Hort Innovation

Final Report

Industry-specific impact assessment program: Nursery

Impact assessment report for project *Nursery and garden industry communications 2013-2015* (NY12011)

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AgEconPlus and Agtrans Research

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Executive Summary

What the report is about

This report presents the results of an impact assessment of a Horticulture Innovation Australia Limited (Hort Innovation) investment in Nursery and Garden Industry Communications 2013-2015 (Project NY12011). The project was completed over the period April 2013 to November 2015.

Methodology

The investment was first analysed qualitatively within a logical framework that included activities and outputs, outcomes and impacts. Actual and/or potential impacts then were categorised into a triple bottom line framework. Principal impacts identified were then considered for valuation in monetary terms (quantitative assessment). Past and future cash flows were expressed in 2020/21 dollar terms and were discounted to the year 2020/21 using a discount rate of 5% to estimate the investment criteria and a 5% reinvestment rate to estimate the modified internal rate of return (MIRR).

Results/key findings

The investment in this nursery industry project produced effective tools that could be, and were, used to deliver targeted and focussed communications pertaining to industry activities. This enhanced set of communication mechanisms not only improved the engagement of stakeholders within the industry, but also built more effective relationships with those external to the industry.

Investment Criteria

Total funding from all sources for the project was $0.41 million (present value terms). The investment produced an estimated total expected benefit of $1.27 million (present value terms). This gave a net present value of $0.86 million, an estimated benefit-cost ratio of 3.08 to 1, an internal rate of return of 31.4% and a MIRR of 8.8%.

Conclusions

The investment in NY12011 will likely contribute to improved decision making within industry sectors, but also an improved understanding of the industry by those external to the industry.

Keywords

Impact assessment, cost-benefit analysis, nursery industry, communications

Introduction

All research, development, and extension (RD&E) and marketing levy investments undertaken by Horticulture Innovation Australia Limited (Hort Innovation) are guided and aligned to specific investment outcomes, defined through a Strategic Investment Plan (SIP). The SIP guides investment of the levy to achieve each industry's vision. The relevant industry SIPs apply for the financial years 2016/17 – 2020/21.

In accordance with the Organisational Evaluation Framework, Hort innovation has the obligation to evaluate the performance of its investment undertaken on behalf of industry.

The impact assessment program addresses this requirement through conducting a series of industry-specific ex-post independent impact assessments of the berry (RB + BS), mango (MG), turf (TU) and nursery (NY) RD&E investment funds.

Fourteen RD&E investments (projects) were selected through a stratified, random sampling process. The industry samples were as follows:

- Four RB + BS projects were chosen worth $1.44 million (nominal Hort Innovation investment) from an overall population of 16 projects worth an estimated $8.59 million,
- Three MG projects worth $1.77 million (nominal Hort Innovation investment) from an overall population of 16 projects worth approximately $7.90 million,
- Four TU projects worth $0.66 million (nominal Hort Innovation investment) from a total population of 15 projects worth $4.81 million, and
- Three NY projects worth $0.96 million (nominal Hort Innovation investment) from an overall population of 19 projects worth $7.32 million.

The project population for each industry included projects where a final deliverable had been submitted in the five-year period from 1 July 2015 to 30 June 2020.

The projects for each industry sample were chosen such that the investments represented (1) at least 10% of the total Hort Innovation RD&E investment expenditure for each industry, and (2) the SIP outcomes (proportionally) for each industry where possible given the small sample sizes. Also, for the NY sample only, there were three projects that had been evaluated previously in 2019 (two projects) and 2020 (one project). Hort Innovation requested that the three additional NY projects be assessed against the current sample criteria. All three projects that had previously been evaluated met the current sample criteria. As a result, and to increase the sample size for the NY industry evaluations, the benefit and cost cash flows from the 2019 and 2020 evaluations were updated and the three projects were incorporated into the current NY sample.

General Method

The impact assessment follows general evaluation guidelines that are now well entrenched within the Australian primary industry research sector including Research and Development Corporations, Cooperative Research Centres, State Departments of Agriculture, and some universities. The approach includes both qualitative and quantitative descriptions that are in accord with the impact assessment guidelines of the CRRDC (CRRDC, 2018).

