MT21015 project page.

## Project background

From 2003 the Australian Almond industry underwent a period significant growth, with production volume increasing from 7,017 tonnes in 2003 to 114,144 in 2017-18 underpinned by new orchard plantings. While the majority of growth in

production volume was destined for export markets<sup>1</sup>, expectations that production volumes would reach up to 200,000 tonnes by 2030<sup>2</sup> highlighted the importance of growing domestic consumer demand to support a sustainable industry.

As the regular consumption of almonds had been shown to support common health issues, such as supporting weight management, promoting gut health, and reducing the risk of type 2 diabetes and heart disease, the industry identified an opportunity to leverage the health-promoting attributes of almonds to drive consumption amidst a growing domestic supply. Engaging and educating health care professionals on the benefits of consuming almonds was identified as a suitable strategy to grow domestic demand, given the strong levels of consumer trust in health care providers (Hardie and Christine 2008) and associated message effectiveness.

Educational initiatives targeting healthcare professionals (HCPs) commenced on behalf of the almond industry in 2008 and continued over four distinct project iterations (AL07017, AL10015, AL11004, and AL12001) delivered by the Almond Board of Australia (ABA). Project AL16007 sought to continue to expand HCPs' awareness of the role that almonds play in a healthy diet, through a partnership approach between Nutrition Australia and the ABA that would support closer engagement with a wider cohort of HCPs, including General Practitioners, practice nurses, dietitians, nutritionists and fitness professionals. The specific objectives of AL16007 were to:

- Provide the scientific evidence that almonds play an important role in a healthy daily diet.
- Increase the understanding and advocacy by health professionals of the nutritional value of almonds to heart health, diabetes prevention and management and healthy weight.
- Raise the profile of almonds as a food with aspirational health benefits leveraging the health benefits of almonds as an exercise recovery snack and as a food that improves cognitive function.

With a focus on building HCP knowledge and awareness of the health benefits of almonds to increase domestic demand, AL16007 was closely aligned with the Almond 2017-2021 Strategic Investment Plan Outcome 5: *Increased domestic consumption from 16,000 tonnes in 2016 to 27,500 tonnes in 2022.*

## Project details

The Almond Board of Australia was selected as the lead delivery partner, and was supported by Nutrition Australia, with the project running from 2018 to 2021 (Table 1)

**Table 1. Project details**

<b>Project code</b>	AL16007
<b>Title</b>	Educating Health Professionals
<b>Research organization(s)</b>	Almond Board of Australia (lead) Nutrition Australia (supporting)
<b>Project leader</b>	Ross Skinner and Joseph Ebbage (ABA) Amber Kelaart (Nutrition Australia)
<b>Funding period</b>	May 2018 to July 2021
<b>Objective</b>	Educate HCPs on the health benefits of almond consumption, resulting in an increased willingness to recommend almonds to their clients in support of achieving health outcomes.

## Logical framework

The impact pathway linking the project's activities and outputs, and their assessed outcomes and impacts have been laid out in a logical framework (Table 2).

<sup>1</sup> 73.6% of total almond production volume was exported between 2018 and 2021.

