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# **An Impact Assessment of FRDC Investment in 2016-411: Skills and Capability Building Priorities**

**Agtrans Research**

**July 2018**

FRDC Project No **2016-134**

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**An Impact Assessment of FRDC Investment in 2016-411: Create a matrix of skill and capability building priorities across FRDC partners and advisory groups  
Project No 2016-134**

2018

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In submitting this report, the researcher has agreed to FRDC publishing this material in its edited form.

# Contents

<b>Contents .....</b>	<b>iii</b>
List of Tables .....	iv
List of Figures .....	iv
<b>Acknowledgments .....</b>	<b>v</b>
<b>Abbreviations .....</b>	<b>v</b>
<b>Executive Summary .....</b>	<b>vi</b>
<b>Introduction.....</b>	<b>7</b>
<b>General Method .....</b>	<b>8</b>
<b>Background and Rationale.....</b>	<b>9</b>
<b>Project Details .....</b>	<b>10</b>
Summary .....	10
Objectives .....	10
Logical Framework.....	10
<b>Project Investment .....</b>	<b>13</b>
Nominal Investment.....	13
Program Management Costs .....	13
Real Investment and Extension Costs.....	13
<b>Impacts.....</b>	<b>14</b>
<b>Valuation of Impacts.....</b>	<b>16</b>
Impacts Valued .....	16
Impacts not Valued .....	16
FRDC RD&E Investment Assumed Impacted.....	16
Counterfactual.....	17
Summary of Assumptions .....	17
<b>Results .....</b>	<b>18</b>
Investment Criteria.....	18
Sensitivity Analyses.....	19
Confidence Ratings and other Findings .....	20
<b>Conclusions .....</b>	<b>21</b>
<b>Glossary of Economic Terms .....</b>	<b>22</b>
<b>References.....</b>	<b>23</b>

## List of Tables

Table 1: Logical Framework for Project 2016-411 .....	10
Table 2: Annual Investment in Project 2016-411 (nominal \$).....	13
Table 3: Triple Bottom Line Categories of Principal Impacts from Project 2016-411.....	14
Table 4: Australian Government Research Priorities.....	15
Table 5: Allocation of FRDC Funding across Various Activities Including Partnership Agreements	16
Table 6: Partnership Agreement Funding .....	17
Table 7: Summary of Assumptions.....	17
Table 8: Investment Criteria for Total and FRDC Investment in Project 2016-411 .....	18
Table 9: Sensitivity to Discount Rate .....	19
Table 10: Sensitivity to Assumption for the Level of the Efficiency Dividend Assumed .....	19
Table 11: Confidence in Analysis of Project .....	20

## List of Figures

Figure 1: Annual Cash Flow of Undiscounted Total Benefits and Total Costs .....	18
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Ross Ord, Food and Agribusiness Solutions  
Jo-Anne Ruscoe, Fisheries Research and Development Corporation

# Abbreviations

CBA	Cost-Benefit Analysis
CRRDC	Council of Research and Development Corporations
FRDC	Fisheries Research and Development Corporation
IPA	Industry Partnership Agreement
IRR	Internal Rate of Return
MIRR	Modified Internal Rate of Return
NSILP	National Seafood Industry Leadership Program
OTLF	Ocean Trap and Line Fishery
PVB	Present Value of Benefits
RAC	Research Advisory Committee
RD&E	Research, Development and Extension
SNA	Skills Needs Analysis

# Executive Summary

## What the report is about

This report presents the results of an impact assessment of the Fisheries Research and Development Corporation (FRDC) investment in a project to create a matrix of skills and capability building priorities across FRDC advisory groups. The project was funded by FRDC in the year ending 30<sup>th</sup> June 2017.

## Methodology

The investment in the project was analysed qualitatively within a logical framework that included activities/outputs, outcomes, and impacts. Identified impacts were then categorised into a triple bottom line framework. Principal impacts from those identified were then valued. Benefits were estimated for a range of time frames up to 30 years from the year of last investment in the project. Past and future cash flows in 2017/18 \$ terms were discounted to the year 2017/18 using a discount rate of 5% to estimate the investment criteria.