The evaluation process involved identifying and briefly describing project objectives, activities and outputs, outcomes, and impacts. The principal economic, environmental, and social impacts were then summarised in a triple bottom line framework.

Some, but not all, of the impacts identified were then valued in monetary terms. Where impact valuation was exercised, the impact assessment uses cost-benefit analysis as its principal tool. The decision not to value certain impacts was due either to a shortage of necessary evidence/data, a high degree of uncertainty surrounding the potential impact, or the likely low relative significance of the impact compared to those that were valued. The impacts valued are therefore deemed to represent the principal benefits delivered by the project. However, as not all impacts were valued, the investment criteria reported for individual investments potentially represent an underestimate of the performance of that investment.

Background & Rationale

Background

The Australian nursery and garden (N&G) industry is a diverse industry that is present in all Australian States and Territories. It produces live plants for various uses such as production of fruit, vegetables, forestry, as well as plants for landscaping for households and community areas.

The N&G industry is a very large horticultural industry with value of production of $2.56 billion for the year ending June 2020; wholesale value was higher at $2.69 billion in the same year (Australian Horticulture Statistics Handbook 2019/20). The value of both nursery exports and imports is relatively minor compared to the Australian value of production.

Table 1 following shows the recent production, supply and value of the Australian nursery industry.

Table 1: Australian Nursery Industry Production and Value for Years Ending June 2018 to 2020

Year ended June	Total Australian Production (million units)	Production ($m)	Imports ($m)	Supply Wholesale Value ($m)
2018	1,900	2,400.0	37.7	2,571.2
2019	2,030	2,440.0	41.9	2,563.0
2020	2,100	2,563.0	37.8	2,685.7
Average	2,010	2,467.7	39.1	2,606.6

Source: Australian Horticultural Statistics Handbook, 2019/20

The marketing and research and development activities of the nursery industry are guided by the industry's Strategic Investment Plan (SIP) developed by Hort Innovation in consultation with the nursery industry and levy payers. The current SIP addresses the Australian nursery industry's research and development (R&D) needs from 2017 to 2021. The activities are funded by levies payable on nursery plants produced in Australia; the marketing and R&D levy funds are managed by Hort Innovation.

Rationale

Project NY12011 was developed to strengthen the nursery industry internally as well as externally. Improved internal communications were viewed as assisting with the spatial and diverse nature of the industry so that sharing of issues and their solutions could be better communicated between industry sectors and businesses. In addition, improved external communications were viewed as needing strengthening to improve knowledge and understanding by other sectoral interests interacting with the nursery industry and its strategies.

The project was to build on a previous communications project (NY10010) that had developed previous Nursey Papers and Policy Positions through targeted communications, and particularly relating to opportunities for greenlife in urban environments.

The approach was to make available communication tools to assist the National Technical and Policy Officer, funded through another Hort Innovation project, to deliver nursery industry information, both internally and externally.

Project Details

Summary

Project Code: NY12011

Title: *Nursery and Garden Industry Communications 2013-2015*

Research Organisation: Nursery and Garden Industry Australia (NGIA)

Project Leader: Peter Vaughan (April 2015 to November 2015)

Project Leader: Robert Prince (April 2013 to April 2015)

Period of Funding: April 2013 to November 2015

Objectives

The broad aim of the project was to strengthen the capacity of the N&G industry to respond to growth opportunities and challenges that impact on industry growth and sustainable development. More specifically, the project was funded to provide tools to be utilised more broadly to ensure targeted and focused communication methods are in place across all industry activities.

The specific objectives of the project were intimately aligned with two key objectives of the Nursery Industry SIP, namely:

- To enhance the capacity and efficiency of the industry's resources through upgrading industry skills, knowledge and practice.
- To build industry support through shaping government, public and related industry understanding of the industry's benefits, and enhance these benefits through communication.

The project was also planned to be closely aligned with the industry marketing program 2020 Vision, a 2013 national campaign to change via increasing Australian urban green space by 20% by 2020.

Logical Framework

Table 2 following provides a detailed description of the project in a logical framework.