<sup>2</sup> AL16007 Final Report

Table 2. Project logical framework detail

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">RD&amp;E activities</p>	 	<p><b>Nutrition Australia</b> <i>Lifestyle nutrition program</i></p> <ul style="list-style-type: none"> <li>• Completed a literature review on the benefits of almond consumption for diabetes.</li> <li>• Developed a communications and stakeholder (HCP) engagement plan.</li> <li>• Researched and scoped content for HCP facing fact sheets and website; focus on heart health, diabetes, healthy weight, gut health and cognition.</li> <li>• Disseminated information to HCPs through communication channels (see outputs).</li> </ul> <p><b>Almond Board of Australia</b> <i>General</i></p> <ul style="list-style-type: none"> <li>• Supplied and distributed almond product for sampling and educational activities.</li> <li>• Hosted content on ABA website.</li> </ul> <p><i>Fitness and sports nutrition program</i></p> <ul style="list-style-type: none"> <li>• Participated in industry conferences to extend health content engagement.</li> <li>• Developed content for sport dieticians Australia nutrition course.</li> </ul> <p><i>Industry nutrition program</i></p> <ul style="list-style-type: none"> <li>• Participated in industry conferences to extend health content engagement.</li> </ul>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">RD&amp;E outputs</p>		<p><b>Nutrition Australia</b></p> <ul style="list-style-type: none"> <li>• 12 facts sheets for HCPs (and clients) covering 6 topics: Good Health, Heart Health, Diabetes, Healthy Weight, Mood and Cognition, and Gut Health.</li> <li>• 6 digital clips for educating HCPs on above topics.</li> <li>• Attended 5 industry conferences (reaching 4350 delegates).</li> <li>• Recipe photo shoot for use in extension material.</li> <li>• 2 webinars (193 HCPs attending). Snack packs supplied to 124 HCP attendees.</li> <li>• Delivered 2-day Orchard Tour for 6 influential HCP.</li> <li>• State of the science document content and dissemination plan.</li> <li>• Social media communications on Facebook, Instagram, LinkedIn, and eDM with a total reach of 56,928 across all social channels.</li> </ul> <p><b>Almond Board of Australia</b></p> <ul style="list-style-type: none"> <li>• Delivered 1,000 education packs and snack tins to HCPs.</li> <li>• Hosted the Health Professionals website.</li> <li>• Attended 10 industry and health care conferences.</li> <li>• Developed content for to meet the professional development education requirements for fitness trainers.</li> <li>• 3D virtual exhibition capability.</li> <li>• Environmental sustainability brochure.</li> <li>• Support provided for 3 nutrition research projects.</li> </ul>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Outcomes</p>		<ul style="list-style-type: none"> <li>• Increased likelihood that HCPs engaged through project delivery would recommend almonds to clients as part of a healthy diet as a result of:             <ul style="list-style-type: none"> <li>○ Increased knowledge of the nutritional profile of almonds.</li> <li>○ Greater awareness and knowledge of latest scientific research on health benefits of almonds regarding the following topics: diabetes, heart health, weight management, cognitive function, and exercise recovery.</li> <li>○ Increased capacity and confidence of health professionals to communicate almond nutrition profile to clients.</li> <li>○ Increased HCP knowledge of production practices and sustainability initiatives supporting confidence and trust in the almond industry.</li> <li>○ At the project conclusion, 87% of engaged HCPs were 'very likely' to recommend almonds as part of a healthy diet compared to 51% at project start.</li> </ul> </li> <li>• Increased industry knowledge on demand creation initiatives that can be leveraged to support future market development. For example, in emerging high growth Asian markets where there remains a strong opportunity to motivate consumption with increasingly health-conscious populations (Stakeholder Consultation).</li> </ul>



- Through the increased likelihood of HCPs recommending almonds the project had the potential to generate increased demand for almonds, in turn supporting:
  - [Economic] Increased industry revenue.
  - [Socio-economic] Increased health and wellbeing, and reduced health care management costs, by contributing to reduced incidences of common ailments (diabetes, heart health, weight management) (AL16007 Final Report and KPMG 2023).
  - [Socio-economic] Increased contribution to regional community resilience and wellbeing from more profitable almond growers, particularly in the Sunraysia and Riverland regions (RMCG, 2021).
  - [Economic] Increased consumer knowledge of sustainable almond production practices supporting the industry’s social license to operate, decreasing potential costs relating to negative consumer sentiment (Williams and Martin 2011 and Moffat et al 2016).

## Project costs

The project was funded by Hort Innovation, using the almond research and development levy and contributions from the Australian Government, with additional funding from research partners Nutrition Australia (Table 3). Where relevant, overhead costs were added to the direct project cost to capture the full value of the RD&E investment.

## Nominal investment

**Table 3. Project nominal investment**

Year end 30 June	Hort Innovation project costs – ABA contract (\$)	Hort Innovation project costs – Nutrition Australia contract (\$)	Hort Innovation overhead costs <sup>1</sup> (\$)	Nutrition Australia In-Kind costs <sup>2</sup> (\$)	Total nominal cost (\$)
2018	Initial payment incurred in FY19				
2019	294,062	236,476	91,020	13,136	634,694
2020	232,483	58,433	36,873	7,203	334,992
2021	205,931	124,490	52,454	8,181	391,056
2022	Final payment incurred in FY21				
<b>Total</b>	<b>732,475</b>	<b>419,399</b>	<b>180,347</b>	<b>28,520</b>	<b>1,360,742</b>

1. The overhead and administrative costs were calculated from the Statement of Comprehensive Income in the Almond Fund Annual Reports (Hort Innovation 2019 to 2022), averaging 15.2% for the AL16007 funding period.

2. Other funds from Nutrition Australia were provided in the contract as a lump sum, so were apportioned yearly based on Hort Innovation cash costs.