## Results/key findings

The major impact identified and valued was a more cohesive and integrated capability building initiative across FRDC advisory groups. This was expected to deliver both efficiency and effectiveness in future resource allocation investments by FRDC and its advisers.

## Investment Criteria

Total funding from all sources for this project was \$0.05 million (present value terms). The value of expected benefits was estimated at \$0.16 million (present value terms). This gave an estimated net present value of \$0.11 million, and a benefit-cost ratio of 3.30 to 1.

## Conclusions

The investment in this small project has identified the need for additional investment in capability building for partnership and advisory personnel. For purposes of this evaluation, it is expected that this additional investment will be made, albeit with a risk parameter applied. The additional investment is strategic in that an increasing proportion of FRDC funding is likely to be influenced by and advisory groups in the future.

## Keywords

**Impact assessment, cost-benefit analysis, capability building, partners, advisory groups**

# Introduction

The Fisheries Research and Development Corporation (FRDC) required a series of impact assessments to be carried out annually on a number of investments in the FRDC research, development and extension (RD&E) portfolio. The assessments were required to meet the following FRDC evaluation reporting requirements:

- Reporting against the FRDC 2015-2020 RD&E Plan and the Evaluation Framework associated with FRDC's Statutory Funding Agreement with the Commonwealth Government.
- Annual Reporting to FRDC stakeholders.
- Reporting to the Council of Rural Research and Development Corporations (CRRDC).

The first series of impact assessments, that included 20 randomly selected FRDC investments, was completed in August of 2017. The published reports for the first series of evaluations can be found at: <http://frdc.com.au/Research/Benefits-of-research/2017-Portfolio-Assessment>

The second series of impact assessments also included 20 randomly selected FRDC investments. The investments were worth a total of approximately \$5.62 million (nominal FRDC investment) and were selected from an overall population of 96 FRDC investments worth an estimated \$21.32 million (nominal FRDC investment) where a final deliverable had been submitted in the 2016/17 financial year.

The 20 investments were selected through a stratified, random sampling process such that investments chosen spanned all five FRDC Programs (Environment, Industry, Communities, People and Adoption), represented approximately 26% of the total FRDC RD&E investment in the overall population (in nominal terms) and included a selection of small, medium and large FRDC investments.

Project 2016-411: *Create a matrix of skill and capability building priorities across FRDC partners and advisory groups* was selected as one of the 20 investments and was analysed in this report.

# General Method

The impact assessments followed 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, 2014).

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 and Rationale

The FRDC Research Advisory Committees (RACs) jurisdictions include the six states, the Northern Territory, and the Commonwealth. The RACs assist in RD&E planning and advisory processes through various mechanisms and interactions with FRDC.

The RACS are an expertise based and advise the FRDC on how best to utilise 'public good funding'. Expertise is representative of sectors (wildcatch, aquaculture, indigenous, recreational) and stakeholders (government, research, industry). The RACs meet 3 times a year to advise FRDC, both by providing feedback on applications submitted to FRDC and by recommending research priorities going forward (Nicole Stubing, pers. comm., 2018).

Industry Partnership Agreements (IPAs) are agreements between the FRDC and industry sectors to advise and assist with management of a series of sector-related projects in accord with an agreed industry strategic plan. The projects are usually identified by the industry sector and address their key priorities. In addition, subprogram partners sometimes manage a group of RD&E projects to deliver higher levels of coordination, integration and communication. These advisory groups have needs and priorities in building capabilities and skills and it was in the interests of FRDC that such priorities were recognised and identified with further actions then taken by FRDC to service such requirements to deliver a more effective total fisheries RD&E system.

FRDC supports people development and capability building to enhance industry and research performance, to build leadership and research capacity, and encourage a skilled workforce and innovation at all levels. As significant FRDC resources are invested via the RACs, IPAs and Subprogram partners, it was necessary to elicit input from these sources as to their priorities for building skill sets and leadership capacity in their respective domains. Hence, FRDC contracted Food and Agribusiness Solutions to assist with understanding the people development priorities of its partners.

