

ANNUAL REPORT ☐ 2018–19



FRDC





Key achievements in 2018–19

- The 2018 edition of the Status of Australian Fish Stocks (SAFS) reports is published.
- The first SAFS phone app is released.
- First Australian shark report card is completed.
- National Habitat Strategy—used to inform large-scale rehabilitation programs—is completed.
- Yellowtail Kingfish R&D for Profit research program is finalised.
- FRDC Seafood Industry Safety Initiative is started.
- SeSAFE project to address commercial fisher safety is launched.
- FRDC research and support assists prawn farmers in south-east Queensland affected by white spot disease to successfully restart prawn farming.
- The first Fish 2.0 Australian seafood innovation series is run.
- FRDC worked with the Dietitians Association of Australia to share information on SAFS reports.
- FRDC investment in research, development and extension supports the growth of the Tasmanian seafood industry to be the first state to exceed \$1 billion of gross value of production.
- The second National Seafood Marketing Symposium is held in Brisbane.

Quick guide to the annual report

If you do not have time to read this report in detail, look first in the following sections:

- For an outline of the FRDC's investments and income, read pages i–iv and the financial statements starting on page 135.
- For an overview of operations during the past year, read 'The directors' review of operations and future prospects' starting on page 5.

More detailed coverage is in these sections:

- The FRDC's national priorities are shown on pages 34, 39, 42 and 45.
- Outcomes by recent and current projects are in the research and development (R&D) programs reporting starting on page 54 (Environment), page 67 (Industry), page 72 (Communities), page 77 (People) and page 82 (Adoption).
- Performance reporting for the management and accountability program starts on page 107.
- Financial contributions by industry and governments are listed on pages i–iv and 135–148.
- Coverage of corporate governance information is in the section starting on page 117.
- The financial statements start on page 135.

2018–19 achievements through investment

Five years at a glance

TABLE 1: INCOME

	2014–15	2015–16	2016–17	2017–18	2018–19
	\$m	\$m	\$m	\$m	\$m
Total income	31.75	30.12	37.32	36.00	39.56
Industry contributions	7.16	7.45	8.18	9.04	10.18
Total government contributions	18.71	20.05	21.76	22.71	23.48
Project funds from other parties	4.27	1.48	5.63	2.02	3.42
Other revenue	1.61	1.14	1.75	2.23	2.48

TABLE 2: MATCHABLE INCOME

	2014–15	2015–16	2016–17	2017–18	2018–19
	\$m	\$m	\$m	\$m	\$m
Maximum matchable (government) contribution ¹	6.25	6.78	7.25	7.57	7.78
Actual government matching	6.22	6.48	7.25	7.57	7.78

1. Government funding and maximum matchable contribution (the maximum amount to which the Australian Government will match industry contributions) are detailed on page 174.

TABLE 3: FINANCIAL INDICATORS OF RESEARCH, DEVELOPMENT AND EXTENSION (RD&E) INVESTMENT

Expenditure	2014–15	2015–16	2016–17	2017–18	2018–19
	\$m	\$m	\$m	\$m	\$m
Total expenditure	28.16	28.33	29.26	31.39	35.22
Total of RD&E projects	24.85	24.58	24.41	26.00	29.80
RD&E Program 1 (Environment)	10.44	8.68	7.46	7.94	7.92
RD&E Program 2 (Industry)	10.09	11.54	12.31	11.24	14.48
RD&E Program 3 (Communities)	0.83	0.86	0.98	1.74	1.83
RD&E Program 4 (People)	1.49	1.55	1.34	2.30	2.39
RD&E Program 5 (Adoption)	2.00	1.95	2.32	2.78	3.19
Management and accountability	3.31	3.75	4.85	5.39	5.41

TABLE 4: NEW, ACTIVE AND COMPLETED PROJECTS

	2014–15	2015–16	2016–17	2017–18	2018–19
Number of approved new projects	105	116	122	167	145
Total number of active projects under management	394	415	408	493	491
Number of final reports completed	155	133	86	85	120

TABLE 5: 2018–19 PROJECT LENGTH—AVERAGE COST PER PROJECT

Duration	Number of projects	Total investment \$	Average project value \$
Long (36 months and over)	104	49,370,209	479,322
Medium (from 18 and 36 months)	145	50,755,373	350,037
Short (up to 18 months)	242	32,236,390	134,318
Total	491	132,361,972	271,234

TABLE 6: PROJECT INVESTMENT BY RISK PROFILE

	2015–16	2016–17	2017–18	2018–19	Total	Total
	\$	\$	\$	\$	\$	%
High	1,882,358	2,195,940	1,514,281	1,065,692	6,658,271	6
Low	15,673,233	12,792,771	11,993,516	15,533,813	59,052,360	54
Medium	7,017,986	9,438,571	12,495,655	13,204,366	44,372,885	40
Total	24,573,576	24,427,281	26,003,453	29,803,871	110,083,516	100

Summary of contributions

TABLE 7: CONTRIBUTIONS, MAXIMUM MATCHABLE CONTRIBUTIONS BY THE AUSTRALIAN GOVERNMENT AND RETURN ON INVESTMENT, 2018–19

	A	B	C	D	E	F
Jurisdiction— by year	Maximum matchable contribution	Actual contribution amounts	Percentage of matchable	Distribution of FRDC spend	Return on contribution (D /B)	
	[note 1]	[note 2, 3]		[note 4, 7]	[note 5, 6]	
	\$	\$	%	\$	2018–19	5 years
Commonwealth	1,181,735	1,489,848	126	3,459,640	2.32	2.46
New South Wales	396,452	778,953	196	3,656,528	4.69	4.27
Northern Territory	185,040	183,438	99	1,173,612	6.40	5.59
Queensland	555,995	891,953	160	3,913,224	4.39	3.81
South Australia	1,131,517	1,500,969	133	4,540,468	3.03	3.80
Tasmania	2,597,767	3,166,903	122	6,319,720	2.00	2.20
Victoria	268,965	239,562	89	2,260,838	9.44	6.47
Western Australia	1,531,662	1,929,721	126	4,149,811	2.15	2.29
Total	7,849,135	10,181,349	130	29,803,822	2.93	3.03
Australian farmed prawns [note 8]	208,457	130,666	63	496,924	3.80	2.32

1. Maximum matchable contribution is the maximum amount that the Australian Government will match industry contributions in accordance with the criteria detailed on page 174.
2. Note that contribution figures are accrual based—i.e. some payments for the year may have been made but will not show in the figures at the time of publishing.
3. There are timing issues in some jurisdictions therefore matching may not occur in the year in which the invoice is raised.
4. Distribution of FRDC spend is based on the estimated flow of RD&E benefits to the respective jurisdictions. It includes a deduction of prior project refunds.
5. Ratios in column F are derived from the distribution of FRDC spend (column D) for 2018–19 and the previous four years.
6. Australian Government investment in the National Carp Control Plan has resulted in an increased return on contribution in Victoria.
7. The total distribution of spend excludes \$230,000 (approximately) invested in the Australian Capital Territory.
8. Australian farmed prawns are also included in the jurisdictional totals above.

The FRDC's balanced research investment approach

The FRDC aims to spread its investment in research, development and extension (RD&E) across the whole value chain of fishing and aquaculture, and for the benefit of both Indigenous and recreational fishers. The FRDC balanced investment approach ensures RD&E investment covers issues of critical national importance, as well as recognising the diversity of stakeholder priorities. Ultimately, all FRDC investment in RD&E is driven by the needs of its stakeholders.

Strategic national priorities

TABLE 8: 2018–19 EXPENDITURE BY INVESTMENT AREA

	2018–19 actual	2018–19 actual	2018–19 AOP ¹ budget	Difference
	\$m	as %	as %	%
National priorities	4.60	15	14	1
Priority 1: Ensuring that Australian fishing and aquaculture products are sustainable and acknowledged to be so	1.45			
Priority 2: Improving productivity and profitability of fishing and aquaculture	1.71			
Priority 3: Developing new and emerging aquaculture growth opportunities	1.44			
National infrastructure	3.80	13	16	3
Partnership agreements (industry sectors) ²	9.08	30	32	–2
Partnership agreements (jurisdictions) ³	7.19	25	31	–6
Response fund	2.18	7	5	2
Incentive fund	2.95	10	2	8
Total activities expenditure	29.8	100	100	0

Figures in this table have been rounded, hence totals may not agree with component figures.

1. Annual operational plan.

2. Industry Partnership Agreements (IPAs) see page iv.

3. Research Advisory Committees (RACs) see page iv.

FIGURE 1: RD&E BUDGET ACTUAL EXPENDITURE 2018–19 VERSUS FORECAST EXPENDITURE 2019–20

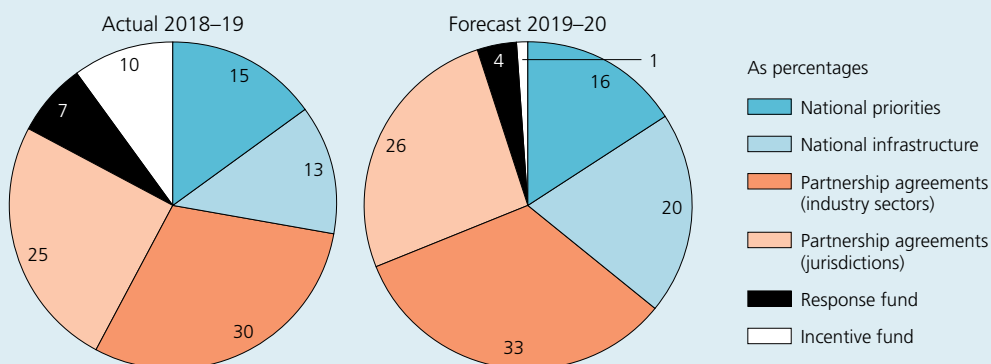


TABLE 9: TOTAL FORECAST EXPENDITURE AGAINST PROGRAM

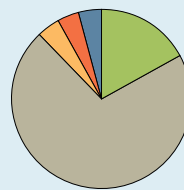
Programs	Actual expenditure \$	Actual expenditure %	2018–19 AOP %	Difference %
Environment	7.91	27	40	-13
Industry	14.48	49	40	9
Communities	1.83	6	4	2
People	2.39	8	8	0
Adoption	3.19	11	8	3
Total programs expenditure	29.80	100	100	0

Industry Partnership Agreements investment by program 2018–19

Investment by Industry Partnership Agreements (IPAs) is driven by the needs of individual sectors. As a result, there will be a higher investment in projects focused on the Industry program. However, the FRDC requires IPAs to aim for a balanced portfolio approach to their investment.

TABLE 10: INDUSTRY PARTNERSHIP AGREEMENTS INVESTMENT BY PROGRAM 2018–19

Program	\$m	%
Environment	1.50	17
Industry	6.47	71
Communities	0.40	4
People	0.35	4
Adoption	0.37	4
Industry Partnership Agreements total	9.09	100

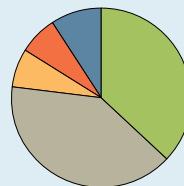


Research Advisory Committees investment by program 2018–19

Investment made through Research Advisory Committees (RACs) is driven by the needs of the various jurisdictions. It is expected there will be a higher investment in projects focused on public good and, generally, based around the Environment program. However, as with IPAs the FRDC requires RACs to aim for a holistic approach to their investment.

TABLE 11: RESEARCH ADVISORY COMMITTEES INVESTMENT BY PROGRAM 2018–19

Program	\$m	%
Environment	2.65	37
Industry	2.89	40
Communities	0.50	7
People	0.48	7
Adoption	0.67	9
Research Advisory Committees total	7.19	100





Australian Government

Fisheries Research and Development Corporation

15 October 2019

Senator the Hon. Bridget McKenzie
Minister for Agriculture
Parliament House
CANBERRA ACT 2600

Dear Minister,

On behalf of the directors of the Fisheries Research and Development Corporation (FRDC), I have pleasure in presenting the Corporation's annual report for the year ended 30 June 2019.

The report has been prepared and approved by the Board in accordance with our legislative obligations under section 28 of the *Primary Industries Research and Development Act 1989* (PIRD Act); and sections 39 and 46 of the *Public Governance, Performance and Accountability Act 2013* (PGPA Act).

The report provides a clear picture of our performance against set priorities and performance indicators in achieving the FRDC's outcome (page 17 for you, the Minister for Finance, members of parliament, FRDC stakeholders and the Australian community).

FRDC's annual report [performance statements] is produced in accordance with s39 (1)(a) of the PGPA Act for the 2018–19 financial year. The performance statements start with the directors' review of operations (pages 5 to 10), followed by report of operations part 2: The FRDC's operational results, services and governance (pages 31 to 129). The financial statements and the Australian National Audit Office audit of the FRDC financial statements (pages 135 to 171)—which returned an un-modified audit report, complete the FRDC performance statements. It is the opinion of the Board of FRDC that the statements accurately present FRDC's performance in the reporting period and comply with s39 (2) of the PGPA Act.

This report documents inputs (income and expenditure on pages i–iv, 138, 143–146) and, outputs from research and development against the performance measures published in the *2018–19 Portfolio Budget Statements Budget Related Paper No. 1.1, Agriculture Portfolio* and the *FRDC Annual Operational Plan* (pages 13–16). The report also includes an overview and assessment of the longer-term outcomes for the Corporation's investment that utilises the methodology developed by the rural research and development corporations (RDCs) benefit cost framework (pages 87–91). Future priorities and planned budgets for FRDC activities are on page 16 of this report.



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Analysis of key factors affecting performance during the year

Looking forward, the operating environment for the FRDC and its fishing and aquaculture stakeholders looks positive. However, there remain potential challenges, which may impact the FRDC across varying fronts.

The value of Australian fishing industry continues to see strong growth. The gross value of production (GVP) for fishing and aquaculture in 2018–19 was valued at \$3.1 billion. The seafood industry is expected to see growth in the coming financial year, driven primarily by aquaculture. Volume increases in the farmed salmonid, prawn and Barramundi sectors will contribute most to lifting the production value. There will continue to be a focus on biosecurity partly because of the white spot disease outbreak in south-east Queensland in 2016, despite the most recent environmental testing being negative. The review and development of the Emergency Aquatic Animal Disease Response Agreement should ensure a continued awareness across fishing and aquaculture and provide some security. Key sectors like Atlantic Salmon and Barramundi will focus on increasing biosecurity readiness to reduce future risks. Likewise, the continued occurrence of algal blooms across south-east Australia requires fishing and aquaculture to ensure ongoing monitoring and evaluation of the environment.

The forecast for production and value of the wild-catch sector remains neutral with little change expected over the coming year. The Status of Australian Fish Stock reports provided a solid report card during the year with some key species like Southern Bluefin Tuna showing strong signs of recovery and moving to the recovering status. However, work will need to be undertaken across species where stock levels have declined. For example, production from the wild abalone fishery is expected to fall due to a number of stocks declining and further quota cuts likely to be put in place.

At the macro level, Australia's economic forecast remains positive, with the lower Australian dollar providing a boost to Australian agricultural export earnings. Similarly, the growing prevalence of harmful algal blooms, especially in south-east Australia, presents a major challenge to the seafood sector. This is especially in terms of our access to lucrative overseas markets. FRDC plays a pivotal role in mitigating this threat through a portfolio of research aimed at better understanding and measuring the risks.

Australian climate patterns are being influenced by the long-term trend of increasing global air and ocean temperatures. This is very evident from the drought conditions across large tracts of Australia. This has directly affected agriculture production and inland waterways. On the east coast of Tasmania for example, climate induced range extension of the Longspined Sea Urchin is posing a threat to abalone and rock lobster fisheries through the formation of urchin barrens. Citizen science reporting of the range extensions of many marine species suggests that while the impact on wild fisheries has to date been minimal, there are likely to be longer-term impacts on productivity in the future. This will be both a threat and an opportunity to the sector.

Marine noise and seismic testing will continue to be issues for fishing and aquaculture following Australian research findings demonstrating impacts from seismic testing. Further research scheduled for the coming year will extend the knowledge of these impacts. The oil and gas industry will continue to negotiate with fishing and aquaculture stakeholders to identify a way forward.