Table 2: Logical Framework for Project NY12011

Activities	Major project activities undertaken throughout the project included: • Continued development of Nursery Papers as a mechanism of delivering research findings to growers in the N&G industry. • Continued development of digital communications facilities such as the Nursery and Garden Industry Association (NGIA) web page (ngia.com.au), a plant safely web page (plantsafely.com.au), an industry digital blog (your levy at work), as well as social media channels including Facebook, Twitter, and Linked In. • Development of metrics of audience use of various communication facilities.
Outputs	• Nursery Papers (30) were produced that addressed industry R&D, as well as business and technical topics, including: o Biosecurity and preparedness, o Management of Fungus Gnat, o Managing iron, o Bridging e-Business technology gap,

	○ Automating irrigations scheduling, ○ Accreditation and certification, ○ Managing chemicals, and ○ Valuing the urban forest in Sydney. • An increased and improved range and quality of digital communication platforms were produced, including: ○ A monthly electronic mail-out (Your Levy at Work) that reached 1,600 recipients. ○ Industry policy positions across a range of issues including water, plant labelling and environmental sustainability. • Metrics were used in assessing audience use of communications provided. Primarily through open and click through rates on emails, readership of nursery papers on-line and social media metrics (Peter Vaughan, pers. comm., 2021). • A series of four recommendations for future communication projects included: (a) NGIA retains direction and control of communication of levy funded activity. (b) Industry policy development continues. (c) Focus on the future development of social media with regards to leverage of the benefits from this medium, as well as to amplify communication and drive practice change. (d) Nursery papers continue to be developed and published. • The outcomes of the four recommendations were (Peter Vaughan, pers. comm., 2021): (a) The recommendation was basically supported with NGIA involved in the delivery of the next levy funded communications program, but it was done in conjunction with Cox Inall Communications. So NGIA could certainly provide input into the direction, but the project was a partnership between NGIA and 'controlled' by Hort Innovation through their contracting approach. (b) A number of policies previously developed were reviewed and updated and a number were maintained as written as they were still relevant. Direct levy funding for policy development ceased at the end of Project NY12011. (c) Social media became an important approach to communicating to a range of levy payers and industry stakeholders in both subsequent levy funded communications programs. (d) Nursery Papers have continued to be produced on a monthly basis and will be until the end of the current project which finishes in November 2021.
Outcomes	<u>Intermediate outcomes</u> • Improved access to information eliciting an increase by N&G members in their use of available information. • Increased awareness of levy payers and other industry stakeholders of the outcomes of industry investment in both research and development (R&D) and marketing. • A subsequent independent review of the project reported that industry participants saw the approach and delivery of the project as appropriate and valuable. <u>Final outcomes</u>

	• More informed N&G industry participants. • Increased knowledge and ideas utilised by industry that could lead to improved nursery management. • Reduced potential for spread of pests and diseases from the N&G industry, and potentially, an increase in biodiversity in nearby environments. • Other sectors that interface with the N&G sector are more/ better informed (e.g. environmental groups, input and output supply chain businesses, State government and local government organisations, residential sectors).
Impacts	• Improved business and technical management by some N&G industry participants, leading to increased income and/or reduced costs of N&G industry businesses. • Improved practices related to management of chemicals and pest and disease, resulting in a reduced incidence of external negative impacts to nearby non-N&G land uses, including a potential increase in biodiversity. • Greater appreciation of the N&G industry as a respected and responsible industry, leading potentially to a strengthening of the industry's future social licence to operate.

Project Investment

Nominal Investment

Table 3 shows the annual investment made in Project NY12001 by Hort Innovation. All funding was provided by Horticulture Australia Limited (Hort Innovation).

Table 3: Annual Investment in Project NY12001 (nominal $)

Year ended 30 June	HORT INNOVATION ($)	TOTAL ($)
2013	40,000	40,000
2014	40,000	40,000
2015	84,800	84,800
2016	68,500	68,500
Total	233,300	233,300

Program Management Costs

For the Hort Innovation investment the cost of managing the Hort Innovation funding was added to the Hort Innovation contribution for the project via a management cost multiplier (1.162). This multiplier was estimated based on the share of 'payments to suppliers and employees' in total Hort Innovation expenditure (3-year average) reported in the Hort Innovation's Statement of Cash Flows (Hort Innovation Annual Report, various years). This multiplier was then applied to the nominal investment by Hort Innovation shown in Table 3.