An increasing proportion of FRDC investment is via RACs and IPAs so that jurisdictions and industry sectors have increasing influence in priority formation and advice. The FRDC 2017 Annual Report reports that shows 64% of FRDC funds now flow through jurisdictions and industry sectors. This trend was a motivating factor in funding this capacity building investment to ensure a balanced portfolio that did not neglect people development (Jo-Anne Ruscoe, pers. comm., 2018). There was also a need to understand shared priorities in order to reduce duplication and benefit from scale, as opposed to each small group making small uncoordinated investments (Jo-Anne Ruscoe, pers. comm., 2018).

# Project Details

## Summary

Project Code: 2016-411

Title: *Create a matrix of skill and capability building priorities across FRDC partners and advisory groups*

Research Organisation: Food and Agribusiness Solutions

Principal Investigator: Ross Ord

Period of Funding: August 2016 to November 2016

FRDC Program Allocation: People (85%), Adoption (15%)

## Objectives

The objective of the project was:

1. To create a matrix of skills and capability building priorities across FRDC partners and advisory groups

## Logical Framework

Table 1 provides a description of the project in a logical framework developed for the evaluation.

Table 1: Logical Framework for Project 2016-411

<p>Activities and Outputs</p>	<p>Desktop research</p> <ul style="list-style-type: none"> <li>• Analysis of extension and adoption plans was undertaken for a number of the 11 FRDC industry partners (IPAs) and eight FRDC Research Advisory Committees (RACs).</li> <li>• Some the plans available were drafts, and given that not all plans were available, results were treated with some caution.</li> <li>• Reports for the past two years on skill needs and reviews of fishing aquaculture workforce developments needs were examined.</li> <li>• The above activities allowed identification of industry and regional priorities and identification of additional stakeholders to be contacted.</li> <li>• Identification of existing skills and training opportunities resulted from these activities.</li> </ul> <p>Survey of key stakeholders</p> <ul style="list-style-type: none"> <li>• An online survey of skill priority areas and areas of commonality was undertaken; this was partly based on the earlier desktop research.</li> <li>• The target audience for the survey was representative of RACs, IPAs and Subprogram partners.</li> <li>• Survey questions addressed needs, extent of needs currently met, identification of new skill development needs and emerging priorities.</li> <li>• Responses were independently reviewed by researchers and FRDC.</li> </ul> <p>Integration of desktop research and stakeholder survey data</p> <ul style="list-style-type: none"> <li>• The foregoing activities identified key themes and areas for further in-depth investigation.</li> </ul>
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	<ul style="list-style-type: none"> <li>• Further directed stakeholder engagement was then made by telephone, face to face discussions and industry events</li> </ul> <p>Telephone interviews</p> <ul style="list-style-type: none"> <li>• Structured telephone interviews were conducted with ten representatives of RACs, IPAs and Subprograms.</li> <li>• Many of the issues addressed in these telephone interviews were based on the findings from both the desktop research and the online survey.</li> </ul> <p>Development of a framework/mapping tool</p> <ul style="list-style-type: none"> <li>• The foregoing information allowed identification of common elements and gaps between RACs and IPAs.</li> <li>• These gaps and common elements were then mapped to existing capacity-building courses and programs.</li> <li>• The gaps identified where a need existed but where there was no course/program currently available.</li> </ul> <p>Recommendations</p> <p>Two recommendations emanated from the project.</p> <ul style="list-style-type: none"> <li>• The first was that FRDC and its partners should develop a plan to implement the development programs included in the final report of the project.</li> <li>• The second was that priority be given to forming an Expert Group to review and confirm the industry’s leadership and development requirements and to coordinate an orderly and linked leadership program and development opportunities to complement the National Seafood Industry Leadership Program.</li> </ul>
Outcomes	<ul style="list-style-type: none"> <li>• The two recommendations (development of an implementation plan and formation of an Expert Group) have not yet been actioned by FRDC.</li> <li>• The people development program will continue with Johnathon Davey leading a current review of training (Nicole Stubing, pers. comm., 2018).</li> <li>• The VICRAC funded the ‘Catch the Drift’ program; WA RAC recently funded 4 members to attend the ELIAS leadership program; and the NT RAC had a priority to develop leadership capacity. The idea of new courses is being floated, albeit such an activity still lacking in co-ordination (Nicole Stubing, pers. comm., 2018).</li> <li>• As yet, there has not been an analysis of which skill sets have been enhanced with the different target groups.</li> <li>• However, there has been an increase in total investment in capacity building for leaders in several partner programs via the National Seafood Industry Leadership Program (Jo-Anne Ruscoe, pers. comm., 2018).</li> <li>• There has not been improved matching of prospective targets for capacity building for individuals with existing courses and programs available. However, there is greater awareness of the need for groups to take a lead in such an initiative as a result of the project (Jo-Anne Ruscoe, pers. comm., 2018).</li> <li>• Improved targeting of courses and programs to build capacity in line with needs and so improving future research resource allocation and leadership efficiencies and effectiveness.</li> <li>• Possibly a greater awareness within both FRDC and partners of the need to include capacity building in the priority setting for these groups.</li> </ul>
Potential Impacts	<ul style="list-style-type: none"> <li>• Further attention by FRDC to this initiative could result in potential improvements to FRDC resource allocation and management for partner</li> </ul>