Australians believe sustainability is a shared responsibility, encompassing commercial, recreational and community interests, with governments as the primary custodians. Sustainability is now a mainstream issue similar to food safety—it is simply expected. There is also an increased awareness and discussion of animal welfare issues including humane catching and processing. This is increasingly seen in consumer surveys in markets such as the United Kingdom and the United States.

The building of better understanding around Indigenous values and priorities will help to facilitate the development of policy and regulations to enable greater Indigenous engagement and opportunities in fishing and aquaculture.

Angling and sports fishing will continue to maintain its relative share of recreational activities. However, those participating in recreational fishing will invest considerably more in technology and assets to support their pastime. To improve the understanding of the economic and social contribution, demographics, attitudes and behaviours of recreational fishers, the FRDC has invested with the Department of Agriculture to undertake a national survey of these features of the sector. The survey is expected to begin late 2019 and will focus on collection of key social and economic data at a national, state and regional level.

Key performance indicators

Over the year, the FRDC met and achieved its performance indicators as outlined in the 2018–19 Portfolio Budget Statements.

- The financial income target was \$34.70 million and \$39.55 million was achieved.
- The financial expenditure target was \$34.68 million and actual expenditure was \$35.22 million was achieved.

For a full explanation of financial target variance, see Note 5.1: Explanation of major variances in the financial statements for the difference between forecast and actual income and expenditure (page 166).

Portfolio Budget Statement performance measures	Targets 2018–19	Results
The number of species in the national Status of Key Australian Fish Stocks (SAFS) reports increases to include 200 species.	One hundred and sixty species included in SAFS reports.	Not achieved. One hundred and twenty species covering 406 stocks were assessed (an increase of 37 new species on 2016) and of these 255 stocks were assessed as being sustainable. In addition, the FRDC delivered a shark report card that covered and assessed 194 species (199 stocks), and of these 124 stocks have been assessed to be sustainable at current levels of fishing.
The number of species classified as 'undefined' is reduced from the previous [2016] SAFS reports.	Undefined species are less than 20%.	In the 2018 report, 54 stocks or 13% were classified as undefined compared to 16% in the 2016 reports.
Perception of the commercial fishing industry increased from 28–40% by 2020.	Perception of industry increases to 34%.	The most recent survey of community perception (June 2019) shows that 46% believe the industry is sustainable.
Understand the quantity of potential production from Australia's fishing and aquaculture resources.	Two reports completed that assist increased knowledge to improve the utilisation of fisheries resources by Indigenous Australians.	

Portfolio Budget Statement performance measures	Targets 2018–19	Results
Advance two or more new or emerging aquaculture opportunities/species for which RD&E has identified clear opportunities and technologies for good production and profitability growth, as measured by increases in harvest tonnages.	One thousand five hundred tonnes of additional production.	National government production statistics not available. Forecasts and individual company records indicate that production will have exceeded the 2018–19 target. Additionally the Kingfish for Profit project facilitates expansion. New leases allocated for an additional 60,000 tonnes of production.
Partners have a RD&E plan.	Ninety per cent of partners have an RD&E plan.	Achieved. Ninety-five per cent of RACs and IPAs have plans in place.
Partners invest in a balanced portfolio across the FRDC's programs: Environment, Industry, Communities, People and Adoption.	Investment portfolios include investment across FRDC purposes.	Achieved, see page iv.
Projects focus on the FRDC Board's assessment of priority research and development issues.	Ninety-five per cent are a priority.	Achieved. Projects align with strategic priorities set out in annual operational plan and partner plans.
Projects are assessed as meeting high standards/peer review requirements for improvements in performance and likely adoption.	Ninety-five per cent are a high priority.	Achieved.
Maintain ISO9001:2008 accreditation.	FRDC maintains certification.	Achieved, see page 99.
Submit planning and reporting documents in accordance with legislative and Australian Government requirements and time frames.	One hundred per cent met Government requirements.	Achieved, all documents submitted in accordance with requirements.
Implement best practice governance arrangements to promote transparency, good business performance and unqualified audits.	Achieve unqualified audit result.	Achieved, see audit report page 132.
Demonstrate the benefits of RD&E investments by positive benefit cost analysis results.	Benefit analysis undertaken on one investment area.	Achieved. Average benefit cost analysis results, see pages 87–93. See also pages 57, 70, 75, 80, 85.
Commence collection of voluntary marketing funds, pending legislative changes.	Two hundred and fifty thousand dollars collected.	Not achieved. On 16 August 2018 the Primary Industries Research and Development Amendment Bill 2017 was passed. No voluntary funds collected.
Coordinate the delivery the Love Australian Prawns campaign, pending legislative changes.	Campaign activities delivered in line with marketing plan.	Not achieved. Following legislative change the Love Australian Prawns campaign administered by industry.
Establish full statutory marketing levy collection with industry sectors for sectors—where requested and pending levy being established.	One marketing levy established.	Not achieved. Marketing levy development still underway.

Key factors contributing to performance

Throughout the year, the FRDC focused on core business and priorities to promote sustainability, improve productivity and profitability and grow aquaculture with many significant projects initiated and completed.

The FRDC uses formal consultative structures (representative organisations, Research Advisory Committees, Industry Partnership Agreements, and the Indigenous Reference Group) to ensure that its investments remain targeted, relevant and deliver a balanced portfolio of activity—in line with the objects of the PIRD Act.

The use of these structures and the effort and investment to improve engagement with stakeholders is paying dividends, with a majority of stakeholders satisfied with the approach taken to get information, make comment and the areas where investment has been made.

The FRDC works collaboratively with the other rural RDCs on issues relevant to fishing and aquaculture that deliver value for fishing and aquaculture stakeholders. Examples of this include evokeAG and the development of the RDC Vision 2050 Paper.

Project expenditure is the one area where FRDC did not meet its Portfolio Budget Statement target. Researchers aim to deliver on time, and FRDC monitors milestone progress, however the timing for project activity does vary for a range of reasons (for example, seasonality of fisheries). This results in delays in expenditure.

The directors' review of operations (pages 5–12) provides further detail on events and activities that impacted the FRDC during the year.

I take this opportunity to acknowledge the strong support of my fellow directors in guiding the FRDC towards outcomes that will benefit people in fishing and aquaculture, as well as the broader Australian community.

Yours faithfully,

A handwritten signature in dark ink, appearing to read 'R. Boswell', written in a cursive style.

The Hon. Ron Boswell
Chair



This annual report not only outlines the achievements over the 2018–19 financial year but also how they have contributed to the fourth year of FRDC's strategic plan 2015–20.

This year of the plan sees how the objectives initiated in 2015 are now being delivered.



ANNUAL REPORT □ 2018–19

FRDC







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REPORT OF OPERATIONS PART 1:

THE DIRECTORS' REVIEW OF OPERATIONS AND FUTURE PROSPECTS



DELIVERED TO PORT



DELIVERED TO MARKET



DELIVERED TO YOU



The year in review

The FRDC has had a successful year during which we worked closely with and briefed two ministers and three assistant ministers. We welcomed a new Board of Directors. Across fishing and aquaculture there were many positives; Tasmania becoming the first state to reach \$1 billion worth of production; the continued recognition of the Indigenous Reference Group to boost the capacity and performance of Indigenous fisheries; and a number of fisheries rebounding, including the iconic Southern Bluefin Tuna. We also saw industry uniting behind a new peak body, Seafood Industry Australia.

On the other side, a number of sectors were at odds with each other which impacted on the unity of the industry, the stock status of a number of key species such as abalone decline, the value of some key export sectors decrease and safety at sea become a critical issue.

Following is a summary of the key issues the Board addressed during the year. The letter of transmittal also forms part of the Board's review of operations and outlines some of the broader issues faced in the operating environment.

Ministerial changes

During the year, the Hon. David Littleproud MP was the Minister for Agriculture and Water Resources* with Senator the Hon. Richard Colbeck and Senator the Hon. Anne Ruston both in the role of Assistant Ministers for Agriculture and Water Resources with responsibility for fishing and aquaculture.

Senator Bridget McKenzie became Minister for Agriculture* following the 2019 May federal election. Senator Jonathon Duniam takes on the role of Assistant Minister for Forestry and Fisheries and Assistant Minister for Regional Tourism.

* The Department of Agriculture and Water Resources was renamed the Department of Agriculture after the 2019 federal election. This report will use the Department of Agriculture throughout unless specific to items before May 2019.

New FRDC directors

The Minister for Agriculture and Water Resources, the Hon. David Littleproud MP, appointed five new directors and re-appointed two directors to the FRDC Board in October 2018. This expands the Board from eight to nine directors.

The new directors are Kate Brooks, Saranne Cooke, Mark King, John Lloyd, and Katina (Katie) Hodson-Thomas. Two directors of the previous Board, Lesley MacLeod and Colin Buxton, were reappointed.

The FRDC Chair Ron Boswell thanked outgoing directors Renata Brooks, John Harrison, Daryl McPhee and John Susman for their hard work and service in overseeing the first three years of the FRDC's Research, Development and Extension Plan for 2015–2020.





Marketing legislation passes

On 16 August 2018, the Primary Industries Research and Development Amendment Bill 2017 was passed by both houses of parliament. The change now allows FRDC to undertake marketing activities with voluntary funds—where industry request it—and allows a more flexible approach to deliver marketing services to industry. It also opens the doors for FRDC and the seafood industry to work with other primary producers, such as Wine Australia to deliver integrated Australian marketing activities.

FRDC staff changes

There were several staff changes at the FRDC over the year, but the most significant was the retirement of Annette Lyons. Annette has been with the FRDC since 1994 and has overseen many changes, many projects and many principal investigators. Annette will be missed and we wish her well in the future.

Independent performance review of FRDC completed

The FRDC has completed a comprehensive independent review of its performance as required by the 2015–19 funding agreement with the Commonwealth Government. In September 2017, the FRDC and the Department agreed on the terms of reference for the review which was to include face-to-face interviews, as well as seeking broader stakeholder feedback. The final report was provided to the Department for consideration on 27 November. For more on the review see page 18. The full report and the FRDC Board response can be found on the FRDC website: <http://www.frdc.com.au/About-us/Corporate-documents/Funding-agreement>

FRDC independent review of Research Advisory Committees, Industry Partnership Agreements and subprograms

An independent performance review of the FRDC by Forest Hill Consulting made a number of recommendations, including the need for FRDC to simplify the complexity of its investment and evaluation framework and the need for FRDC to strengthen its approach to extension.

The review provided recommendations as to how the FRDC might better collaborate with stakeholders, and the capacity and capability needs of the organisation in developing and maintaining effective partnerships into the future. It also evaluated the various approaches to extension taken by both the FRDC and its partners. Responses and changes as a result of recommendations are expected to be completed later in 2019.

Benchmarking and external reviews

During the year, the FRDC was required to participate in a number of benchmarking and audit processes. These included an internal and an external three-year recertification audit with SAI Global to retain Standards certification, Comcover Risk Management and Benchmarking Survey, National Archives of Australia assessment (Check-up PLUS) and a financial audit by the Australian National Audit Office.

Investment fund approach to approving funding of RD&E

At its April meeting, the FRDC Board endorsed a new investment approach to the approval of funding of RD&E projects. Under the new approach, the Board has delegated the assessment of individual applications deemed to be medium to low risk to the FRDC Managing Director. It also involves the Board approving annually an investment in RD&E against key planning documents RD&E and Annual Operational Plan as well the sector (Industry Partnership Agreements) and jurisdictional (Research Advisory Committee) Plans.





The 2018 Status of Australian Fish Stocks reports

Senator the Hon. Richard Colbeck launched the 2018 Status of Australian Fish Stocks (SAFS) reports in March 2019 as part of his opening address to the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) Outlook conference.

In total, 120 species made up of 406 stocks were assessed in the SAFS reports, including 37 new species. This was less than the RD&E plan target of 200 species. However, SAFS remains the most comprehensive status of fish stocks every undertaken in Australia. The results show most of Australia's fish stocks are well managed and healthy. The reports cover the majority of the Australian caught fish that Australians will eat and of the stocks assessed almost 80 per cent were sustainable (excluding undefined and negligible).

While the current picture is good, we cannot rest on our laurels or past performance. Fish stocks are constantly changing and require ongoing monitoring. The results provide a clear course of action, highlighting areas that need further work—for management, industry and researchers. The latest edition of the SAFS reports are available online at www.fish.gov.au and via the new app <http://fish.gov.au/app>.

Shark report card

Alongside the launch of the SAFS reports is the release of the report card of Australia's sharks (project 2013-009 Shark Futures: A report card for Australia's sharks and rays). This report undertook an assessment of 194 species of sharks (and rays with shark-like bodies) by 23 of Australia's leading shark and ray scientists. The report shows that of the 194 species (199 stocks), 124 stocks were assessed to be sustainable at current levels of fishing. The reports for all 194 species are available on the SAFS website.

SAFS informs the United Nations Sustainability Goals

The FRDC is pleased that the SAFS reports continues to inform Australia's contribution towards meeting the United Nation's Sustainable Development Goals, namely relating to Goal 14: Life Below Water, see Australian report <https://dfat.gov.au/aid/topics/development-issues/2030-agenda/pages/sustainable-development-goals.aspx>





FRDC RD&E Plan 2020–25 development

Building a vibrant and innovative fishing and aquaculture industry requires careful and deliberate planning. The process of delivering the FRDC's RD&E Plan 2020–25 has started and will continue throughout 2019. The plan will be shaped by the priorities of the Australian Government, the Australian Fisheries Management Forum, and the needs and aspirations of the sectors and industries that make up Australia's fishing and aquaculture community. To assist, the FRDC will be conducting an extensive consultative process throughout 2019.

National Carp Control Plan program extended

The National Carp Control Plan (NCCP) program has entered its final year. The FRDC originally planned to submit the completed NCCP in late 2018. However, research as part of the plan identified some critical knowledge gaps, and the FRDC applied to the Department of Agriculture for an extension. The Department approved a 12-month extension for the development of the plan in September last year.

In November 2018, after two years as the NCCP Coordinator Matt Barwick resigned. Jamie Allnutt, the NCCP Operations Manager, was appointed to take on the role of NCCP Coordinator.

The program is on track to deliver the NCCP to the Australian Government in late 2019. See more on pages 59–66.

Ernst & Young vision for rural innovation in Australia

Ernst & Young led a project to create a shared vision for the future of the agricultural innovation system and enable opportunities for a vibrant agricultural sector. The Department of Agriculture, in conjunction with Ernst & Young, undertook a comprehensive consultation process with stakeholders across the agricultural innovation system including research providers, rural RDCs, industry representatives, governments, investors, start-ups and accelerators, producers, grower and farm systems groups, processors and retailers. For further information see <http://www.agriculture.gov.au/ag-farm-food/innovation/vision-for-agricultural-innovation>

Fish 2.0—Regional hub of seafood entrepreneurs and investors

The FRDC partnered with the global FISH 2.0 Program to run the first Australian seafood innovation series. The event was held at the Melbourne Business School in October and drew 16 groups of seafood entrepreneurs and innovators. In addition, more than 40 investors and seafood experts attended an investor pitch session.

The second, larger Australia–Asia–Pacific regional event was run in Brisbane in March 2019, and saw FRDC partner with the United States Department of State. The event brought together another 20 teams of innovators from Australia and the Pacific to work on and share ideas. The event drew investors from Australia, the Pacific Islands and South-East Asia to listen to the teams pitch their ideas.





FRDC Seafood Industry Safety Initiative

Safety at sea remains a major issue for the seafood industry. The FRDC have taken the lead in developing a nationally integrated effort to improve the safety at sea of Australia's seafood industry. A key driver was knowledge that the safety performance of commercial fishing has not improved in last 15 years and it is now considered one of the most dangerous occupations (even though this statement has not been statistically evaluated).

The FRDC Seafood Industry Safety Initiative broadly focuses on the integration of previous and new investments made in the area of workplace health and safety.

Project SeSAFE

A key component of the FRDC's Seafood Industry Safety Initiative is the project 'SeSAFE—Delivering industry safety through electronic learning' (2017-194). SeSAFE was established to develop electronic learning modules to facilitate the uptake of knowledge required for an improved culture of safety awareness, including general workplace safety requirements under workplace health and safety legislation.