Real Investment and Extension Costs

For purposes of the investment analysis, the investment costs of all parties were expressed in 2020/21 dollar terms using the Implicit Price Deflator for Gross Domestic Product (ABS, 2021). No additional costs of extension were included as the project was directly concerned with communication and communicated findings to stakeholders within the project activities.

Impacts

Table 4 provides a summary of the principal types of impacts delivered by the project, based on the logical framework. Impacts have been categorised into economic, environmental and social impacts.

Table 4: Triple Bottom Line Categories of Principal Impacts from Project NY12001

Economic	• Improved business and technical management by some N&G industry participants. • Increased sales, income and/or reduced costs of some nursery and garden industry businesses.
Environmental	• Reduced incidence of external negative impacts to nearby non-N&G industries and land users, including a potential increase in biodiversity.
Social	• Greater appreciation of the N&G industry as a respected and responsible industry, leading potentially to a strengthening of the industry's future social licence to operate.

Public versus Private Impacts

The major impact identified from the investment (management and economic impacts to individual N&G operators) is predominantly a private impact due to potential productivity and profitability gains for some N&G operators. Public impacts also have been delivered, including increased biodiversity and reduced impacts on the environment.

Distribution of Private Impacts

The private impact to N&G industry participants will be shared with businesses operating across the N&G industry input and output supply chains; shares will be distributed, according to the relevant elasticities of supply and demand along each supply chain.

Impacts on Other Australian Industries

It is likely that most impacts will be confined to the N&G industry and their supply chains. However, some impacts may well be captured by some industries operating near N&G industry locations.

Impacts Overseas

There are assumed to be no impacts to overseas interests.

Match with National Priorities

The Australian Government's Science and Research Priorities and Rural RD&E priorities are reproduced in Table 5. The project outcomes and related impacts will contribute primarily to Rural RD&E Priority 4, with some outcomes and impacts also contributing to Priorities 2 and 3. In addition the project is likely to contribute to Science and Research Priorities 1 and 2.

Table 5: Australian Government Research Priorities

Australian Government	
Rural RD&E Priorities (est. 2015)	**Science and Research Priorities (est. 2015)**
1. Advanced technology 2. Biosecurity 3. Soil, water and managing natural resources 4. Adoption of R&D	1. Food 2. Soil and Water 3. Transport 4. Cybersecurity 5. Energy and Resources 6. Manufacturing 7. Environmental Change 8. Health

Sources: DAWE (2015) and OCS (2015)

Alignment with the Nursery Strategic Investment Plan 2017-2021

The strategic outcomes and strategies of the Australian nursery industry are outlined in the Nursery Strategic Investment Plan 2017-2021[1] (Hort Innovation, 2017). The specific objectives of Project NY12011 were:

- To enhance the capacity and efficiency of the industry's resources through upgrading industry skills, knowledge and practice.
- To build industry support through shaping government, public and related industry understanding of the industry's benefits, and enhance these benefits through communication.

These project objectives were consistent with contributions to Outcomes 2 and 4 in the SIP, namely:

- Outcome 2: Increased marketing effectiveness and efficiency and better decision making based on increased industry knowledge.
- Outcome 4: Improved productivity, profitability and professionalism through the creation of opportunities through innovation and adoption of industry best management practices.

[1] For further information, see: https://www.horticulture.com.au/hort-innovation/funding-consultation-and-investing/investment-documents/strategic-investment-plans/

Valuation of Impacts

Impacts Valued

Analyses were undertaken to estimate for total benefits that included future expected benefits. A degree of conservatism was used when finalising assumptions, particularly when some uncertainty was involved. Sensitivity analyses were undertaken for those variables where there was greatest uncertainty or for those that were identified as key drivers of the investment criteria.

Impact Not Valued

Not all of the impacts identified in Table 4 could be valued in the assessment. The impacts not valued were:

- Reduced incidence of external negative impacts to nearby non-N&G industries, including a potential increase in biodiversity.
- Greater appreciation of the N&G industry as a respected and responsible industry, leading potentially to a strengthening of the industry's future social licence to operate.