	<p>capacities and skill sets that make up a significant proportion of FRDC annual RD&amp;E investment.</p> <ul style="list-style-type: none"><li>• Potential impact on non-partner capacities and skill sets (e.g. FRDC staff and/or industry) and hence implications for a broader impact on resource allocation and management improvements in fisheries R&amp;D.</li><li>• However, these impacts are not likely to be fully captured unless further investment is made by FRDC to capitalise on the potential opportunities identified.</li></ul>
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# Project Investment

## Nominal Investment

Table 2 shows the annual investment made in Project 2016-411 by FRDC. There was no other funding organisation involved.

Table 2: Annual Investment in Project 2016-411 (nominal \$)

<b>Year ended 30 June</b>	<b>FRDC (\$)</b>	<b>OTHER<sup>(a)</sup> (\$)</b>	<b>TOTAL (\$)</b>
2017	38,000	0	38,000
<b>Totals</b>	<b>38,000</b>	<b>0</b>	<b>38,000</b>

## Program Management Costs

For the FRDC investment, the cost of managing the FRDC funding was added to the FRDC contribution for the project via a management cost multiplier (1.122). This multiplier was estimated based on the share of 'employee benefits' and 'supplier' expenses in total FRDC expenditure reported in the FRDC's Cash Flow Statements (FRDC, 2013-2017). This multiplier then was applied to the nominal investment by FRDC shown in Table 2.

## Real Investment and Extension Costs

For purposes of the investment analysis, the investment costs of all parties were expressed in 2017/18 \$ terms using the Implicit Price Deflator for Gross Domestic Product (ABS, 2018). No additional costs of extension were included as the decision to invest further rested with FRDC management.

# Impacts

Table 3 provides a summary of the principal types of impacts expanded from those listed in Table 1 and categorised into economic, environmental and social impacts.

Table 3: Triple Bottom Line Categories of Principal Impacts from Project 2016-411

Economic	<ul style="list-style-type: none"> <li>Improved targeting of capacity building investments leading to increased and more appropriate skill development leading to increased efficiency of future RD&amp;E resource allocation for partner programs.</li> </ul>
Environmental	<ul style="list-style-type: none"> <li>Nil</li> </ul>
Social	<ul style="list-style-type: none"> <li>Increased personal and business capacity including leadership skills.</li> <li>Spinoff to increased community well-being through the spill-over effects of increased RD&amp;E investment efficiency.</li> </ul>

## Public versus Private Impacts

Many of the impacts likely to be delivered by this investment are either personal or industry related and therefore impacts are considered largely private benefits. However, there will be some public benefits delivered also via improved efficiency of public fund RD&E allocations and via improved efficiency of RD&E funding that includes general community impacts.