Raising industry's awareness of SeSAFE is a key priority for the project team who have met and spoken with stakeholder groups, engaged with media and developed a dedicated project website (www.sesafe.com.au).

Thank you

The FRDC Board appreciates the continued support from the Australian Government; and its stakeholders across the commercial, recreational and Indigenous sectors over the last 12 months. Government and industry engagement play a vital role in ensuring high-quality research priorities are identified and turned into outcomes.

The Board thanks its four representative organisations for their continued strong collaboration. The FRDC also depends on the contributions of many other bodies and agencies for its success, including:

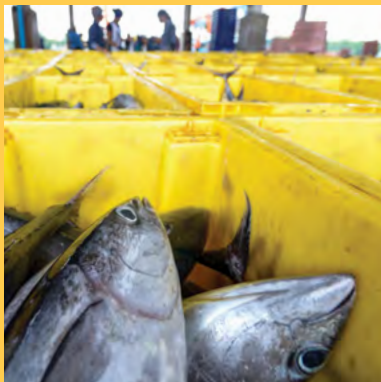
- peak and representative bodies (from all sectors),
- Commonwealth, state and territory fisheries management and research agencies,
- Research Advisory Committees,
- FRDC subprogram and coordination leaders and their committees,
- the many researchers who work on FRDC projects, and
- the many interested people and seafood consumers FRDC engages with.

The dedication and passion of FRDC staff is critical to the FRDC's ongoing success for which the Board is very grateful. The Board welcomes feedback and invites you to contact any director and let them know your thoughts after reading this annual report.

Significant events after 30 June 2019

Nil.





Priorities for 2019–20

The FRDC RD&E Plan 2015–20 brought with it a significant change to the way planning and investment is undertaken. The most significant is that the FRDC will directly invest to deliver results and outcomes against the national priorities. The FRDC has devolved some authority to jurisdictions through Research Advisory Committees (RACs) and industry sectors through Industry Partnership Agreements (IPAs)—to allow them greater ownership over setting research priorities and making recommendations on which projects to fund.

The key areas of focus for the FRDC priorities in the coming year are as follows.

Lead

Priority 1: Australian fishing and aquaculture products are sustainable and acknowledged to be so.

- Expand the Status of Australian Fish Stocks reports to include information on bycatch, fisheries management and habitat, and reduce the number of undefined species in the report.
- Progress the development and implementation of a national bycatch reporting framework.
- Develop risk assessment tools for commercial fisheries and aquaculture.
- Develop best practice on water performance.
- Extend new forms of communication with stakeholders and end users (consumers).
- Finalise guidelines for Australian Fisheries Management Standards.

Priority 2: Improved productivity and profitability of fishing and aquaculture.

- Implement new approaches to industry development and innovation.
- Progress the development of the Easy Open Oyster.
- Deliver innovation acceleration programs to assist industry development.
- Develop new ways to utilise under-utilised species and further improve post-harvest waste.
- Invest in R&D projects to improve efficiency in wild fishery capture methods.
- Work towards understanding the social and economic contributions of recreational fishing in Australia.





Priority 3: Development of new and emerging aquaculture growth opportunities.

- Continue the advances made in Yellowtail Kingfish production.
- Explore options for developing aquaculture in northern Australia and scope the potential for novel species, systems and approaches.
- Invest in R&D projects that will assist grow production volumes of aquaculture species across Australia.

National infrastructure

- National Carp Control Plan—complete the development of the National Carp Control Plan.
- Recfishing Research—progress Southern Bluefin Tuna research and assist in the development of a national social and economic survey. The RD&E plan and/or priorities for this subprogram can be found at frdc.com.au/Partners/National-Priorities-and-Subprograms/Recfishing-Research. This RD&E plan and associated priorities form the basis of investment for the coming financial year.
- Aquatic Animal Health and Biosecurity Subprogram—develop procedures for operating in presence of disease and research towards resistant stock to enable enhanced disease resistance in industry. The RD&E plan and/or priorities for this subprogram can be found at frdc.com.au/Partners/National-Priorities-and-Subprograms/Aquatic-Health-and-Biosecurity. This RD&E plan and associated priorities form the basis of investment for the coming financial year.
- Indigenous Reference Group Indigenous Capacity Building Program—improve data on Aboriginal and Torres Strait Islanders fisheries resource use to better inform Indigenous community planning and fisheries agency decision making. Develop a concise summary of Indigenous R&D undertaken to date and how best to extend the outputs, sharing and preserving knowledge through story. The RD&E plan and/or priorities for this subprogram can be found at frdc.com.au/Partners/National-Priorities-and-Subprograms/Indigenous-Reference-Group. This RD&E plan and associated priorities form the basis of investment for the coming financial year.
- Human Dimensions Research Subprogram—develop a nationally-coordinated estimate of the economic contributions of commercial fisheries and aquaculture and effective engagement to achieve socially supported fisheries and aquaculture. The RD&E plan and/or priorities for this subprogram can be found at frdc.com.au/Partners/National-Priorities-and-Subprograms/Human-Dimensions-Research-Subprogram. This RD&E plan and associated priorities form the basis of investment for the coming financial year.





Partner

Research Advisory Committees

The FRDC holds an annual stakeholder workshop to gain an insight into the key issues and set priorities for the jurisdictional Research Advisory Committees (RAC) annual call for applications. The RD&E plan and/or priorities for each RAC can be found on their individual webpages, see frdc.com.au/Partners/Research-Advisory-Committees. These RD&E plans and priorities form the basis of investment for the coming financial year.

Industry Partnership Agreement priorities

Each Industry Partnership Agreement (IPA) develops a RD&E plan, which contains its specific priorities and from which it focuses its annual call for applications. The RD&E strategic plans for the IPAs can be found on their individual webpages, see frdc.com.au/Partners/Industry-Partnership-Agreements. These RD&E plans and priorities form the basis of investment for the coming financial year.

Collaborate

The FRDC encourages stakeholders—industry partners (IPAs), jurisdictions (RACs) and/or subprograms to co-invest in projects addressing common or mutual priority areas. Funds are set aside to encourage and facilitate this collaboration. It is up to each partner to identify and prioritise projects with the FRDC to access collaboration funding. The FRDC will then invest collaboration funds in these agreed activities with the RACs, IPAs and subprograms.

FRDC marketing functions

On 13 December 2013, the *Rural Research and Development Legislation Amendment Act 2013* amended the FRDC's enabling legislation, the PIRD Act. These amendments extend the scope and range of activities the FRDC can undertake to include marketing for all its stakeholders where a statutory levy was established.

On 16 August 2018, the Primary Industries Research and Development Amendment Bill 2017 was passed by both houses of parliament. The change allows FRDC to undertake marketing activities with voluntary funds—where industry request and contribute. This provides a more flexible and responsive approach for FRDC to deliver marketing services to industry. It also opens the doors for FRDC and the seafood industry to work with other primary producers, such as Wine Australia to deliver integrated Australian marketing activities.

FRDC will work with industry stakeholders to develop and undertake marketing activities as required. If industry agrees to marketing activities, FRDC will develop and publish a separate marketing plan in addition to its RD&E plan. The two plans will be closely linked, as RD&E will play a key role in underpinning and informing the development of any marketing activity. It will also provide the mechanism by which marketing activities will be evaluated.

Marketing priorities

- A key focus for the FRDC is to establish a robust industry marketing collection processes—whether voluntary or levy based. Underpinning this, the FRDC has established policies and procedures to ensure good governance of marketing funds.
- Assist sectors progressing statutory marketing levies.
- Deliver on the 2015–20 RD&E Plan priority to increase exports of seafood to countries where Australia has signed a new free trade agreement (China, Korea and Japan).



Financial targets 2019–22

FINANCIAL INCOME TARGETS

REVENUE	2019–20	2020–21	2021–22
	\$m	\$m	\$m
<i>Australian Government 0.5% AGVP*</i>	15.60	16.16	16.70
<i>Matching of industry contributions</i>	7.80	8.08	8.34
Total revenues from the Australian Government	23.40	24.24	25.04
Contributions revenue from industry	8.59	9.70	9.95
Projects revenue from other parties	1.00	3.00	3.00
Other revenue	1.51	1.85	1.85
Marketing and promotion	0.50	1.00	2.00
Total revenue	35.00	39.79	41.84

* Average gross value of production.

FINANCIAL EXPENDITURE TARGETS

EXPENDITURE	2019–20	2020–21	2021–22
	\$m	\$m	\$m
Total RD&E expenditure	34.00	31.80	32.60
Total marketing expenditure	0.45	0.90	1.80
Total communications	0.67	0.70	0.70
Total corporate costs	6.31	6.38	6.65
Total expenditure	41.43	39.98	41.75

RD&E EXPENDITURE BY INVESTMENT AREA

ACTIVITIES	2019–20	2020–21	2021–22
	\$m	\$m	\$m
LEAD			
National priorities	5.45	5.08	5.21
National infrastructure	6.78	6.35	6.50
COLLABORATE			
Response fund	1.35	1.26	1.30
Collaboration fund*	0.36	0.35	0.35
PARTNER			
Partnership agreements (industry sectors)	11.20	10.46	10.75
Partnership agreements (jurisdictions)	8.86	8.30	8.49
Total activities expenditure	34.00	31.80	32.60

* In 2018–19 the collaboration fund was called the incentive fund.

PIRD ACT REQUIREMENTS

	2019–20	2020–21	2021–22
	\$,000	\$,000	\$,000
Remuneration and allowances to directors and members	420	420	420
Cost recovery expenses to pay to the Commonwealth	15	15	15
Selection committee expenses and liabilities	Nil	60	Nil



The Corporation

FRDC is a statutory corporation within the Australian Government's Agriculture portfolio and is accountable to the Parliament of Australia through the Minister for Agriculture. Revenue for RD&E investment is based on a co-funding model between the Australian Government and the commercial fishing and aquaculture industries.

The Corporation was formed on 2 July 1991 and operates under two key pieces of legislation the *Primary Industries Research and Development Act 1989* (PIRD Act) and the *Public Governance, Performance and Accountability Act 2013* (PGPA Act).

Vision

The FRDC's vision is for Australia to have vibrant fishing and aquaculture sectors which adopt world-class research to achieve sustainability and prosperity.

Planned outcome

Increased economic, social and environmental benefits for Australian fishing and aquaculture, and the wider community, by investing in knowledge, innovation, and marketing.

Role

The FRDC's role is to plan and invest in fisheries RD&E activities in Australia. As a national organisation with strong linkages to industry, managers and researchers, it has a fundamental role in providing leadership and coordination.

Portfolio minister

The portfolio Minister for Agriculture is Senator the Hon. Bridget McKenzie. The Assistant Minister for Forestry and Fisheries is Senator the Hon. Jonathon Duniam.

Stakeholders

FRDC works to a diverse and geographically dispersed group of stakeholders across fishing and aquaculture, which are not mutually exclusive. For example, Indigenous fishers may participate in customary fishing, conduct aquaculture and commercial fishing, and fish recreationally.



Representative organisations

The FRDC has four ministerially declared representative organisations:

- Australian Recreational and Sport Fishing Industry Confederation Inc., trading as Recfish Australia (representing recreational and sport fishers),
- Commonwealth Fisheries Association (representing commercial fishers operating in Commonwealth waters),
- National Aquaculture Council (representing the aquaculture industry),
- Seafood Industry Australia (representing the seafood industry).

The FRDC also involves the Indigenous Reference Group and the Australian Recreational Fishing Foundation in all representational organisation activities.

FRDC funding agreement

Australia's rural research and development corporations (RDCs) are the mechanism by which primary producers and the government co-invest in research and development for industry and community benefits. This partnership between industry and government is reflected in joint funding and in input to RDC priorities and planning processes.

The Australian Government has previously entered into agreements with the RDCs which are industry-owned companies as a means to define and govern aspects of their relationship. The Parliament of Australia has legislated to require similar negotiated agreements between the Australian Government and the statutory RDCs.

The funding agreement requires establishment of necessary accounting systems, procedures and controls in accordance with the PGPA Act and the funding agreement, including a cost allocation policy. FRDC's Cost Allocation Policy sets how to allocate direct and indirect costs across its research and development and marketing programs. The Policy is available from the website—www.frdc.com.au

Review of the performance of all RDCs is important to ensure accountability and help foster a culture of continuous improvement. The agreement between the government and FRDC establishes a framework for periodic, independent reviews.

Independent performance review of FRDC completed

The FRDC is required under its 2015–19 funding agreement with the Commonwealth Government, to engage an independent organisation to undertake a comprehensive review of its performance by 2 December 2018. The FRDC Board agreed to the terms of reference with the Department in September 2017 and Forest Hill Consulting (led by Scott Williams) was selected to undertake the review. As part of the review Forest Hill Consulting conducted a number of face-to-face interviews, as well as seeking broader stakeholder feedback. The report was completed and provided to the Department for consideration.

In total, 10 recommendations were made, and the FRDC has agreed to fully implement all of them. The report and the FRDC Board response to the review can be found at www.frdc.com.au/en/about/corporate-documents/funding-agreement





Recommendation		Priority
1.	Based on a new RD&E plan, future FRDC annual operational plans (AOPs) should: <ul style="list-style-type: none">■ simplify key targets per area of investment,■ continue the refinement of management/governance targets that are more relevant to organisational performance (e.g. milestones achieved on time, contract turnaround times etc).	Important
2.	FRDC should develop, produce and promote to stakeholders a stand-alone performance report that summarises the FRDC's key outputs and impacts relative to targets in its RD&E plan and annual operation plan on an annual basis.	Important
3.	During the development of the next RD&E plan, FRDC should review the way it organises and manages its RD&E program (its investment and evaluation framework) with the aim of simplifying it so that it is easily understood by the average stakeholder.	Important
4.	The FRDC Board should consider options to assist it in its role in respect to RD&E, one of which would be the creation of a Research Committee of the Board.	Better practice
5.	The FRDC Board should consider creating a People and Culture Committee of the Board to formalise the succession planning process for all senior management, including the Managing Director, to recommend the remuneration of the Managing Director, and to develop a Board skills matrix.	Better practice
6.	FRDC should develop a deeper understanding of risk appetite and risk tolerance across the key risk areas in line with the new risk policy and ensure that this is monitored regularly by the Finance, Audit and Risk Management Committee. Risk appetite should be set by the Board with tolerances agreed to between the Board and management.	Better practice
7.	FRDC should strengthen its approach to extension, possibly by creating a specific position to oversee or coordinate extension across the organisation.	Better practice
8.	FRDC should continue to conduct ex-post impact assessments of randomly selected projects as planned. The focus for FRDC should be on communicating the results to stakeholders using clear, simple language, as it did in its <i>Annual Report 2016–17</i> . FRDC could consider preparing and publicly releasing a short performance evaluation report each year, which would include results against its key performance indicators as well as the results from the impact assessments.	Better practice
9.	FRDC should explore with its impact assessment provider the feasibility of providing in the impact assessment reports more detailed commentary on the likely distribution of benefits from the project clusters between regions and/or sectors of the Australian fisheries sector.	Better practice
10.	FRDC should develop and implement with its impact assessment provider a project to assess willingness-to-pay studies of environmental attributes of fishery resources and externalities arising from aquaculture as input into future assessments of the environmental impacts of FRDC's Environment program.	Better practice





Investment strategy—a balanced research investment approach

The FRDC aims to spread its investment in RD&E across the whole value chain of the commercial fishing and aquaculture industry, and for the benefit of both Indigenous and recreational fishers. In line with the deliverables in the RD&E plan, the FRDC will provide a balanced RD&E portfolio by investing in:

- the FRDC's five programs (Environment, Industry, Communities, People, Adoption),
- national jurisdictional (lead); regional and sector-focused projects (partner); and these working together for similar priorities (collaborate),
- short-term and long-term projects (an indicator of adaptive versus strategic research),
- high-risk (i.e. blue sky) and low-risk projects (percentage chance of success),
- functional and applied (not just research) projects.