## Present Value of investment

The nominal investment of \$1.36 million identified in Table 3 was adjusted for inflation (ABS, 2023) into a real investment of \$1.58 million (2022-23 equivalent values). This was then further adjusted to reflect the time value of money using a real discount rate of 5% (CRRDC 2018), generating a present value (PV) of costs equal to \$1.85 million (2022-23 PV).

## Project impacts

The impact pathway identified in Table 2 was evaluated against available data to determine if the impacts could be quantified with a suitable level of confidence. The domestic supply per capita of almonds increased over the project term, rising from 1.07kg in 2017-18 to 2.35 kg per capita in 2021-22, from a base of just 0.68kg in 2008 when educational initiatives towards HCPs commenced. However the extent to which the increase in domestic per capita consumption (with associated industry and social benefits) was supported by engaging HCPs was not able to be quantified due to a lack of supporting data.

While the project monitoring data recorded an increased likelihood of HCPs recommending almonds to their patients at the conclusion of the project, supporting evidence identifying the extent to which this intent was realised through increased advice, and subsequent increased consumption was not captured. The intensity of intervention by HCPs in supporting their patients (e.g. frequency of patient consultations), a factor linked to extent and magnitude of patient response (Williams et al.

2019) were not also not recorded. In addition, patients acting on the advice provided by HCPs is subject to a range of factors outside the direct influence of the HCP themselves, including demographic, cultural, environmental and lifestyle factors (Kelly et al. 2020). As a result, while the project was able to influence the knowledge of HCPs leading to an increase in intent to recommend almonds to relevant patient cohorts, the complex interaction of factors impacting demand make this outcome insufficient to confidently attribute and quantify a change in consumer demand and therefore impact. Discussions with project and industry stakeholders confirmed the challenges associated with quantifying and valuing impacts of this nature given the available evidence base.

To illustrate the basis by which impact could be quantified and valued through future investment in HCP education (or other consumer-facing education initiative), recommended data metrics are described in Table 4. Future investments should prioritise the collection of these data metrics to support a quantitative impact assessment. These data metrics would be aligned with available market price data to inform the extent by which market price and associated industry revenue impacts would have been stimulated through the project.

**Table 4: Recommended data metrics to support valuation of the economic impact: increase in domestic consumer demand for almonds supporting increased industry revenue**

Project monitoring data metric	Rationale	Data source
Total number of HCPs in Australia.	Define the target population of HCPs.	HCP industry association annual reports. ABS Census.
Number of patients receiving nutrition advice from HCP.	Define the share of the Australian population exposed to advice.	HCP association annual reports. Industry consultation.
Total engagement and reach of HCPs with project material.	Define the proportion of the target population engaged.	Project records capturing HCP engagement with key initiatives.
Change in HCP values and perceptions relating to almond attributes (e.g. nutrition and sustainability).	Values drive what is important to HCPs when making recommendations, the extent to which these perceptions of a product (almonds) align to values determines the extent to which they will then be recommended.	Baseline and follow up survey at the project mid-point and end of project output delivery.
Change in almond recommendations delivered by HCPs to patients.	Demonstrate how changed attitudes influences HCP behaviour change.	
Change in share of patients acting on advice delivered by HCP to consume almonds.	Determine the extent to which the HCP advice supports consumer demand for product.	Follow up survey at project conclusion (e.g. 6 months following delivery of educational material) with HCP.
Change in volume consumed in accordance with HCP advice.	Change total volume stimulated in the patient's diet will inform demand increase.	
Timeframe of patient behaviour change.	Required to support quantification of the overall demand profile beyond the advice period. Behaviours may peak, decline, and/or stabilise over time.	Industry consultation.
Almond specific effects on health and wellbeing	AL16007 identified the relationship between the broader nut category and health, but found limited evidence for almonds specifically (Final report Appendix 23 p4). Additional almond specific research would support greater confidence in impact attribution and quantification.	Further research.

### Break even analysis

In the absence of a quantitative impact assessment, break-even analysis was utilised to demonstrate the additional volume of almonds that would need to be sold for the investment to provide a break-even return. The PV cost of the investment in project AL16007 (\$1.85M) was divided by the average real farmgate kernel weight equivalent almond price from 2018-2021 (\$8.81/kg), resulting in a total minimum volume of 209,604 kg. Therefore, at this average farm gate price an additional 209,604 kg of almonds would need to be sold for the investment to break even. Compared against the total domestic supply of Australian almonds over the term of the investment (107,190 tonnes) this volume target is equivalent to a 0.2% share of the total volume supplied domestically over this period.