## Distribution of Private Impacts

Some additional private benefits initially will be captured by the industries that will benefit from improved efficiency and effectiveness of investment of RD& E resources. Where this is the case, it is assumed that the final distribution of some of the impacts from the investment will be distributed between participants along the commercial fish and fish product supply chains, including final consumers.

## Impacts on other Australian industries

It is assumed that project impacts will be confined to the Australian public and fish and fish product supply chains.

## Impacts Overseas

No significant benefits to overseas parties are expected.

## Match with National Priorities

The Australian Government's Science and Research Priorities and Rural Research, Development and Extension (RD&E) priorities are reproduced in Table 4. The more focused capacity building activities will contribute primarily to Rural RD&E Priorities 1 to 4 and to Science and Research Priority 1.

Table 4: Australian Government Research Priorities

<b>Australian Government</b>	
<b>Rural RD&amp;E Priorities (est. 2015)</b>	<b>Science and Research Priorities (est. 2015)</b>
<ol style="list-style-type: none"> <li>1. Advanced technology</li> <li>2. Biosecurity</li> <li>3. Soil, water and managing natural resources</li> <li>4. Adoption of R&amp;D</li> </ol>	<ol style="list-style-type: none"> <li>1. Food</li> <li>2. Soil and Water</li> <li>3. Transport</li> <li>4. Cybersecurity</li> <li>5. Energy and Resources</li> <li>6. Manufacturing</li> <li>7. Environmental Change</li> <li>8. Health</li> </ol>

Sources: DAWR (2015) and OCS (2015)

# Valuation of Impacts

## Impacts Valued

The principal impact valued from this small but targeted investment is the increased efficiency of allocation and management of fisheries RD&E funding that is directed via FRDC partner organisations (RACs, IPAs and subprograms). The analysis includes and allowance for additional costs to FRDC in investment in capacity building for partnership/advisory personnel.

The valuation was undertaken for total benefits that included future expected benefits. A degree of conservatism was used when finalising assumptions, particularly where some uncertainty was involved. Due to the skill building nature of the investment, generalised assumptions were required regarding the improvement to RD&E prioritisation and resource allocation that potentially will be delivered.

## Impacts not Valued

Not all impacts identified in Table 3 could be valued in the assessment. The two impacts not valued were:

- Increased personal and business capacity including leadership skills.
- Spinoff to increased community well-being through the spill-over effects of increased RD&E investment efficiency

## FRDC RD&E Investment Assumed Impacted

Table 5 shows FRDC funding by activity for the five years from 2015-16 to 2019-20. Table 6 extracts the total partnership agreement funding by year and shows how it has increased, and is increasing, to be a significant part of the FRDC budget by 2019-20.

Table 5: Allocation of FRDC Funding across Various Activities Including Partnership Agreements (\$m nominal)

Activity	Year ending June 2016	Year ending June 2017	Year ending June 2018	Year ending June 2019	Year ending June 2020
Existing contracts	15.59	12.16	7.1	3.06	2.02
National Priorities	1.6	1.6	2.3	3.6	5.0
National Infrastructure	1.0	1.4	2.7	3.3	3.3
Response fund	1.5	1.5	1.5	1.5	1.5
Partnership agreements (industry sectors)	4.5	6.2	8.0	9.0	10.0
Partnership agreements (jurisdictions)	0.1	2.55	5.0	7.45	7.45
Public-good funding within jurisdictional partnership agreements	0	0.89	1.7	2.67	2.67
Total Programs expenditure	24.29	25.41	26.60	27.91	29.27

Source: <http://frdc.com.au/Research/RDE-Plan-2015-20/Evaluation-and-planning-budget>

FRDC funding is often matched by other interested parties, so the RD&E resources assumed impacted are assumed to be greater than in Table 5 (See Table 6). In three past reports of clusters of investments analysed, FRDC was estimated to contribute/supply 39% (2009), 33% and 50% of the total investment in various projects and clusters of projects. The relevant expenditure for the year ended June 2020 is assumed to continue into the future.