All RD&E plans (FRDC, sector, and jurisdictional) need to demonstrate how they achieve a balanced portfolio of investment. RD&E investments are regularly assessed to ensure the FRDC maintains a balanced portfolio that meets the needs of its stakeholders, including the Australian Government and the Australian community.

The portfolio is monitored through the FRDC's project management system which is based on the key metrics above to inform future investment decisions and ensure a balance is maintained. The FRDC ensures funding applications are developed and reviewed by the RACs in line with broader portfolio requirements. A breakdown of investment for the past year can be seen on pages i–iv.

The FRDC seeks to achieve maximum leverage from its investments by providing research administration and services using a value-adding model. Research projects have input provided by the FRDC during their development and assessment phase in order to decide on a specific outcome which is then actively managed and monitored.

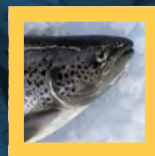
Cost allocation policy

The Board, as the accountable authority, is required by the PGPA Act to establish and maintain systems of risk and control to create an operating environment that promotes the proper use and management of public resources, in pursuit of both the public good and the purposes of the entity for which it is responsible.



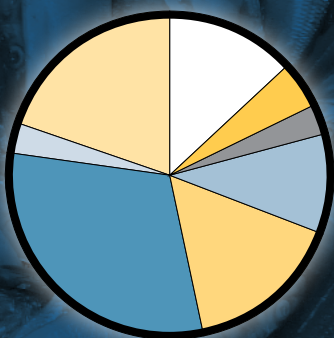
Australian fishing industry statistics

Aquaculture produced **93,964** tonnes
worth **\$1,318,618,880**



Wild-catch fisheries produced **166,022** tonnes
worth **\$1,742,370,920**

That's \$3.1 billion



Shares in gross value of fishery and aquaculture production

- Commonwealth (13%)
- New South Wales (5%)
- Northern Territory (3%)
- Queensland (10%)
- South Australia (16%)
- Tasmania (31%)
- Victoria (3%)
- Western Australia (20%)



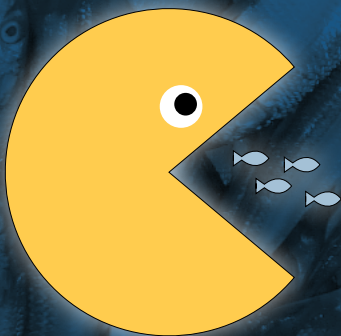
Tasmania became the first state to produce \$1 billion worth of seafood



Salmonids GVP up 5 per cent to **\$756 million**

Tuna exports down 11 per cent to **\$144 million**

Despite an increase in production volume, rock lobster production value fell because of weaker prices, down 3 per cent to **\$673 million**



In the past 12 months 78 per cent of Australians have consumed fresh, frozen or tinned seafood. Only 7 per cent of the population do not eat seafood.

Fresh seafood is on the menu

- frequently (at least weekly) by 33 per cent of people
- regularly (fortnightly/monthly) by 32 per cent
- occasionally (less than monthly) by 26 per cent

Australian Fisheries Statistics (2018) are available from http://www.agriculture.gov.au/SiteCollectionDocuments/abares/publications/AustFishAquacStats_2017_v1.2.0.pdf
Consumer data from FRDC report 'Unpacking the consumer seafood experience' (2019).





Relationships with stakeholders

The FRDC works with diverse and geographically dispersed groups who operate or interact with fishing and aquaculture stakeholders. Some of these relationships are driven by a shared vision of working to address issues of concern, with some reinforced through mandate or legislation.

To meet and deliver on these needs the FRDC Board and staff regularly visit locations where they can engage directly with those involved in fishing and aquaculture and see issues first hand. FRDC is committed through formal policy to:

- treat stakeholders courteously and professionally,
- provide them with quality service,
- respond to written enquiries within 10 working days of receipt by the FRDC,
- return telephone calls by the close of business on the following day at the latest,
- provide information that is current and accurate.

Engaging with stakeholders plays an important part of the work program for FRDC staff members. Over the course of a year, the FRDC aims to meet with its key stakeholders and participate in discussions on priorities, investment and related issues.

This year the FRDC completed a significant change and upgrade of how it engages with stakeholders, which has largely been driven by decisions listed in the FRDC RD&E Plan 2015–20. Key changes have included the appointment of three new staff (Adelaide based) to focus on and manage stakeholder relationships, the re-invigoration of RACs, and the affirmation and signing of two new IPAs.

Consultation with representative organisations

The FRDC has four representative organisations with which it consulted during 2018–19.

- Australian Recreational and Sport Fishing Industry Confederation Inc. (trading as Recfish Australia),
- Commonwealth Fisheries Association Inc.,
- National Aquaculture Council Inc.,
- Seafood Industry Australia.

The Indigenous Reference Group and the Australian Recreational Fishing Foundation are both not technically FRDC declared representative organisations but are invited to all meetings.

Under clause 6.6 of the FRDC's funding agreement with the Department of Agriculture, the FRDC may meet travel and other expenses incurred in connection with consultation between the FRDC and each of its representative organisations. The FRDC aims to meet with these organisations at least twice a year. The organisations often combine their visits to meet with other Canberra-based government agencies. While the FRDC budgeted \$15,000 for representative organisation consultation, payments are only made to reimburse costs when they are associated with this activity (\$5,925.87 exclusive of GST was spent in 2018–19). Consultation with these organisations allows the FRDC to gain insights on the RD&E priorities for industry sectors. It also provides a way for the FRDC to report the outcomes from its RD&E investment.





Consultation with Australian Prawn Farmers Association

The FRDC's investments in prawn farming research and development is mostly guided by the Australian Prawn Farmers Association's (APFA) RD&E Plan. FRDC and APFA have enjoyed a very close working relationship for a number of years and APFA has a lead role with the FRDC in ensuring its RD&E priorities are met. The table below outlines the financial record of the relationship.

Year	2015–16	2016–17	2017–18	2018–19*	2019–20*
APFA R&D levy contribution	\$161,515	\$177,197	\$151,738	\$130,666	\$200,000
FRDC expenditure on RD&E projects	\$40,711	\$383,588	\$406,152	\$496,924	\$350,000

* Estimated investment.

Year	2016–17	2017–18	2018–19	2019–20
Cost recovery expenses to Commonwealth	\$15,000	\$15,000	\$15,000	\$15,000

Research Advisory Committees

The FRDC supports a network of RACs—one covering Commonwealth fisheries and one in each state and the Northern Territory. The RACs play an important role in delivering on efficient, effective planning and investment processes, and the development of project applications. The FRDC works to ensure a majority of research funding applications are submitted through, reviewed and prioritised by the RACs. The RACs represent all fishing and aquaculture, fisheries managers and researchers; and most have environmental and other community interest representation.

The RAC Chairs at the end of 2018–19 were as follows.

Commonwealth	Peter O'Brien
New South Wales	Peter Dundas-Smith
Northern Territory	Dr Rik Buckworth
Queensland	Dr Cathy Dichmont
South Australia	Don Plowman
Tasmania	Ian Cartwright
Victoria	Peter Rankin
Western Australia	Brett McCallum

For further information on the RACs—www.frdc.com.au





Industry partners

The FRDC has continued its close relationship with seafood industry sectors. Industry Partnership Agreements (IPAs) are a key part of the FRDC business model because they provide individual sectors with greater certainty for long-term investment against their RD&E plans.

Each IPA develops a RD&E plan which contains specific priorities, from which the IPA focuses its annual call for applications. The RD&E plans and priorities form the basis of investment for the coming financial year. These RD&E plans can be found on their individual webpages at frdc.com.au/Partners/Industry-Partnership-Agreements. During the year the FRDC has IPAs with the following organisations:

- Australian Abalone Growers Association,
- Abalone Council Australia,
- Australian Barramundi Farmers Association,
- Australian Council of Prawn Fisheries,
- Australian Prawn Farmers Association,
- Australian Southern Bluefin Tuna Industry Association,
- Oysters Australia,
- Pearl Consortium,
- Southern Fisheries,
- Southern Rocklobster Limited,
- Tasmanian Salmonid Growers Association,
- Western Rock Lobster Council.

Australian Government

The Minister for Agriculture and the Department provide the key priorities that need to be addressed from an Australian government perspective. The Department acts as the day-to-day policy intermediary between the office of Minister, Assistant Minister and the FRDC.

Australian Fisheries Management Forum

The Australian Fisheries Management Forum (AFMF) is attended by the heads of the Commonwealth, state and territory government agencies responsible for management of fisheries and aquaculture. AFMF discusses issues relating to fisheries and aquaculture management.

The FRDC understands that adoption of research outputs by management agencies is a key to optimising management outcomes. It will continue to work with AFMF, participating as an invited representative to its meetings, providing advice and ensuring AFMF priorities are incorporated into planning and prioritisation processes.

Rural research and development corporations

The FRDC continues to partner with other RDCs on a range of activities to enhance joint strategic outcomes. The FRDC attends meetings of the Council of Rural Research and Development Corporations (CRRDC), as well as meetings of executive directors, business managers and communications managers. It continues to be an active member of these groups driving a number of key areas in particular the CRRDC evaluation program.

The FRDC also partners and participates with other RDCs at the project level. A key area for collaboration has been the R&D for Profit Program and projects in which the FRDC is a co-investor. The FRDC has assisted in coordinating sponsorship and participation in events such as evokeAG, ABARES 'Outlook' conference and individual projects on data, safety and community perceptions.





Research partners

Investment in research is the FRDC's core business. As a result, it is vital to the FRDC's success that good relationships are built and maintained with its research partners. In any given year, FRDC will have over 400 active projects under management. The research is undertaken and delivered by partners including:

- fishing and aquaculture industry,
- Department of Agriculture,
- Australian Fisheries Management Authority,
- state/territory fisheries research centres,
- Commonwealth Scientific and Industrial Research Organisation (CSIRO),
- universities,
- cooperative research centres (CRCs),
- other rural RDCs and corporations,
- industry groups,
- co-investors from the private sector.

Aligning RD&E priorities

Knowledge for fishing and aquaculture into the future: The FRDC's RD&E Plan 2015–20 was launched by Senator the Hon. Richard Colbeck at Parliament House on 16 September 2015. There have been no variations to the 2015–20 RD&E Plan.

The FRDC has taken great care to align its planning processes clearly showing how the priorities of a grassroots fisher can fit with, and align to, national priorities and programs, and this in turn helps achieve the Corporation's outcome statement.

In addition, the FRDC's program areas have been aligned closely to the objectives of the PIRD Act—Environment, Industry, People, Communities and Adoption and accountability and governance (see Figure 3 on pages 28–29)—these also a key component to delivering a balanced portfolio of investment.

The FRDC's annual planning and priority setting cycle starts with the Board undertaking a review of operations (including achievements listed in the previous year's annual report), which is followed by feedback being sought from stakeholders about their priorities for the next year.

The FRDC also run regular planning and R&D prioritisation meetings with RACs and IPAs. This culminates in an annual stakeholder workshop, which aims to provide an insight into the key issues around Australia at a higher level. The issues identified along with stakeholder feedback form an integral part of the priority setting for FRDC's partners and infrastructure investments. This then aligns with the processes for the call for applications either through open calls or with tendering processes. The FRDC then factors these into the cycle leading to an updated annual operational plan (and portfolio budget statements), ensuring these documents align with the FRDC's five-year RD&E plan.

Requests for investment against the Plan are then called for and projects that address the priorities and needs of stakeholders and the FRDC are provided with funding.

The FRDC aims to spread its investment in RD&E across the whole value chain of commercial fishing and aquaculture, and for the benefit of both Indigenous and recreational fishers. This balanced approach ensures RD&E is funded that incorporates issues of critical national importance as well as stakeholder priorities, because—ultimately—all FRDC's investment in RD&E is driven by the needs of its stakeholders.

The following year's annual report completes the cycle by reporting on key achievements.





Developing the FRDC's RD&E Plan 2020–25

Continuing to build a vibrant and innovative fishing and aquaculture community will require careful and deliberate planning. FRDC have commenced development of their RD&E Plan 2020–25. Consultation will be vital to ensure that FRDC is able to accurately or adequately interpret and respond to RD&E needs of Australia's fishing and aquaculture community.

FRDC has produced six strategic plans in its life, and each five-year RD&E plan has taken a contemporary look at the business landscape, to articulate the optimal framework for investment in RD&E to achieve the vision for fishing and aquaculture in Australia.

The process of delivering the FRDC's RD&E Plan 2020–25 has started and will continue throughout 2019. The plan will be shaped by the priorities of the Australian Government, the Australian Fisheries Management Forum, and the needs and aspirations of the sectors and industries that make up Australia's rich fishing and aquaculture community. To assist, the FRDC will be conducting an extensive consultative process. The process will be designed to provoke thought and feedback on possible future states of fishing and aquaculture in Australia; activities to respond to key internal and external driving forces; and review systems, investment frameworks and processes to improve efficiency in delivery of outputs through investment in RD&E. The FRDC RD&E Plan 2020–25 will also be informed by:

1. A contemporary snapshot of fishing and aquaculture today, updating earlier work conducted in 2014 (FRDC project 2014/503.20).
2. A horizon-scanning process looking over a 10-year time horizon (2030) that considers geopolitical, social, economic, environmental and/or technical changes likely to occur over 2020–30, drivers of those changes, and implications for fisheries and aquaculture production, trade, pricing, fishing participation, expenditure and the environment.
3. An independent review of FRDC's performance (as part of funding agreement review), and proposed independent review of RACs and IPAs (see above).
4. Relevant strategic plans and strategies that are extant for the nominated five-year period.