Given the recommended serving of nuts (including almonds) is 30 grams per day, the breakeven volume is equivalent to the recommended annual consumption of nuts for 19,142 people. This reflects a one off consumption change but will vary depending on the duration of change in HCP recommendation, the duration of change in consumption, and the previous consumption levels. For example, as the project was delivered over a 4 year period a minimum of 4,785 additional consumers would need to consume an additional 30 gram serve of almonds each day over four years to achieve the volume target.

Break even analysis could be completed at the commencement of future behaviour change demand creation projects to inform engagement benchmarks, performance expectations and strategic project delivery approaches to support these targets. The break even method can also be used to evaluate the relevance and appropriateness of the engagement strategy against other alternatives targeting different market segments (e.g. school education program).

The identified socio-economic impact relating to improved health and wellbeing and an associated reduction in healthcare management costs has the potential to provide an important public benefit. Consuming the recommended serving of nuts per day has been associated with reduced risk of coronary heart disease (25-29%) cardiovascular disease (21-22%), type 2 diabetes (13%), total cancer (11-15%), reduced all-cause mortality (22%) and supported weight management (Nuts for Life 2019 and KPMG 2023). Therefore the reduction in health care expenditure through positive health outcomes are considered to be relevant given that only 2% of the Australian population have been estimated to consume 30 grams of nuts per day, including almonds (Nikodijevic et al. 2020). However, the extent to which these health care costs have reduced again depends on the total increase in nut consumption stimulated through the HCP education, which could not be quantified given the limitations in data described above.

The potential health management cost savings resulting from dietary change have been previously modelled for nuts through Nutrition Australia (KPMG 2023) and for vegetables through the Hort Innovation project *Economic modelling of the impact of increased vegetable intake on health costs and grower returns* (VG15031). The data on nuts from KPMG (2023) could be used to inform the socio-economic value of increased almond consumption, but would again require data on the extent to which consumption has increased as a result of HCP education. The analysis could be further refined through increased detail on the specific relationship between almonds and health and wellbeing (separate to the broader nut category).

## Implications and learnings

The delivery of AL16007 continued the almond industry's program (started in 2008) of seeking to increase the knowledge and attitudes of a range of HCPs regarding the benefits of consuming almonds to support several common and important health ailments. This resulted in an increased likelihood of HCPs delivering recommendations to their patients to consume almonds in support of their health. The HCP engagement was supported by several initiatives, including workshops, communication updates and outreach at industry events.

The educational engagement activities targeted at HCPs was a strategy that leveraged favourable evidence linking almond consumption to reduced risk of several health ailments and was especially relevant given only 2% of the Australian population consume the recommended serve of nuts on a daily basis (Nikodijevic et al. 2020). Anecdotal stakeholder feedback suggested that through sustained investment (continuing through several previous projects), almonds have elevated their profile and association as a health food amongst HCPs and the general population, especially by challenging the perception that the energy and fat content of almonds was linked with weight gain, which had been identified as a key barrier to consumption (Stakeholder Consultation).

The domestic supply per capita of almonds increased over the project term, rising from 1.07kg in 2017-18 to 2.35 kg per capita in 2021-22, from a base of just 0.68kg in 2008 when educational initiatives towards HCPs commenced. However, while the project monitoring data recorded an increased likelihood of HCPs recommending almonds to their patients at the conclusion of the project, supporting evidence identifying the extent to which this intent was realised through increased

advice, and subsequent increased consumption was not captured. While evidence generally indicates that HCPs such as dieticians have a positive impact on supporting patients achieve their desired health care goals (Williams et al. 2019; Mitchell et al. 2017), the extent of the influence in changing patient almond consumption is contingent on factors including the intensity of the HCP involvement (Williams et al. 2019) and broader demographic factors (Kelly et al. 2020). The lack of empirical data connecting HCP intent to recommend almonds and actual consumption changes, combined with the complex interaction of factors impacting demand meant there was insufficient evidence to confidently estimate the attributable impact of AL19004. Discussions with project and industry stakeholders confirmed the challenges associated with quantifying and valuing impacts of this nature given the available evidence base. Through the impact assessment analysis, recommendations were made to enable future research to address these data gaps.