These impacts were not valued due to:

- The lack of data on the extent of any reduction in N&G negative impacts and the extent of how these may have been reduced due to the project.
- The lack of data on the extent and risk of such a loss of social licence if it had occurred and how the extent and risk may have changed due to the project investment.

Summary of Assumptions

The impact that was valued was that driven by improved business and technical management of some N&G industry participants. This was assumed to have driven either by increased sales and income, and/or reduced costs of nursery and garden industry businesses.

Assumptions required for valuing the impact of NY12011

The key base data required to carry out the impact valuation included:

- Gross farm gate value of Australian nursery industry
- Total number of nursery businesses
- An estimate of average gross farm gate value per business (turnover)
- Existing profit as a percentage of turnover

Other key assumptions required included the likely changes due to the project that related to:

- The proportion of businesses that increase profits due to the project
- Extent of profit increase for the businesses affected
- Year of first impact and the longevity of the impact

A summary of all assumptions made for valuation of the improvement in profits due to the project is provided in Table 6 below.

Table 6: Summary of Assumptions for Impact Valued

Variable	Assumption	Source/Comment
Increased profitability		
Gross farm gate value of Australian nursery industry	$2.44 billion	Greenlife Industry Australia (2019)
Total number of nursery businesses	1,651	Hort Innovation (2018)
Average gross farm gate value per business (turnover)	$1.48 million	$2.44 billion/1,651; Also, Hort Innovation Project NY16004 data show that most greenlife businesses (59%) have a turnover of less than $500,000 per year but that businesses with a turnover of more than $2 million per year account for 74% of the industry's gross value of production.
Profit as a percentage of turnover	9.8% (average of 15% and 4.6%)	Previous benchmarking studies have previously estimated profit as a percentage of turnover of nurseries at between 4.6% and 15% (e.g. IBISWORLD)
Maximum proportion of businesses that increase profits due to the project	5%	Analyst assumptions
Extent of profit increase for the businesses affected	5%	
Year of first impact	2016/17	Analyst estimate of year in which increased profitability commences due to the project
Year of maximum impact	2019/20	Year of maximum profitability
Year in which impact ceases	2023/24	Analyst estimate of year in which impacts cease without further communication investment – impact to decline linearly to zero in 2023/24
Risk and attribution factors		
Probability of output	100%	Analyst assumptions
Probability of outcome (use of the outputs)	75%	
Probability of impact given usage	75%	
Attribution	90%	A small proportion of the impacts is assumed to have been related to the previous communications project (NY10010) that had developed earlier Nursey Papers and Policy Positions through targeted communications
Counterfactual		
Without the NY 12011 project funding, it is assumed that the impact assumed in Table 4 would not have occurred; any impacts from the previous communications project (NY10010) have already been accommodated via the attribution factor provided in Table 6.		

Results

All costs and benefits were discounted to 2020/21 using a discount rate of 5%. A reinvestment rate of 5% was used for estimating the Modified Internal Rate of Return (MIRR). The base analysis used the best available estimates for each variable, notwithstanding a level of uncertainty for many of the estimates. All analyses ran for the length of the project investment period plus 30 years from the last year of investment (2015/16) as per the CRRDC Impact Assessment Guidelines (CRRDC, 2018).

Investment Criteria

Tables 7 and 8 show the investment criteria estimated for different periods of benefits for the total investment and the Hort Innovation investment alone. As Hort Innovation was the only financial contributor, the results in Tables 7 and 8 are the same.