FIGURE 2: FRDC RD&E MONITORING AND EVALUATION FRAMEWORK

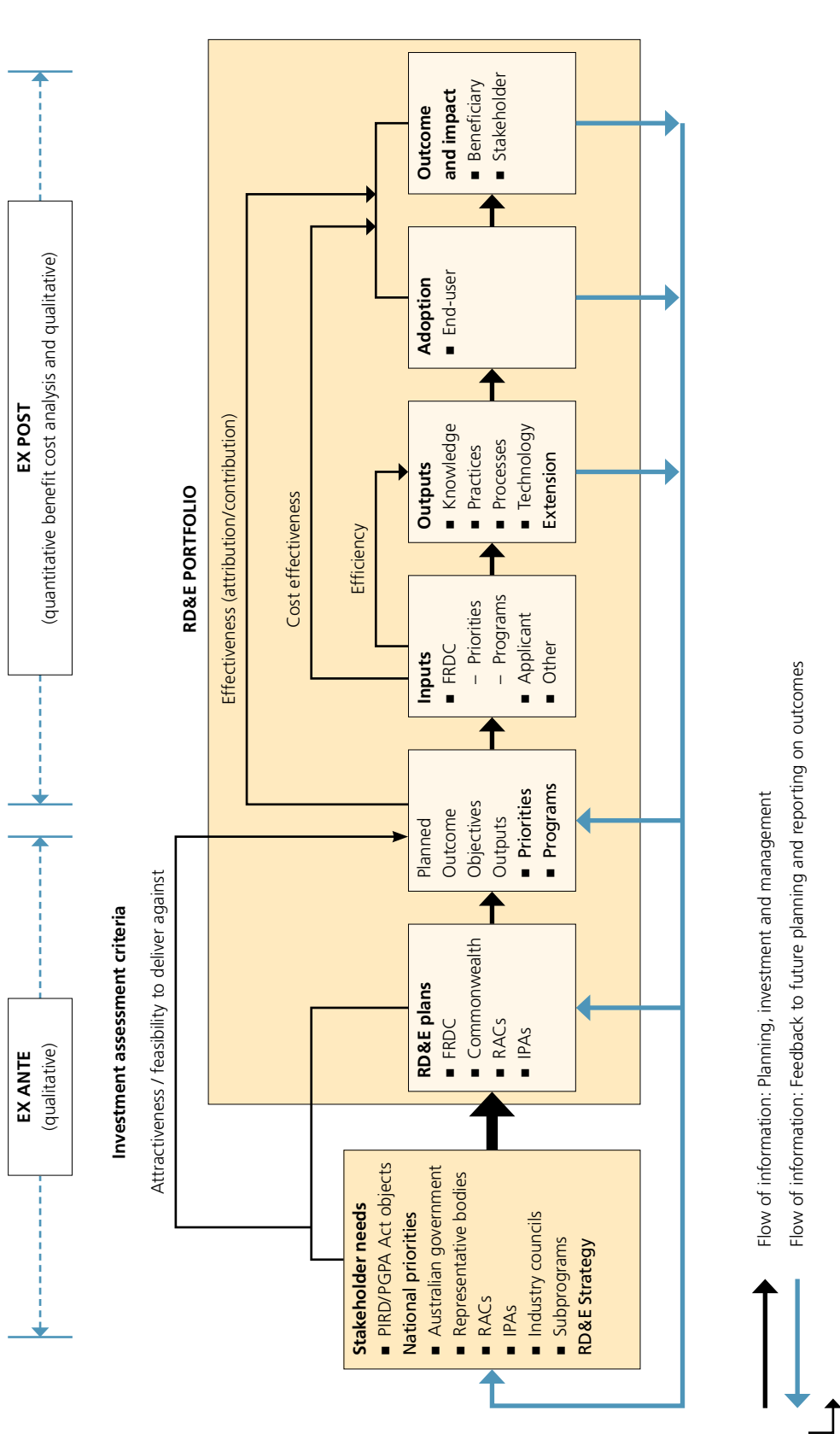
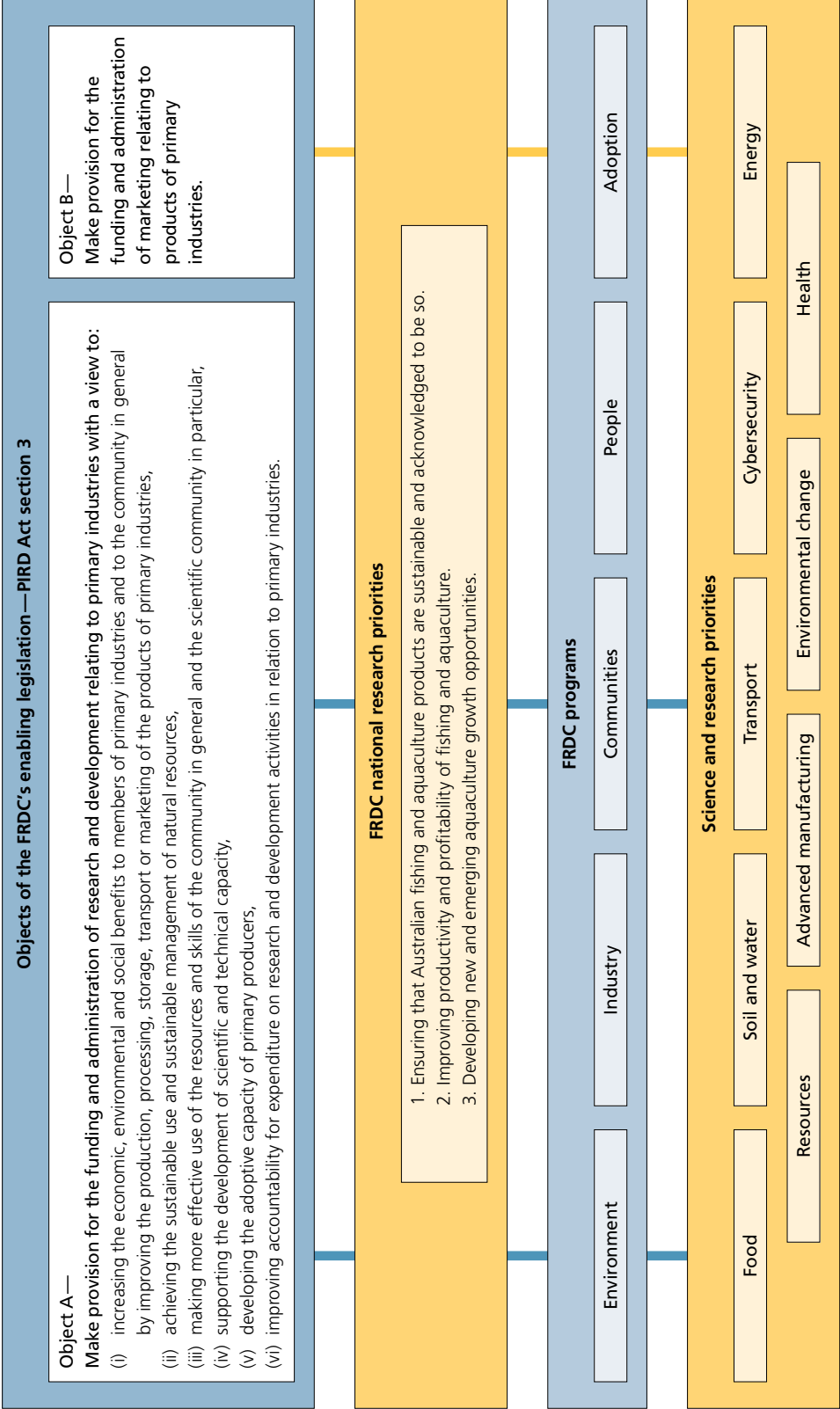
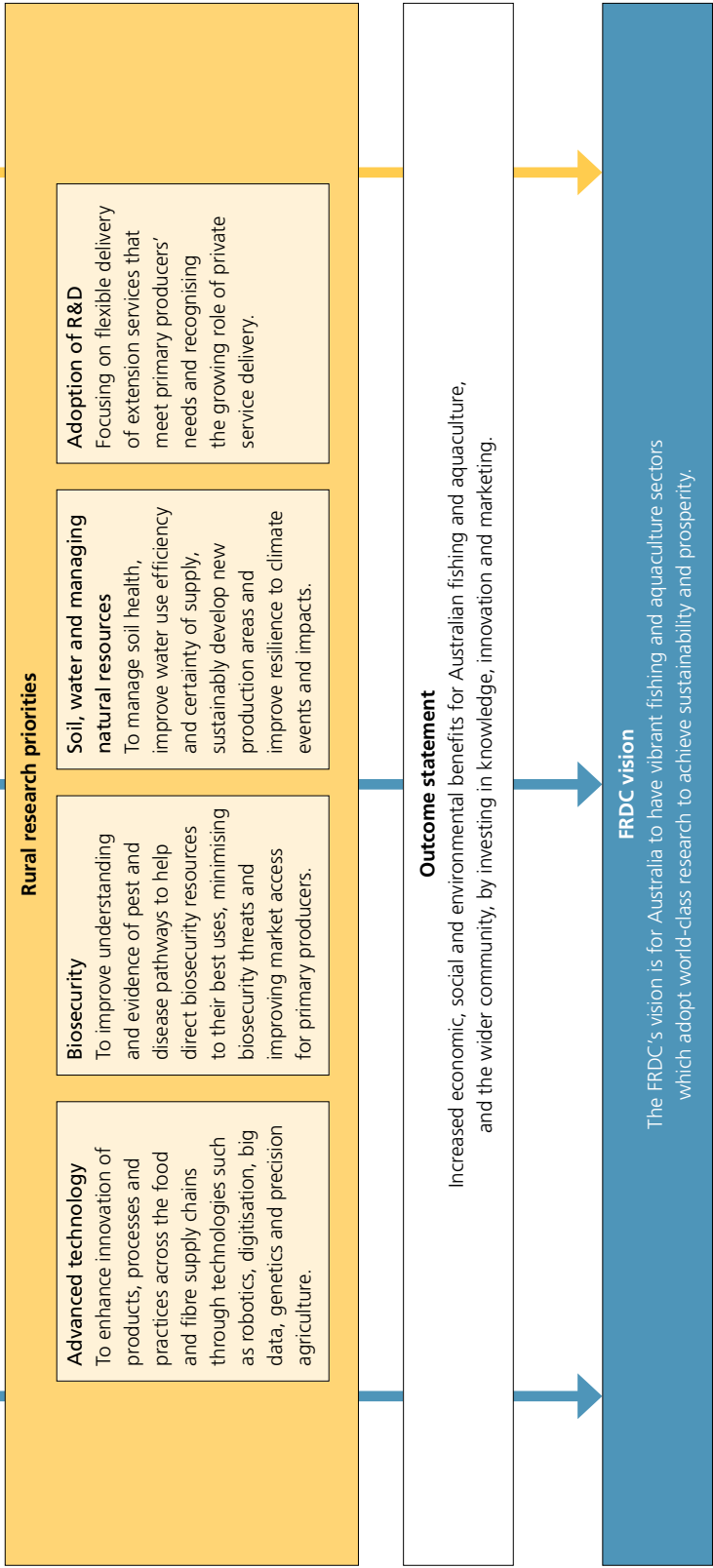


FIGURE 3: THE FRDC'S FRAMEWORK FOR INTEGRATING LEGISLATIVE, GOVERNMENT AND INDUSTRY PRIORITIES





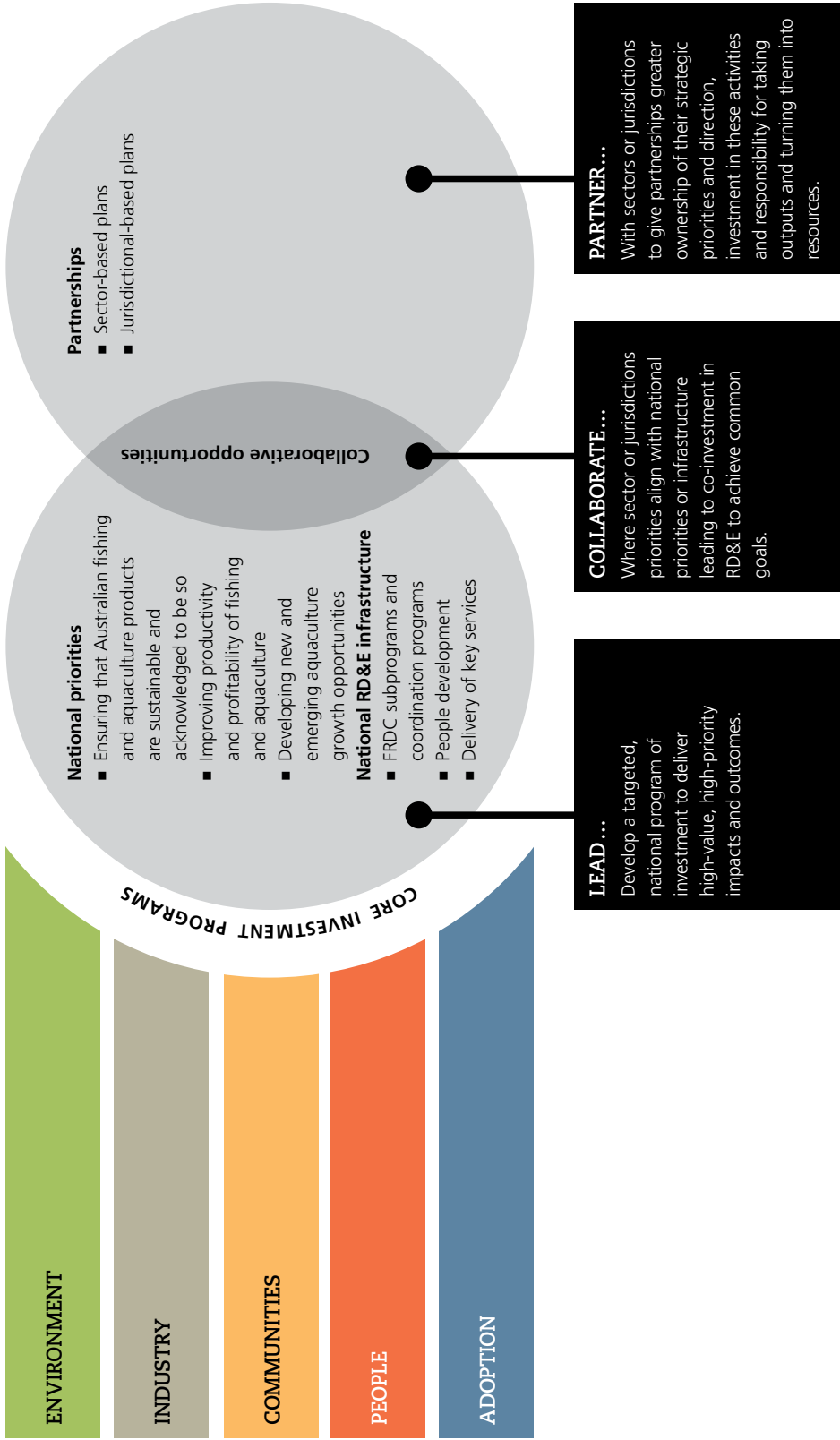


REPORT OF OPERATIONS PART 2:

THE FRDC'S OPERATIONAL RESULTS



FIGURE 4: THE FRAMEWORK FOR RD&E INVESTMENT BY THE FRDC 2015–20





Inputs to output

The FRDC has developed a flexible approach to how it funds projects to align with the principles of 'lead, collaborate and partner' in its current RD&E Plan (2015–20).

This means projects can sit under the categories of:

- national priorities or infrastructure, collaboration or partnerships (sector or jurisdiction), or
- FRDC's five programs (Environment, Industry, Communities, People, Adoption).

See Figure 4 on the previous page.

How to read the project reports

To show where each project or activity story in this section of the annual report sits within the FRDC's investment framework, it has been coded into the grid shown below. The grid shows the national priorities, infrastructure, collaboration or partnerships and FRDC's programs. The purpose is to show that a single project can cross a number of fields, and allows the reader to see how a project fits within the investment framework.

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

For example, FRDC's investment in the SAFS reports is funded under national priorities, partner: jurisdiction and collaboration but is also coded against FRDC programs—Environment and Industry.

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

The tables on subsequent pages highlight the fourth year of progress towards achieving deliverables in FRDC's RD&E Plan 2015–20. These are expected to be completed or implemented throughout the life of the Plan. In the tables that show the status of deliverables, the icons below mean that activity:

	has been completed (there are none at this stage),
	is on track for completion,
	is underway,
	work is yet to start (there is just one at this stage).

FRDC's RD&E Plan 2015–20 is available from www.frdc.com.au





FRDC NATIONAL PRIORITIES

LEAD

Priority 1. Ensuring that Australian fishing and aquaculture products are sustainable and acknowledged to be so

Strategy

Continue to prioritise investment in RD&E that contributes to the sustainability of fishing and aquaculture, including consideration of target species; bycatch species; threatened, endangered and protected species; and the broader marine environment.

Build understanding of the drivers of social licence to operate and respond to community concerns and needs for information with science-based evidence.





Principal inputs

During 2018–19, there was \$1.45 million or around 4.9 per cent of the total R&D investment for this priority.

Priority area activities	Portfolio Budget Statement (PBS) target 2018–19	Achievement
The number of species in the national Status of Key Australian Fish Stocks (SAFS) reports increases to include 200 species.	One hundred and sixty species included in SAFS reports.	Not achieved. One hundred and twenty species covering 406 stocks were assessed (an increase of 37 new species on 2016). In addition, the FRDC delivered a shark report card that covered and assessed 194 species (199 stocks), of this 124 stocks have been assessed to be sustainable at current levels of fishing.
The number of species classified as 'undefined' is reduced from the previous [2016] SAFS reports.	Undefined species is less than 20%.	In the 2018 report, 54 stocks or 13% were classified as undefined compared to 16% in the 2016 report.
Perception of the commercial fishing industry increased from 28–40% by 2020.	Perception of industry increases to 34%.	The most recent survey of community perception (June 2019) shows that 46% believe the industry is sustainable.



The following table provides a guide to progress in achieving the deliverables in FRDC's RD&E Plan.