The results from a break even analysis suggest that the minimum number of additional sales required as a result of consumer demand from HCP providing recommendations to consume almonds was equivalent to 4,785 additional consumers achieving a daily 30 gram serve of almonds over a four year period. This is equivalent to a 0.2% share of the total volume supplied domestically over the project period.

Despite the challenges in quantifying the overall economic impact of HCP education, discussions with industry stakeholders stressed that this program served a valuable component of market development. The Australian domestic market has evolved to be considered an established market with a mature growth trajectory by stakeholders, with this maturity attributed in part to the role of the HCP education program. Stakeholders commented that the legacy of AL16007 and previous projects focusing on HCP education domestically will be leveraged to support market development in emerging high growth Asian markets through future investments, where there remains a strong opportunity to motivate consumption with increasingly health-conscious populations.

To enable a quantified impact assessment, the future delivery of educational programs targeting HCPs should prioritise data collection that captures changes in HCP attitudes towards delivering recommendations to patients, as well as the actual change in recommendations being provided, and the resultant patient response. Without this data to provide a direct link and estimate of attributable changes in almond consumption, any impact assessment is effectively a hypothetical scenario analysis rather than a data-driven ex-post impact assessment.

## Stakeholder consultation

Where possible, Ag Econ sought to engage multiple stakeholders across key areas of the logical framework and impact pathway to augment existing information and data sources, and reduce any uncertainty or bias from individual stakeholders. All stakeholders were engaged through telephone or online meetings, with follow up emails as necessary. Consultation followed a semi-structured approach in line with broad topics relating to the impact pathway and associated data requirements. Table 5 outlines the stakeholders consulted as part of this impact assessment and the topics on which they were consulted.

**Table 5. Stakeholder consultation by theme**

Stakeholder details		Consultation topics						
Stakeholder and organisation	Stakeholder type	Related research	Research inputs	Research outputs	Research immediate outcomes	Follow on research	Stakeholder adoption	Impact areas and data
Jacquelyn Simpson, Hort Innovation R&D Manager Human Nutrition	RD&E process owner / manager	✓	✓	✓	✓	✓		
Amber Kelaart, Nutrition Australia	RD&E practitioner (project lead)	✓	✓	✓	✓	✓	✓	✓
Joseph Ebbage, Market Development Manager, Almond Board of Australia	RD&E practitioner	✓	✓	✓	✓	✓	✓	✓
Jemma O'Hanlon, Heart Foundation	RD&E Stakeholder				✓		✓	✓
Simone Austin, Healthy Life	RD&E Stakeholder				✓		✓	✓

## Glossary of economic terms

Benefit-cost ratio (BCR)	The ratio of the present value of investment benefits to the present value of investment costs.
Cost-benefit analysis (CBA)	A conceptual framework for the economic evaluation of projects and programs in the public sector. It differs from a financial appraisal or evaluation in that it considers all gains (benefits) and losses (costs), regardless of to whom they accrue.
Direct Effects	Impacts generated for the funding industry as a result of adoption of the RD&E outputs and recommendations, typically farm level outcomes relating to productivity and risk.
Discounting (Present Values)	The process of relating the costs and benefits of an investment to a base year to reflect the time value of money or opportunity cost of RD&E investment. The analysis applies a real discount rate of 5% in line with CRRDC Guidelines (CRRDC 2018).
Economic Equilibrium	Due to a market's underlying supply and demand curves, changes in supply will have an impact on price and vice-versa. The Economic Equilibrium is the point at which market supply and price are balanced. Estimating the magnitude of market response to changes in supply or demand is a complex and demanding task that is considered beyond the scope of most CRRDC Impact Assessments (CRRDC 2018).
Internal rate of return (IRR)	The discount rate at which an investment has a net present value of zero, i.e. where present value of benefits = present value of costs.
Modified internal rate of return (MIRR)	The internal rate of return of an investment that is modified so that the cash inflows generated from an investment are re-invested at the rate of the cost of capital (in this case the discount rate).
Net present value (NPV)	The discounted value of the benefits of an investment less the discounted value of the costs, i.e. present value of benefits - present value of costs.
Nominal and real values	Nominal values reflect the actual values in a given year (e.g. contracted RD&E expenses). These are converted to real (inflation adjusted) values to make them comparable across time.
Spillover Effects	Impacts generated for stakeholders who did not fund the RD&E, including other agricultural industries, consumers, communities, and the environment.

## Abbreviations

ABA Almond Board of Australia

CRRDC Council of Rural Research and Development Corporations

HCP Health Care Professional

RD&E Research, Development and Extension

## References

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