Table 7: Investment Criteria for Total Investment in Project NY12011

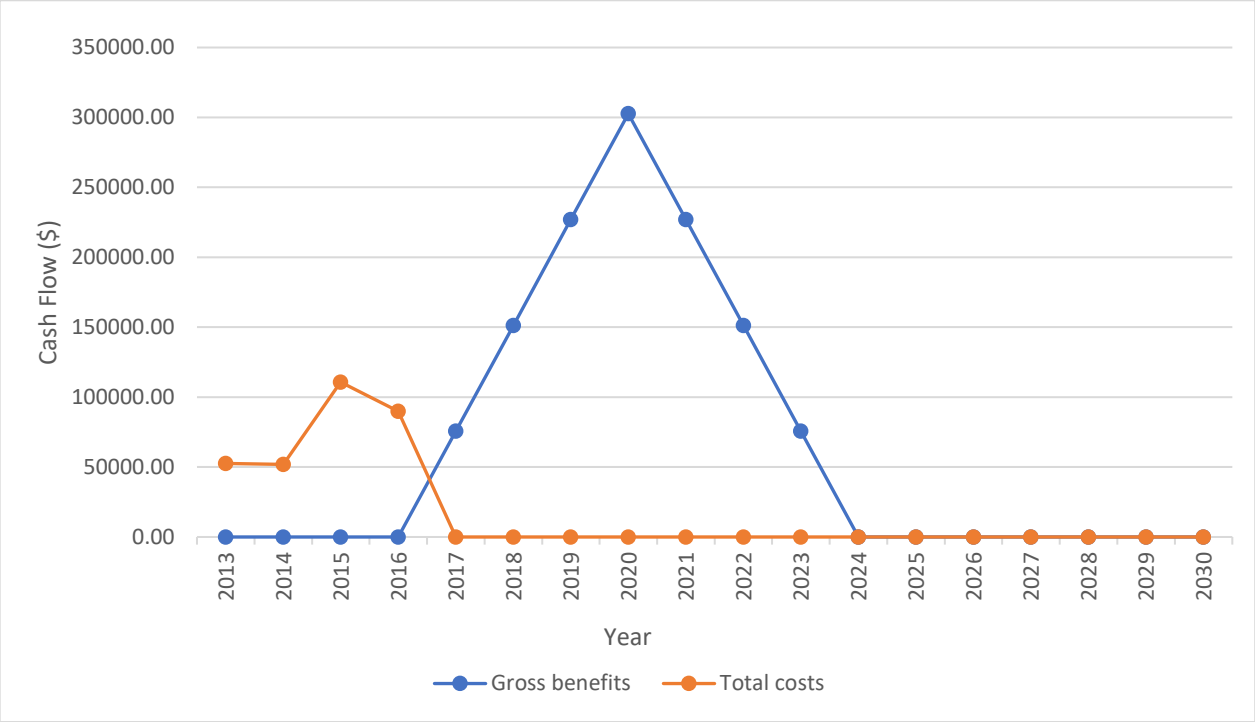
Investment Criteria	Years after Last Year of Investment						
	0	5	10	15	20	25	30
Present Value of Benefits ($m)	0.00	1.06	1.27	1.27	1.27	1.27	1.27
Present Value of Costs ($m)	0.41	0.41	0.41	0.41	0.41	0.41	0.41
Net Present Value ($m)	-0.41	0.65	0.86	0.86	0.86	0.86	0.86
Benefit-Cost Ratio	0.00	2.56	3.08	3.08	3.08	3.08	3.08
Internal Rate of Return (%)	Negative	28.73	31.44	31.44	31.44	31.44	31.44
MIRR (%)	Negative	21.75	15.95	12.49	10.69	9.59	8.84

Table 8: Investment Criteria for Hort Innovation Investment in Project NY12011

Investment Criteria	Years after Last Year of Investment						
	0	5	10	15	20	25	30
Present Value of Benefits ($m)	0.00	1.06	1.27	1.27	1.27	1.27	1.27
Present Value of Costs ($m)	0.41	0.41	0.41	0.41	0.41	0.41	0.41
Net Present Value ($m)	-0.41	0.65	0.86	0.86	0.86	0.86	0.86
Benefit-Cost Ratio	0.00	2.56	3.08	3.08	3.08	3.08	3.08
Internal Rate of Return (%)	negative	28.73	31.44	31.44	31.44	31.44	31.44
MIRR (%)	negative	21.75	15.95	12.49	10.69	9.59	8.84

The annual undiscounted benefit and cost cash flows for the total investment for the duration of the NY12011 investment are shown in Figure 1.

Figure 1: Annual Cash Flow of Undiscounted Total Benefits and Total Investment Costs



Sensitivity Analyses

A sensitivity analysis was carried out on the discount rate. The analysis was performed for the total investment and with benefits taken over the life of the investment plus 30 years from the last year of investment. All other parameters were held at their base values. Table 9 presents the results. The results show a low sensitivity to the discount rate, largely due to the short period of benefits.