Output	Status	Comment
Information on the performance and value of Australia's fisheries is available.		Australian fisheries statistics and the SAFS reports both provide overviews of production and worth of the industry. Further work was undertaken on Whichfish, a pilot scheme that provides quick assessments for environmental risks of Australian wild-caught seafood using publicly available information. Assessments were peer reviewed and are publicly accessible online.
The number of species in the national SAFS reports increases to include 200 species.		One hundred and twenty species covering 406 stocks were assessed (an increase of 37 new species on 2016) and of these 255 stocks were assessed as being sustainable. In addition, the FRDC launched a new SAFS phone app to allow for easier access.
RD&E has provided a basis to reduce the number of species classified as 'undefined' from the approximately 30% currently to less than 10%.		Current levels indicate undefined rates under 10%. Workshops have been undertaken in all jurisdictions to increase the use of methodologies to further reduce the number of 'undefined' species (project number 2017-102: Reducing the number of undefined species in future status of Australian fish stocks reports. Phase two: training in the assessment of data-poor stocks).
Positive perceptions of the commercial fishing industry increase from 28–40% by 2020 as measured through the independently-commissioned FRDC stakeholder survey.		The number of respondents who believe the community perception of the Australian fishing industry (as a whole) is sustainable is 46% in the independently-commissioned community perceptions survey.

EXAMPLES OF PROJECT ACTIVITY DURING THE YEAR

Status of Australian Fish Stocks (SAFS) reports 2018, and further development of the SAFS production and dissemination system

FRDC project number: 2017-100

For further information: Carolyn Stewardson, carolyn.stewardson@frdc.com.au

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

The latest edition of the Status of Australian Fish Stocks (SAFS) reports was launched at the ABARES Outlook conference held in Canberra on 5–6 March.

The reports provide a snapshot of how Australia's fish stocks are tracking. The 2018 edition is the most comprehensive so far, bringing the number of species assessed from 83 to 120, including many of Australia's favourite commercial and recreationally caught fish species. The reports are a significant achievement for the fisheries science community. More than 100 fisheries scientists worked on the 120 species reports, which were then independently reviewed by a further 50 fisheries scientists.

Since the inaugural 2012 SAFS reports, each new edition has broadened the number of species covered. At 120 species and 406 stocks, the reports cover a majority of the wild harvested production volume across Australia.





Of the stocks in 2018, there were 254 stocks assessed as sustainable, 23 as depleting, 18 as recovering, 29 as depleted and 28 as negligible. A further 54 were not able to be fully assessed and were classified as undefined.

In developing the 2018 edition of the SAFS reports, the FRDC and the SAFS advisory working group conducted a review aimed at improving upon the 2016 edition of the reports. In this edition, minor changes have been made around stock status classification categories: the 'environmentally limited' classification has been removed, the 'overfished' classification has been replaced by 'depleted', and transitional stock categories are now 'recovering' and 'depleting'.

To address these changes and develop a comparison tool across all editions of the reports, the FRDC engaged Andrew Penney, director of Pisces Australis. He has developed a method that uses the reports to produce trends over time. The report on developing the comparisons is available on the FRDC and SAFS websites (project number 2017-100).

From the outset in 2012, the aim of the SAFS reports has been to give an account of stock status trends over time. Fisheries and the marine environment are constantly changing. They are dynamic systems and the reports provide an insight into how species are faring and where management controls are needed, for example, to reduce catch or to protect fish during spawning.

While the reports provide a picture of the status of our fisheries stocks, the process of putting the reports together has gone a long way to harmonising how fisheries jurisdictions share knowledge and undertake stock assessments.

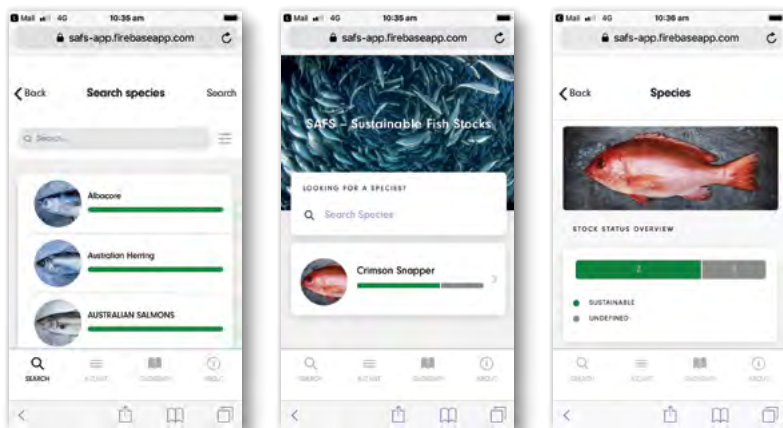
In writing the reports, many early-career scientists have also had the opportunity to work closely with, and learn from, senior scientists. In all, over 100 fisheries scientists from all jurisdictions work on the reports and for some species all jurisdictions contribute information. In the future this knowledge could allow for a more cohesive management approach from management agencies.

Smartphone app for fish stocks

There are now phone apps for both Google Play and Apple so you can easily browse the information in the SAFS reports. These are the most comprehensive guide to how Australia's fish stocks are faring.

The app makes the information on the status of Australia's commercial fish species more accessible, distilling information from the SAFS reports into clear language appropriate to a lay audience. It allows consumers to run searches on 120 of Australia's commercial fish species and see where and how fish are caught.

Just search SAFS Sustainable Fish Stocks in the Google Play Store (for Android) or the Apple App Store (for iPhone) now or visit <https://www.fish.gov.au/app>





Shark Futures: A report card for Australia's sharks and rays

FRDC project number: 2013-009

For further information: Colin Simpfendorfer, colin.simpfendorfer@jcu.edu.au

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

A 'report card' on 194 shark and ray species in Australian waters indicates that the majority are sustainable and in a healthy state. These included 180 shark and 14 shark-like ray species which comprise 198 stocks in total. Australia has one of the most diverse and distinctive shark and ray faunas in the world. A quarter of the 320 or so species occurring in Australian waters are endemic.

The process of writing Australia's report card on sharks followed the well-established approach used by the International Union for the Conservation of Nature (or IUCN) for curating its Red List of Threatened Species.

The organisers held a workshop with 23 of Australia's leading shark and ray experts, who all brought the latest information and evidence on their species of interest to the table. The group then applied the IUCN Red List criteria to the shark species being considered, to establish the health of each population.

It can be an intense process, says Will White (CSIRO ichthyologist). "There are lots of discussions, and you do get some strong disagreements, but you always come out with a stronger assessment at the end."

The IUCN sets a high bar for the evidence required to show a species is threatened, Will says, which means there is very little chance that threat is being overstated. The report also incorporated Australian categories and criteria for sustainability, using the FRDC's SAFS reports.

The report card found that, overall, Australia's sharks and shark-like rays are in relatively good condition, with 124 stocks (79 per cent, excluding those classified as undefined) assessed as sustainable. Forty-one stocks were assessed as undefined, meaning there was insufficient information to determine their status. Of the 198 stocks, only 18 (11.5 per cent) were assessed as depleted.

The report card highlights the species of concern that are either still in decline or depleted, and species for which management needs to be introduced to ensure stocks do not become depleted. The results of the assessment indicate that interactions with fisheries are sustainable for the large majority of species.

The report card on Australia's sharks and rays can be accessed on the SAFS website.





FRDC Stakeholder Survey Program: Tracking perceptions of sustainability

FRDC project number: 2011-514

For further information: Peter Horvat, peter.horvat@frdc.com.au

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

The latest fisheries perceptions survey suggests many consumers are uncertain but hopeful about the future of the sector.

The 2019 survey of Community Perceptions of the Sustainability of the Australian Fishing Industry was undertaken as part of the *Unpacking the consumer seafood experience* report in June. This year, there were 2002 adult Australian main grocery buyers who did the survey. The main finding—the breakdown of views on sustainability—are similar to those of previous surveys, although changes in some responses are a concern for the sector.

The number of people who believe the industry is, or could be, sustainable in the future is 65 per cent (compared to 60 per cent in 2011 and 59 per cent in 2018). A breakdown of this figure reveals that this year there is a strengthening in the conviction about whether the industry is sustainable now.

Of the overall figure, 46 per cent think the industry is currently sustainable which is a 10 per cent increase on last year's figure of 36 per cent (and compared with 37 per cent in 2011). This increase in perception was noted across all components of fishing and aquaculture (commercial wild catch, aquaculture, traditional and recreational). In addition, the percentage of people who were hopeful and confident the industry would be sustainable rose 5 per cent to 44 per cent (Hopeful and confident: 19 per cent, plus Hopeful: 25 per cent).

The study reinforces engaging with consumers and community members by:

- continuing to reinforce the success around sustainability using existing channels of communication for the group that was already engaged,
- targeting the 'connected' segment more directly using fishing industry publications, websites, social media and blogs to engage recreational fishers and having a point-of-sale focus for fresh seafood consumers,
- taking a more passive and selective approach for the 'not engaged' segment.

The survey is an important barometer of public views for the FRDC. When there is a performance indicator that says 'we want to be sustainable', and 'we want people to know', you must be able to measure it.

Ensuring the sector is sustainable and 'acknowledged to be so' is the FRDC's first national priority. When assessing a public resource, it's really important to maintain connectivity and understand where the pressure points are in the community.





FRDC NATIONAL PRIORITIES

Priority 2. Improving productivity and profitability of fishing and aquaculture

Strategy

Invest in RD&E to understand the drivers of, and impediments to, productivity and profitability growth in all fishing and aquaculture sectors; research means of increasing sustainable production and profitability; link these to business education; encompass the needs of Indigenous communities.

Principal inputs

During 2018–19, there was \$1.71 million or around 5.7 per cent of the total R&D investment for this priority.

Priority area activities	PBS target 2018–19	Achievement
Understand the quantity of potential production from Australia's fishing and aquaculture resources.	Two reports completed that assist increase knowledge to improve the utilisation of fisheries resources by Indigenous Australians.	Achieved. Two reports completed during the year.

The following table provides a guide to progress in achieving the deliverables in FRDC's RD&E Plan.

Output	Status	Comment
Provide RD&E to support increased trade of fishing and aquaculture products into countries with free trade agreements by some 300%.		Trade data base is being utilised by industry. Seafood Trade Advisory Group working with key sectors to improve exports to China. FRDC invests in project to assist development of a European Free Trade Agreement.
Understand the quantity of potential production from Australia's fishing and aquaculture resources.		In 2018–19 the value of fish and aquaculture increased to just over \$3.1 billion. Continued growth is expected in the coming year with expansion of aquaculture in key sectors, primarily prawns, Barramundi and Yellowtail Kingfish.
Understand and improve the utilisation of fisheries resources by Indigenous Australians.		FRDC Indigenous Reference Group (IRG) undertaking scoping project to collect Indigenous catch data. IRG undertaking work to extend the knowledge of R&D undertaken over past five years.
Identify obstacles and opportunities to increase productivity through habitat.		National Habitat Strategy completed (project number 2015-501 Recfishing Research Subprogram: Empowering recreational fishers as champions of healthy fish habitat). New project initiated to undertake social and economic assessment of the value of recreational fishing.





EXAMPLES OF PROJECT ACTIVITY DURING THE YEAR

FISH 2.0 Establishing a network of investors to help drive growth in Australian fishing and aquaculture businesses

FRDC project number: 2017-219

For further information: Peter Horvat, peter.horvat@frdc.com.au

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

The Fish 2.0 Regional Innovators Forum in Brisbane has set the scene for Australian seafood innovators to take their products and ideas to the world.

The FRDC has partnered with Fish 2.0 to provide innovative would-be entrepreneurs from Australia's seafood sector with access to global business development expertise and investment opportunities linking research and development to commercialisation opportunities. Together with the United States Department of State and the Australian Government's Department of Innovation, Industry and Science's Accelerating Commercialisation program, the FRDC has sponsored Fish 2.0 to run the Australia and Pacific Islands track.

Fish 2.0 is a global connection platform created to bring entrepreneurs in the seafood sector together with investors. Since its inception in 2013, it has grown to operate as the linchpin for a pool of more than 500 investors and 500 entrepreneurs around the world.

At the Regional Innovators Forum in Brisbane, there were 20 entrepreneurs who presented bite-sized pitches outlining their case for investment, partnerships or cooperation, across three sessions. Ventures seeking investment spanned vastly different businesses in both size and scale, reflecting the diversity of seafood in general, but also giving a taste of what Australia has to offer, from abalone to seaweed, freshwater crayfish and scampi caviar.



The day also included several panel discussions exploring issues such as opportunities for investment in seafood, value-adding in the food supply chain and the key ingredients required for innovation and investment. Insights included the value of a collaborative mindset and getting to know your end user. Discussions pinpointed challenges such as the fact that many seafood producers fail to see themselves as food producers (a space in which there is enormous opportunity) and the fragmented nature of the seafood product and supply chains.

In the last pitch session of the day, presenters included those who qualified through Fish 2.0's online process to compete to attend the Global Innovators Forum in Palo Alto, California in November 2019.

Sensory testing of seafood—fresh versus frozen

FRDC project number: 2017-179

For further information: Sue Poole, sue.poole@qld.gov.au

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

A research project that arose from questions put to consumers about why they do not buy seafood is throwing new light onto the fresh versus frozen debate, with some surprise early findings. The issue has come to a head after a 2016 FRDC consumer survey revealed three key reasons for the aversion of non-seafood eaters—smell, uncertain freshness and lack of knowledge about preparation. All these issues could be resolved by supplying seafood as a ready-to-cook frozen product, but this runs head-on into perceptions that freezing seafood reduces its eating quality.

To test this perception, the FRDC commissioned the Queensland Department of Agriculture and Fisheries' seafood team, led by principal scientist Sue Poole, to investigate. The team was asked to develop and run a series of 'taste tests' among both professional seafood chefs and consumer panels, to build a statistically valid position on whether fresh seafood really can be distinguished from the correctly frozen and thawed product.

The data is still being analysed. But if it shows that most people—including chefs with highly attuned palates—cannot pick the difference, then the results will not only confound conventional wisdom but have significant implications for supply chain management and product development.

Early observations from the research show trained palates can detect a difference in taste and texture between fresh and thawed product, but only after considerable discussion in a workshop scenario. This was an unexpected outcome for the chefs involved.





FRDC NATIONAL PRIORITIES

Priority 3. Developing new and emerging aquaculture growth opportunities

Strategy


Identify research constraints to industry growth—such as potential markets, cost of production, survival, deformities and uniformity of growth—and invest in RD&E to identify opportunities for successful and competitive commercial activity.

Principal inputs

During 2018–19, there was \$1.44 million or around 4.8 per cent of the total R&D investment for this priority.

Priority area activities	PBS target 2018–19	Achievement
Advance two or more new or emerging aquaculture opportunities/species for which RD&E has identified clear opportunities and technologies for good production and profitability growth, as measured by increases in harvest tonnages.	One thousand five hundred tonnes of additional production.	National government production statistics not available. Forecasts and individual company records indicate that production will exceed the 2018–19 target. Department of Agriculture Kingfish for Profit project completed during the year.

The following table provides a guide to progress in achieving the deliverables in FRDC's RD&E Plan.

Output	Status	Comment
Advance two or more new or emerging aquaculture opportunities/species for which RD&E has identified clear opportunities and technologies for good production and profitability growth, as measured by increases in harvest tonnages.		The three-year RD&E for Profit projects on developing new white fish (Yellowtail Kingfish) was completed during the year and underpinned the expansion and development of new leases for an additional 60,000 tonnes of production. Both new farms produced fish and overcame major issues and started commercial production.

EXAMPLES OF PROJECT ACTIVITY DURING THE YEAR

Yellowtail Kingfish growing availability for consumers

FRDC project numbers: 2018-101, 2017-030, 2016-200.20, 2016-200.30, 2016-117, 2015-213

For further information: Simon Clark, simon.clark@sa.gov.au

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

Putting Yellowtail Kingfish (*Seriola lalandi*) on more Australian dining tables, as a 'white flesh' fish option for domestic consumption, is the long-term ambition behind the recently completed national 'Kingfish for Profit' (K4P) research program. The program has brought this consumption goal a step closer, improving both the production efficiency and profitability of Yellowtail Kingfish aquaculture.

The K4P findings have given the industry confidence that its key production benchmarks for growth, feed conversion and fish survival rates are all achievable. This paves the way for a substantial expansion of production that is expected to make Yellowtail Kingfish an affordable white-fleshed companion to Atlantic Salmon for domestic consumers.





The Australian Government provided a \$3.65 million grant through the Department of Agriculture Rural R&D for Profit program to fund the K4P initiative. Contributions from other partners including the FRDC brought the total project funding to \$7.3 million.