Table 6: Partnership Agreement Funding

Year ending	June 2016	June 2017	June 2018	June 2019	June 2020
FRDC funding for Partnership agreements (a)	4.6	9.64	14.78	19.12	20.12
Partnership agreement funding as % of total FRDC funding (a)	23.1	37.9	55.6	68.5	68.7
Total funding via partnership agreements (b)	11.5	24.1	37.0	47.8	50.3

(a) Derived from Table 5

(b) Totals for Partnership agreements multiplied by 2.5 in recognition of the additional non-FRDC funding that would be influenced.

## Assumed Impact Through Targeted Capacity Building

The efficiency gain through more effective capacity building investment has been assumed to be 0.5% per annum.

## Counterfactual

Without the additional skills imparted by the greater targeting of capacity building courses and programs, many of the participants may still have delivered some of the impacts assumed as they would have been recognised as having high potential. It is assumed that 10% of the impacts may still have been delivered without the future funding for the capability investment.

## Summary of Assumptions

A summary of the key assumptions made for valuation of the impact is shown in Table 7.

Table 7: Summary of Assumptions

Variable	Assumption	Source
RD&E future investment expenditure influenced	FRDC resources including contributions by partners	Table 6
Efficiency dividend	0.5% of annual RD&E expenditure influenced	Agtrans Research
Year of first dividend	2019/20	
Dividend accrual	Linear with 0.2% in 2019/20 increasing to 1% in 2023/24	
Additional investment in capability building	\$200,000 per annum in perpetuity commencing 2018/19	
Probability of outcome (capability training funded by FRDC)	75%	
Probability of impact given training occurs	75%	

# Results

All benefits after 2017/18 were expressed in 2017/18 \$ terms. All costs and benefits were discounted to 2017/18 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 investment period plus 30 years from the last year of investment (2016/17) to the final year of benefits assumed.

## Investment Criteria

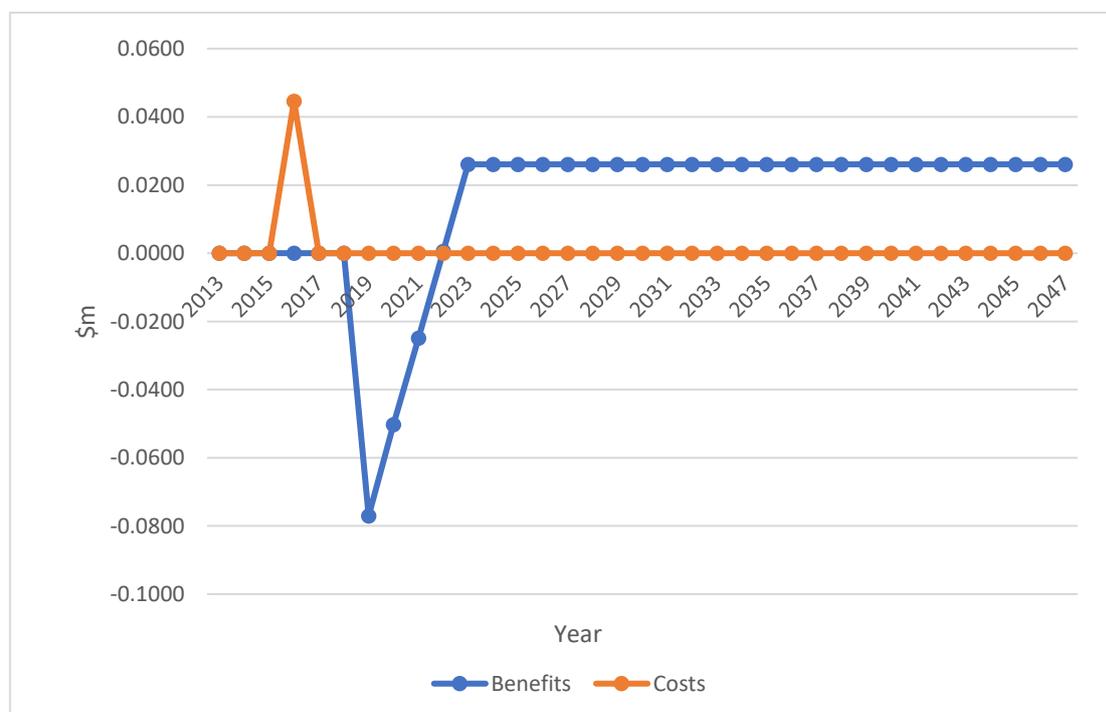
Table 8 provides the investment criteria estimated for different periods of benefits for both the total and FRDC investment. The cost of the additional investment has been subtracted from the estimated benefits.