Table 9: Sensitivity to Discount Rate
(Total investment, 30 years)

Investment Criteria	**Discount rate**		
	0%	**5% (base)**	**10%**
Present Value of Benefits ($m)	1.21	1.27	1.35
Present Value of Costs ($m)	0.31	0.41	0.56
Net Present Value ($m)	0.91	0.86	0.79
Benefit-cost ratio	3.96	3.08	2.43

A sensitivity analysis was then undertaken for the maximum proportion of businesses increasing profits and the extent of the profit increase assumed. Optimistic and pessimistic scenarios were tested for these two important assumptions that drive the impact. Results are provided in Table 10. The investment breaks even when each of the assumptions in Table 10 are set at 2.85%; the pessimistic scenario in Table 10 is very close to the break-even result.

Table 10: Sensitivity to Optimistic and Pessimistic Assumptions (Total investment, 30 years)

Investment criteria	**Pessimistic**	**Base**	**Optimistic**
	Businesses increasing profits (2.5%) and extent of profit increase (2.5%)	Businesses increasing profits (5%) and extent of profit increase (5%)	Businesses increasing profits (10%) and extent of profit increase (10%)
Present Value of Benefits ($m)	0.32	1.27	5.10
Present Value of Costs ($m)	0.41	0.41	0.41
Net Present Value ($m)	-0.10	0.86	4.69
Benefit-cost ratio	0.77	3.08	12.31

Confidence Rating

The results produced are highly dependent on the assumptions made, some of which are especially uncertain. There are two factors that warrant recognition. The first factor is the coverage of benefits. Where there are multiple types of benefits it is often not possible to quantify all the benefits that may be linked to the investment. The second factor involves uncertainty regarding the assumptions made, including the linkage between the research and the assumed outcomes.

A confidence rating based on these two factors has been given to the results of the investment analysis (Table 11). The rating categories used are High, Medium and Low, where:

High: denotes a good coverage of benefits or reasonable confidence in the assumptions made

Medium: denotes only a reasonable coverage of benefits or some uncertainties in assumptions made

Low: denotes a poor coverage of benefits or many uncertainties in assumptions made

Table 11: Confidence in Analysis of Project

Coverage of Benefits	**Confidence in Assumptions**
Medium	Medium-Low

Coverage of benefits was assessed as Medium. The most important impact (business profitability) was valued. Any impact relating to a reduced incidence of external negative impacts to nearby non N&G industries, nor the N&G industry reducing its risk of loss of social licence were not valued.

Confidence in assumptions for valuation of impacts was rated as Medium-Low as some of the assumptions made were not supported strongly by surveys or other forms of evidence of change.

Conclusion

The investment in NY12011 is likely to contribute to improved management of some N&G businesses via an increased diversity and availability of industry communication channels.

Total funding from all sources for the project was $0.41 million (present value terms). The investment produced estimated total expected benefits of $1.27 million (present value terms). This gave a net present value of $0.86 million, an estimated benefit-cost ratio of 3.08 to 1, an internal rate of return of 31.4% and a modified internal rate of return of 8.8%.

Glossary of Economic Terms

Cost-benefit analysis:	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.
Benefit-cost ratio:	The ratio of the present value of investment benefits to the present value of investment costs.
Discounting:	The process of relating the costs and benefits of an investment to a base year using a stated discount rate.
Internal rate of return:	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.
Investment criteria:	Measures of the economic worth of an investment such as Net Present Value, Benefit-Cost Ratio, and Internal Rate of Return.
Modified internal rate of return:	The internal rate of return of an investment that is modified so that the cash inflows from an investment are re-invested at the rate of the cost of capital (the re-investment rate).
Net present value:	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.
Present value of benefits:	The discounted value of benefits.
Present value of costs:	The discounted value of investment costs.

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Abbreviations

ABS	Australian Bureau of Statistics
CRRDC	Council of Research and Development Corporations
DAWE	Department of Agriculture, Water and the Environment
GDP	Gross Domestic Product
IRR	Internal Rate of Return
MIRR	Modified Internal Rate of Return
N&G	Nursery and Garden
NGIA	Nursery and Garden Industry Association
PVB	Present Value of Benefits
R&D	Research and Development
RD&E	Research, Development and Extension
SIP	Strategic Investment Plan