The K4P initiative was coordinated through the FRDC's New and Emerging Aquaculture Opportunities Program. The South Australian Research and Development Institute (SARDI) and New South Wales Department of Primary Industries (NSW DPI) were the lead research agencies. Commercial partners included Yellowtail Kingfish producers Clean Seas Seafood and Huon Aquaculture and feed manufacturers Ridley and Skretting Australia.

Feed is the major input for aquaculture, accounting for about 60 per cent of costs, and was the main focus of the K4P program. Research findings have identified acceptable levels for a range of potential ingredient substitutions, creating more flexible and potentially cheaper feed formulation options.

The K4P project builds on the sizeable earlier research investment to identify nutritional requirements unique to the Australian *Seriola* species. This includes the confirmation that higher levels of the amino acid methionine are critical for optimising growth rates of juvenile *Seriola lalandi*, compared to other closely related *Seriola* species.

Project leader at NSW DPI Mark Booth says this finding is a real step forward and should improve commercial feed formulations to optimise growth rates for Australian producers. Project leader at SARDI David Stone says his group also determined the optimum omega-3 fatty acids levels and protein-to-energy ratios for larger sub-adult Yellowtail Kingfish. Information about this and other fish nutrient needs has further improved feed formulations to optimise growth rates for Australian producers.

New data has allowed for updated models to map the energy and nutritional requirements for Yellowtail Kingfish at different life stages and in different water conditions and temperatures. This has allowed more accurate predictions of growth and feed demand.

The two research locations for the K4P project (Adelaide, South Australia and Port Stephens, New South Wales) effectively provide data for modelling fish growth in both warm and cold water conditions, representative of much of the temperature range experienced by existing commercial Yellowtail Kingfish farms.

The K4P project also developed a tank-based challenge test and undertook microbiomic studies to assess the links between Yellowtail Kingfish nutrition and health.

Building the national research capacity in finfish aquaculture specifically for Yellowtail Kingfish, but with applications to the aquaculture sector more broadly, was an important part of the overall K4P program.



DAN FISH, GENERAL MANAGER OF
AQUACULTURE AT CLEAN SEAS
WITH A YELLOWTAIL KINGFISH





Industry outlook

- At the beginning of the K4P project in 2016, national Yellowtail Kingfish production was estimated at about 1200 tonnes. The FRDC anticipated this would increase to about 5000 tonnes by 2022, which industry is on track to deliver.
- By the end of 2018, as the project was winding up, production projections had increased along with allocations of potential farm sites. The final impact assessment of the K4P project by Agtrans Research and Consulting is based on projections of 48,000 tonnes of Yellowtail Kingfish a year by 2030. This represents growth of 4000 per cent over 15 years.
- Steven Clarke (Executive Officer of the K4P project) says the independent Agtrans Research and Consulting benefit–cost analysis also suggests that over a 15-year time frame a \$17.20 benefit will be realised for every dollar invested in this program.

Triple challenge for Barramundi expansion

FRDC project number: 2016-407

For further information: Dan Richards, dan@hdbarra.com.au

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

As part of his Nuffield Scholarship Dan Richards investigated genetic and management strategies that could increase production of Barramundi.

Dan says Barramundi has the genetic potential to develop further as an aquaculture species, with investments being made globally to increase production capacity. Although there are a few limitations to the species, such as melanisation [dark pigmentation] of the flesh and relatively low fillet yields, these can be improved incrementally over time with genetic selection and breeding programs.

“For the ongoing competitiveness of Australian Barramundi farming, investments into genetic breeding programs are essential,” he says.

Management improvements are also needed to realise the sector’s potential, including aquaculture regulation, farming systems work, research and development, and marketing.

Dan found that:

- ongoing development of aquaculture regulation regimes will be required nationally to enable growth,
- Australian Barramundi farmers will need to commit to maintaining and improving quality standards to ensure consumers have consistently positive experiences,
- investment in Barramundi marketing is essential to compete with other white fish,
- investment in new product development could enhance Barramundi’s ability to penetrate domestic markets and absorb production increases.





FRDC NATIONAL PRIORITIES

National RD&E infrastructure

The FRDC has three subprograms (Aquatic Animal Health and Biosecurity, Recfishing Research and the Indigenous Reference Group) and one coordination program (Social Science and Economics Research Coordination). The FRDC will continue use the system of nation-wide groups and lead in these areas of RD&E. It will also lead in the areas of people development and service delivery.

Principal inputs

During 2018–19, there was \$3.8 million or around 13 per cent of the total R&D investment for this priority.

Strategies

- Continue to invest in leadership capacity building.
- Co-invest with partners in other areas of capacity building.
- Invest with universities in students to study marine science-specific topics relevant to the FRDC's stakeholders.
- Collect and analyse data to better understand the training needs of fishing and aquaculture.
- Partner in the development of research centres of excellence.

EXAMPLES OF PROJECT ACTIVITY DURING THE YEAR

Aligned aspirations

FRDC project number: 2013-218

For further information: Ewan Colquhoun, ewan@ridgepartners.com.au

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

For Indigenous communities wanting to develop their fisheries resources, a new step-by-step approach has emerged from a five-year research project, providing guidance for communities, government fisheries managers and potential business partners. The FRDC's Indigenous Reference Group (IRG) initiated the project 'Building the capacity and performance of Indigenous fisheries', released in June 2018, which analysed seven initiatives across six fisheries jurisdictions.

Fishery assets contribute only a small amount to the total economic wellbeing of Indigenous communities. Indigenous Australians own or have legislated rights under various exclusive and non-exclusive Native Title and rights to 40 per cent of the Australian land mass. Where adjacent to marine coastlines and river catchments, these rights extend to certain fishery resources as well.

As part of the IRG project, seven case studies were developed from face-to-face discussions with community participants about actual or proposed fishery initiatives to identify processes that have worked and potential barriers to be overcome.

The Indigenous fishery community is the core stakeholder in the quest to boost the capacity and performance of Indigenous fisheries.

Communities vary greatly in their understanding of their fishery assets and in their engagement with, access to and use of marine or freshwater fishery resources. Researchers say this diversity compounds the economic complexity that community leaders, investors and research managers face in seeking to boost fishery capacity and performance.





The report will help to provide advice to those communities to enhance the success of their initiatives.

The project identified six attributes for an Indigenous fisheries venture that provide a sound foundation for success.

1. Ensure there is formal community cultural governance in place,
2. Separate the corporate governance of a business initiative from the community's cultural governance structures.
3. Provide access to new Indigenous and non-Indigenous knowledge.
4. Incorporate microbusinesses within the business venture.
5. Develop a formal business plan for the first three to five years, which is reviewed regularly thereafter.
6. Establish a professional management team to lead the venture, with authority from its own board and from the community to implement an agreed business plan and strategy.

Lessons from across the seas

FRDC project number: 2017-003

For further information: Chris Calogeras, chris@c-aid.com.au

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

Learning how to harness both economic benefits and cultural wellbeing for Indigenous Australians through involvement in seafood provided the drive for a recent trip to New Zealand by members of the IRG and the Indigenous Land and Sea Corporation.

The scope of the IRG is to ensure that fishing and seafood industry focused RD&E assists in delivering improved economic, environmental and social benefits to Australia's Indigenous people. The IRG is expertise based, advisory in nature, and makes recommendations to FRDC on strategic issues relevant to Indigenous RD&E in the fishing and seafood industry.

During their visit to New Zealand, the Australians were guests at the 2019 Māori Fisheries Conference, where they presented and were later honoured to be the first ever non-members to attend the annual general meeting—a collective of Māori fishing groups.

The purpose of the trip was to develop stronger relationships between New Zealand and Australian First Nations peoples, in order to share knowledge and experience related to operating in fisheries and aquaculture. The Australian delegation returned home buoyed by the experience and confident about the promise for Indigenous Australians in Australia's seafood industry.





FRDC NATIONAL PRIORITIES

COLLABORATE

The FRDC will provide the means (incentives) so that sectors or jurisdictions may leverage funding where there is alignment between their RD&E priorities and those at the national level. This will encourage sectors to collaborate. Specific areas of RD&E such as people development, service functions and social sciences will be actively supported by the FRDC.

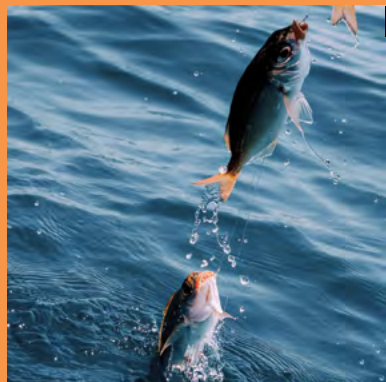
Principal inputs

During 2018–19, there was \$2.95 million or around 10 per cent of the total R&D investment for this program.

The following table provides a guide on the progress FRDC has made in meeting its output target.

	All deliverables are on track for completion
	Work on deliverables is underway
	Work on deliverables (or one component) has not been started

Activity	Input	Status	Comment
Incentive Fund	Invest \$600,000 into collaborative projects.		The collaboration fund target was achieved.



FRDC NATIONAL PRIORITIES

PARTNER

Jurisdictional and industry sector research priorities

Under partnership agreements the RD&E priority-setting process will be led by the relevant sector or jurisdiction. As part of this process the FRDC has put in place a requirement that each group maintain a balanced portfolio (see the table that follows and pages iii and 20). Project selection and approval while accepting recommendation from the groups remains the responsibility of the FRDC Board.

Industry Partnership Agreements

Principal inputs

During 2018–19, there was \$9.08 million or around 30 per cent of the total R&D investment for partnership agreements. This is 2 per cent below the AOP forecast budget.

The following table provides a guide on the progress FRDC has made in meeting its output target.




IPA with	Targets 2018–19	Rating	Output
Australian Abalone Growers Association (AAGA)	Implement RD&E plan and deliver key performance indicators (KPIs)		RD&E plan in place, investment targets being partially met and some key priorities funded. This includes a new collaborative project with Abalone Council Australia (\$47,000 each) 2018-057: Population genomic assessment of Australian Blacklip Abalone for abalone viral ganglioneuritis resistance. IPA R&D budget has increased due to industry growth. Expect more projects to fully expend IPA funds from 2019–20.
Australian Barramundi Farmers Association (ABFA)	Implement RD&E plan and deliver KPIs		RD&E plan in place, investment targets being met and key priorities funded. This includes a new project 2019-003: Harvest and slaughter methods for farmed Barramundi to minimise fish stress and achieve premium market quality and improved fish welfare outcomes. IPA R&D budget will increase with ABFA able to increase contributions from \$75,000 per annum to \$180,000 per annum due to industry growth. Expect more projects to fully expend IPA funds from 2019–20. New RD&E plan commencing.



IPA with	Targets 2018–19	Rating	Output
Abalone Council Australia (ACA)	Implement RD&E plan and deliver KPIs		RD&E plan in place. The ACA have recently implemented their new RD&E 2018–2023 plan, and are in the initial stages of addressing their priorities. The investment has been primarily against the Industry program (2019-041). The ACA hosted a workshop (2018-193) to establish a research work plan to address national resource sustainability concerns.
Australian Council of Prawn Fisheries (ACPF)	Implement RD&E plan and deliver KPIs		RD&E plan in place with investment occurring against nearly all priority areas. The keystone piece and project is the newly funded project 2018-172: Methods to profile and connect the provenance of wild-caught prawn fisheries and their values to the community. This project will test methods to measure and understand community sentiment toward prawn fisheries and elucidate ways of communicating with different groups of the community.
Australian Prawn Farmers Association (APFA)	Implement RD&E plan and deliver KPIs		RD&E plan in place, investment targets being met and key priorities funded. This includes a new project 2019-076: Strategic management of the Australian Prawn Farmers Association RD&E portfolio to drive strategic R&D across the expanding prawn farming industry. R&D budget has increased due to industry growth. Expect more projects to fully expend IPA funds from 2019–20. New RD&E plan in progress.
Australian Southern Bluefin Tuna Industry Association (ASBTIA)	Implement RD&E plan and deliver KPIs		The current RD&E plan ends in 2020. Investment has largely focused on improving farmed fish health and quality. Further investment is required to address priority areas related to industry's human capital. Research outputs have been readily adopted to improve the operational efficiencies (2016-005 and 2018-194).
Oysters Australia (OA)	Implement RD&E plan and deliver KPIs		RD&E plan in place, investment targets being met and key priorities funded. The IPA is over expended until current projects near completion.
Pearl Consortium (Pearls)	Implement RD&E plan and deliver KPIs		RD&E plan in place, investment targets being met and key priorities funded. The IPA is over expended until current projects near completion.
Southern Ocean (SO)	Implement RD&E plan and deliver KPIs		RD&E plan in place This is a relatively new IPA and as such is underspent. The IPA has commenced its programmatic work which is to better understand stock structure. 2018-124: Science to support Australia's Southern Ocean Fisheries 2018–2020.





IPA with	Targets 2018–19	Rating	Output
Southern Rock Lobster Limited (SRL)	Implement RD&E plan and deliver KPIs		<p>RD&E plan in place with investment occurring against most priority areas. There are several investments targeted at improving supply chain traceability and handling practices of product through the supply chain to improve product quality.</p> <p>These projects are having high impact currently in changing behaviours and are informing the future research agenda which will improve profitability of the industry and improve information to manage the fishery more effectively.</p>
Tasmanian Salmonid Growers Association (TSGA)	Implement RD&E plan and deliver KPIs		<p>RD&E plan in place and investment occurring against all priority areas. The key areas of investment are in vaccine development and development of new areas for farming. A recently completed project has developed a commercial vaccine for use against the Pilchard Orthomyxo-Virus which is one of the largest imposts and threats to the industry currently. A program of research worth around \$7 million has recently been funded to underpin the sustainable expansion of farming in to Storm Bay region in south-east Tasmania.</p>
Western Rocklobster Council (WRLC)	Implement RD&E plan and deliver KPIs		<p>RD&E plan in place and some investment occurring. The WRLC have been pre-occupied with a number of other high profile issues and as such some projects have been put on hold and there has been little new investment recently. They are currently looking at funding some new work to better understand how changes currently seen in the environment might be affecting productivity of the fishery.</p>





RAC partnership agreements

Principal inputs

During 2018–19, there was \$7.19 million or around 24 per cent of the total R&D investment for jurisdictional RACs. This is 6 per cent below the AOP forecast budget.

There are RACs in place with the Commonwealth (COM), New South Wales (NSW), the Northern Territory (NT), Queensland (QLD), South Australia (SA), Victoria (VIC), Tasmania (TAS) and Western Australia (WA).

The following table provides a guide on the progress FRDC has made in meeting its output target.

RAC	Targets 2018–19	Status	Comment
RAC-COM	Implement RD&E plan and deliver key performance indicators (KPIs)		RD&E plan in place. RAC currently underspent in relation to priorities but have identified a number for investment in 2020. Key research investments underway on Australian government Harvest Strategy and Bycatch Policies. 2018-021: Development and evaluation of multi-species harvest strategies in the Southern and Eastern Scalefish and Shark Fishery has commenced in 2018 with guidance from 2016-234: Guidelines for the updated Harvest Strategy Policy; and 2015-200: Guidelines on a tiered, risk-based approach to bycatch (completed June 2019). The decadal projections climate project funded by FRDC, CSIRO and the Australian Fisheries Management Authority. The contents are a mine of information for governments and industries looking to the future of their regulatory systems and businesses, and project has given a scientific basis to then proceed with the climate adaptation project.
RAC-NSW	Implement RD&E plan and deliver KPIs		RD&E plan in place, investment targets being met and key priorities funded. Key priorities and projects aligned with the NSW fisheries reform (Commercial Fisheries Business Adjustment Program) (2019-016, 2019-021), as well as industry priorities to develop new products and new markets (2018-087, 2018-024).
RAC-NT	Implement RD&E plan and deliver KPIs		RD&E plan not in place, key priorities in development. Priorities in development to support Blue Mud Bay decision. Projects funded in regards to understanding environmental influences of fisheries (2018-027, co-investment with RAC-COM in 2018-079), as well as research to support the developing Tropical Rock Oyster industry (2018-005).
RAC-QLD	Implement RD&E plan and deliver KPIs		RD&E plan in place, investment targets being met and key priorities funded. Key priorities and projects aligned with information and capacity development needed to support the implementation of the Queensland Sustainable Fisheries Strategy (2018-074, 2018-168).