Table 8: Investment Criteria for Total and FRDC Investment in Project 2016-411

Investment criteria	Number of years from year of last investment						
	0	5	10	15	20	25	30
Present value of benefits (\$m)	0.00	-0.14	-0.05	0.03	0.08	0.13	0.16
Present value of costs (\$m)	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Net present value (\$m)	-0.05	-0.19	-0.10	-0.02	0.03	0.08	0.11
Benefit-cost ratio	0.00	-2.84	-0.96	0.52	1.68	2.59	3.30
Internal rate of return (%)	negative	negative	negative	3.4	6.7	8.1	8.8
MIRR (%)	negative	negative	negative	3.2	6.1	6.9	7.2

The annual undiscounted benefit and cost cash flows for the total investment for the duration of investment period plus 30 years from the last year of investment are shown in Figure 1.

Figure 1: Annual Cash Flow of Undiscounted Total Benefits and Total 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 showed a moderate sensitivity to the discount rate.

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

Investment Criteria	Discount rate		
	0%	5% (base)	10%
Present value of benefits (\$m)	0.50	0.16	0.03
Present value of costs (\$m)	0.04	0.05	0.05
Net present value (\$m)	0.46	0.11	-0.02
Benefit-cost ratio	11.20	3.30	0.59

A sensitivity analysis was undertaken for the level of the efficiency dividend assumed, the variable considered to be associated with the highest level of uncertainty. Results are reported in Table 10. Results show that the investment criteria for the pessimistic scenario are negative and that the sensitivity to the assumption is very high. The efficiency dividend that results in a benefit-cost ratio of 1 is 0.47%.

Table 10: Sensitivity to Assumption for the Level of the Efficiency Dividend Assumed  
(Total Investment, 30 years)

Investment Criteria	Sensitivity to Efficiency Dividend Assumed		
	Pessimistic (0.25%)	Most likely (0.50%)	Optimistic (1.0%)
Present value of benefits (\$m)	-0.69	0.16	1.86
Present value of costs (\$m)	0.05	0.05	0.05
Net present value (\$m)	-0.73	0.11	1.81
Benefit-cost ratio	-13.93	3.30	37.75

## Confidence Ratings and other Findings

The results produced are highly dependent on the assumptions made, some of which are 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

<b>Coverage of Benefits</b>	<b>Confidence in Assumptions</b>
Medium-High	Low

The coverage of benefits was assessed as medium-high as the benefit valued represented the principal outcome expected from the investment. However, the confidence in the assumptions was considered low as the efficiency dividend and the cost of the additional capability investment were subjective.

# Conclusions

The investment in this project is likely to result in improvements in personal, business and industry capacity along the Australian seafood supply chains with associated improved advice to FRDC in resource allocation.

Funding for this short one year project totalled \$0.05 million (present value terms) and produced estimated total expected benefits of \$0.16 million (present value terms). This gave a net present value of \$0.11 million, a benefit-cost ratio of 3.30 to 1, an internal rate of return of 8.8% and a modified internal rate of return of 7.2%.

While several social impacts identified were not valued, their contributions were considered minor compared with the impact valued. Nevertheless, combined with conservative assumptions for the impact valued, investment criteria as provided by the valued benefit are likely to be underestimates of the investment performance.

The analysis provided a good example of a small investment in exploration of capacity building that will potentially lead to further investment in advisory capacity improvements that may not have been undertaken otherwise. This will most likely lead to further strategic investment that delivers more efficient fisheries RD&E investment, particularly given FRDC's increasing emphasis on partnership advice for its resource allocation.

# 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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