RAC	Targets 2018–19	Status	Comment
RAC-SA	Implement RD&E plan and deliver KPIs		RD&E plan in place, investment targets being met and key priorities funded. Projects under way to assist the modelling of multi-species fisheries to inform management, structural adjustment and socioeconomic aspects of these fisheries. Key projects are (2017-014) Informing the structural reform of South Australia's Marine Scalefish Fishery, and (2018-011) a South Australian gulfs and coastal ecosystem model to optimise multi-species fisheries management in a changing environment (these are informing management processes as they progress).
RAC-TAS	Implement RD&E plan and deliver KPIs		RD&E plan in place. RAC currently underspent in relation to priorities but have identified a number for investment in 2020.
RAC-VIC	Implement RD&E plan and deliver KPIs		RD&E plan in place, key priorities in development. Priorities and projects in development to support development and management of new fisheries (Pipi, octopus, Rock Flathead)
RAC-WA	Implement RD&E plan and deliver KPIs		RD&E plan in place, investment targets being met and key priorities funded. This includes research to support developing aquaculture opportunities (2018-107) as well as projects to develop an understanding of the influence of environmental change on fisheries to support fisheries management (2018-050).

EXAMPLES OF PROJECT ACTIVITY DURING THE YEAR

Salmon get ready for their 'flu shots'

FRDC project numbers: 2010-032, 2011-224, 2013-033, 2013-051, 2016-045, 2016-054, 2017-128

For further information: Richard Morrison, richard.morrison@dpiwve.tas.gov.au

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

A new vaccine holds hope in controlling an endemic virus that is challenging Atlantic Salmon production.

A three-year, \$5-million vaccine development program is underway to improve fish health and protect Tasmania's Atlantic Salmon industry from the increasingly deadly Pilchard Orthomyxovirus (POMV).

POMV has become a persistent issue for Atlantic Salmon over the past six years but, so far, it appears that Rainbow Trout are not affected. The virus was first identified as an 'incidental infection' in South Australian pilchards in 1998 where a different, herpes-type infection had caused a major wild fish kill. In the summer of 2006–07, POMV was found in a small number of Atlantic Salmon in Tasmania's Tamar River, also as an incidental infection.

Even before the most recent outbreak, the Atlantic Salmon industry was working with the Centre for Aquatic Animal Health and Vaccines to develop a POMV vaccine. The Tasmanian Salmonid Growers Association and the FRDC have jointly funded this research through an ongoing IPA.

Principal research microbiologist Jeremy Carson heads the Vaccine Centre and has been coordinating a series of related projects including a one-year fast-track POMV project that has developed the vaccine Certovac, which is now being manufactured.





Certovac was developed by applying the virus models and vaccines for similar diseases, including infectious salmon anaemia virus, which is exotic to Australia but has decimated Atlantic Salmon aquaculture overseas. Certovac has been tested in tank trials, although the real evidence of success will come once vaccinated smolt are put to sea.

In addition to the fast-track vaccine, a three-year POMV project will refine the vaccine's effectiveness and its production processes. In concurrent projects, Jeremy's team is also developing vaccines for several less-severe infections that potentially make fish susceptible to more serious infections, including POMV. These include:

- Tasmanian Atlantic Salmon reovirus, which makes fish unwell although it does not necessarily kill them,
- *Tenacibaculum maritimum*, a bacterium that causes skin and gill lesions on a wide range of fish and is a problem in aquaculture internationally,
- Tasmanian aquabirnavirus, found only at Macquarie Harbour.

Improving mortality rate estimates for management of the Queensland Saucer Scallop fishery

FRDC project number: 2017-048

For further information: Tony Courtney, tony.courtney@daf.qld.gov.au

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

Earlier this year, researcher Tony Courtney visited the United States to take part in data collection activities on board the research vessel the RV *Hugh R Sharp*. He is working on FRDC-funded research to understand Ballot's Saucer Scallop mortality rates in Queensland's East Coast Otter Trawl Fishery (FRDC project 2017-048).

The purpose of the voyage was to survey Atlantic Sea Scallops off the coast of Maine and Massachusetts. The trip was an opportunity to observe and learn about the survey methods used on board the RV *Hugh R Sharp*, in particular HabCam, a habitat-mapping camera system that photographs the sea floor, capturing the various species living on it. The technology is used by the United States National Oceanic and Atmospheric Administration for their scallop stock assessment and may also be applicable in some Australian scallop fisheries.

The Queensland Saucer Scallop lives on the sea floor and has limited swimming ability. It is similar to the Atlantic Sea Scallop, although the North American species is slower-growing and lives longer.

As much of the Queensland fishery occurs in waters of the Great Barrier Reef Marine Park, Tony says a camera-based approach may have potential as an additional method for monitoring the benthic ecosystems in the marine park. It may also have application in other fisheries, such as the Western Australian Saucer Scallop fishery, which is the same species as that fished in Queensland.

Although implementation in Australia would require significant funding, Tony believes that the range of potential applications means that this could be supported by a broad user base.

"The trip was one of the most useful and stimulating experiences I have had," he says. "Since my return I have been trialling different towed cameras, an automated underwater vehicle and remotely operated vehicles to see how suitable these may be at photographing scallops."





OUTPUTS—ANALYSIS BY FRDC PROGRAM

Program 1: Environment

Australia has a broad range of freshwater and marine habitats that support a diverse range of aquatic species. Australia’s maritime zone is one of the largest in the world covering about 13.6 million square kilometres which is about twice the area of Australia’s land mass. This zone contains about 4500 known species of finfish (and perhaps tens of thousands of invertebrate species)—most in relatively small numbers.

Federal, state and territory government agencies have legislative responsibility under fisheries legislation and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for managing the fisheries and aquaculture activities within their jurisdictions.

Principal inputs

During 2018–19, there was \$7.92 million or around 27 per cent of the total R&D investment for this program. This is 13 per cent below the AOP forecast budget.

Reporting in relation to the EPBC Act

Section 516A requires annual reports for Commonwealth entities to report against the criteria set out in this section of the Act. The section requires the FRDC to outline how it impacts on the environment through its activities. FRDC’s annual report covers its two primary functions—its internal operations and footprint and the external projects it funds.

EXAMPLES OF PROJECT ACTIVITY DURING THE YEAR

Seabed mapping paints clearer trawl picture

FRDC project number: 2016-039

For further information: Roland Pitcher, roland.pitcher@marine.csiro.au

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

Australia’s seabed is incredibly diverse, ranging from kelp forests to coral reefs, and rocky escarpments to sandy plains. Some of these seascapes are sensitive to the impact of trawl fishing, while others are less so. A recent FRDC project has mapped the footprint of Australia’s trawl sector, as well as mapping these seabed ecosystems, or eco-regions, to identify broad types of sea floor habitats in trawled areas.





The project, which defined and mapped 217 different eco-regions, also found that trawling has occurred over just 3.5 per cent of the continental shelf and slope seabed. This represents just 1.2 per cent of Australia's 8.2 million square kilometres of marine estate.

"Combining the trawl footprint with eco-region mapping allows fisheries managers to focus more closely on the sea floor eco-regions where most trawling occurs, to identify and map any sensitive habitats and put mitigation strategies in place," says CSIRO's Roland Pitcher, who led the research.

The FRDC-funded report builds on a substantial body of work into trawl impact undertaken by Roland and his colleagues.

Roland says the research sets a baseline from which updated and new data, including the further mapping of sensitive habitats, can be added to continue building the full picture of the trawl impact in Australian waters.

Scat DNA reveals what a bird eats

FRDC project number: 2016-118

For further information: Rachael Alderman, rachael.alderman@dpipwe.tas.gov.au

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

A recently completed FRDC project has used DNA collected from Shy Albatross scat to identify what the birds eat, which in turn is helping to identify the most likely locations for potential interactions with the birds, and possible competition with fishers for food.

Australia's own Shy Albatross is listed as 'vulnerable' under Australia's *Environment Protection and Biodiversity Conservation Act 1999* and as 'near threatened' by the International Union for Conservation of Nature.

Fishers in Australia's southern waters have introduced bird deterrent devices on vessels, reducing dangerous interactions with trawl gear by 96 per cent in recent years. Despite this, interactions with seabirds, and particularly with Shy Albatross, are a continuing problem.





Traditionally, data about these birds has been collected at nesting sites and via tagging the birds. This project has added to the researchers' arsenal, focusing on the diet of Shy Albatross for the first time in 20 years.

As part of the project, the research team has compiled a large database of DNA from different fish species in southern Australia to compare the scat DNA to.

The project analysed 1655 scat samples and the analysis identified the DNA of 84 different fish species and 11 cephalopods [molluscs], as well as salps [tunicate or sea squirts] and krill.

The new information was overlaid with Commonwealth fishery data using times, locations and species caught by vessels to give an indication of when bird and vessel activity overlaps both spatially and through the species targeted.

The project found that the majority of the Shy Albatross food is being sourced naturally by the birds, rather than from fishing vessels.

The project has worked with the industry, seeking out fishers and fishery observers to compare this data with observations at sea.

Farmed kelp to balance nutrients

FRDC project number: 2017-177

For further information: Craig Sanderson, craig.sanderson@tassal.com.au

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

An FRDC-funded project has helped to refine the techniques used to produce kelp plants from spores for cultivation.

Tasmania's largest Atlantic Salmon producer, Tassal, is investigating the potential of native kelp plantations on its aquaculture leases, because kelps could take up nitrogen generated as part of the process of fish farming, so reducing its environmental footprint.

Seaweed production in the channel as part of aquaculture operations could help take up nitrogen and maintain the nitrogen balance for the channel as a whole.

Of more than 1000 seaweed species native to Tasmania, just three have been identified as potential candidates for Tassal production: Giant Kelp, Golden Kelp and Tasmanian Kombu. All three are brown seaweeds with existing markets.

The seaweeds are closely related to the Japanese species Wakame and Kombu. These are widely cultivated throughout Asia, usually on longlines—a technique Tassal is adapting to the native seaweeds.

As part of the FRDC-funded work, Deakin University will conduct a nutritional analysis of the kelp produced during 2018 trials, which will help determine potential markets. Heavy metal content will be determined, as well as naturally occurring iodine and inorganic arsenic; two elements of particular concern in seaweeds generally.

The next step is now a farm-scale trial designed to produce commercial quantities of seaweed for specific markets.





BENEFIT COST ANALYSIS

Program 1: Environment

An impact assessment of FRDC investment in project 2016-139: Decadal scale projections of changes in Australian fisheries stocks under climate change

- FRDC program allocation: Environment (85%), Industry (5%), Communities (5%), Adoption (5%)
- Period of funding: July 2017 to June 2018

What this analysis is about

This analysis presents the results of an impact assessment of the FRDC's investment in a project to assemble available species vulnerability information to climate change, as well as to update ecosystem models and their findings based on new climate projections. The framework and findings of the project are potentially to be used to improve fisheries management given climate change (both currently experienced and future predicted).

An estimate of stock size is a fundamental requirement in predicting both a species' and a fishery's production potential and subsequently in developing ecologically sustainable management practices. Knowledge that underpins stock assessment and sustainability includes understanding taxonomy, age structure and longevity, reproduction, habitats, feeding preferences, history of the fishery, catch rate, and species interactions. Stock assessment in Australia has been becoming more and more ecosystem-based with environmental drivers also being of importance (e.g. climate variability, river changes, association with habitat and oceanographic conditions), as are the interconnectedness of species, by-product catches and the interactions between different fisheries management regimes.

Previous projections of the impact of climate change on Australian wild-catch fisheries were outdated and no longer represented the latest information available. Also, earlier projections had mostly used relatively long time frames. Climate models have since improved and can provide projections at finer spatial and temporal scales than previously and which are potentially more useful for decision makers including both industry and fisheries managers.

Current thinking was that climate change may have both positive and negative impacts on various aspects of fisheries biomass for Australia's commercially important marine species. While it was recognised that addressing climate change implications should be a high priority issue for fisheries management, strategies to address climate change implications had not been adequately developed.

Moreover, the Australian Fisheries Management Authority (AFMA), in particular, was seeking updated tools and projections including forecast systems and tools that could be updated as new data and modelling results become available in the future.





Project 2016-139 was funded in parallel with an AFMA related FRDC project 2016-059: Adaptation of Commonwealth fisheries management to climate change; it was intended that the outputs from project 2016-139 would form an important input into the AFMA project 2016-059 to better accommodate policies to manage a changing climate.

Results/key findings

The project investment has made a contribution to continuing sustainable management by wild-catch fisheries managers that face a changing climate. The project has delivered information for a better understanding and appreciation of the implications of sustainable management imperative of fish resources as climate change advances, for both ecological sustainability and avoidance of biodiversity loss. This improved understanding may well translate into an increased capability and capacity to effectively manage Australian fisheries under climate change.

TRIPLE BOTTOM LINE CATEGORIES OF PRINCIPAL IMPACTS FROM PROJECT 2016-139

Economic	<ul style="list-style-type: none">■ Contribution to continuing sustainable management by wild-catch fisheries managers that maximises long-term returns.■ Contribution to improved and more profitable future investment decisions by industry in relation to, for example, wild-catch species and fishing locations, given the evolving sustainable fisheries management frameworks.■ Improved future investment decisions and development of adaptation strategies for aquaculture managers.
Environmental	<ul style="list-style-type: none">■ More effective understanding and appreciation of the implications of sustainable management imperative of fish resources as climate change advances, resulting in both ecological sustainability and avoidance of biodiversity loss.
Social	<ul style="list-style-type: none">■ Contribution to increased capability and capacity to effectively manage Australian fisheries under climate change.

Public versus private impacts

Most impacts identified in this evaluation are related to improved future management of the wild-catch fisheries sector with both private and public impacts. Some long-term private benefits will accrue to commercial entities regarding current and future adjustments to decisions regarding investment and operational decisions. Public impacts will be in the form of adaptive and improved fisheries management that potentially optimises commercial profits, reduces species vulnerability, and maintains ecological resource sustainability.

Conclusions

The findings from the investment in project 2016-139 will likely be translated into improvements in the long-term management of some wild-catch fisheries and potentially into aquaculture management in response to climate change threats to that sector. However, the assumptions in the potential impact valued include further investment in climate change implications for vulnerability of particular wild-catch fisheries over the next decade or more.

Funding for the project over the two years totalled \$0.32 million (present value terms) and produced estimated total expected benefits of \$1.31 million (present value terms). This gave a net present value of \$0.99 million, a benefit-cost ratio of 4.06 to 1, an internal rate of return of 16.0 per cent and a modified internal rate of return of 10.2 per cent.

As some of the impacts identified were not valued, the investment criteria as provided by the valued benefit are likely to be a potential underestimate of the investment performance. On the other hand, confidence in the assumptions for the benefit valued was considered to be low.





National Carp Control Plan

The problem

Carp (*Cyprinus carpio*) have been in Australia for over 100 years and are now established in all states and territories, except the Northern Territory.

Carp completely dominate freshwater fish communities in south-eastern Australia and in many areas they comprise a significant proportion of fish biomass, sometimes exceeding 80 per cent or 350 kilograms per hectare in some parts of the Murray–Darling Basin.

Carp impacts are felt environmentally, economically and socially. They affect water quality, native fish, fishing and irrigation.

There are two main reasons why carp have become a dominant pest in Australia. The first relates to their biology: carp can tolerate a wide variety of environmental conditions, have a broad diet, grow rapidly, mature early, can produce large numbers of eggs, are strong swimmers, good jumpers, and do well in ecosystems that are modified by humans. The second reason is that carp also spawn earlier than many Australian native species, which means their juveniles have access to food and other resources before many native fish species.

Environmental conditions at the time carp began dominating Australian waterways is also an important factor. The initial explosion of carp numbers in Australia in the 1960s–70s occurred during a ‘perfect storm’ of sorts. Many native fish species had experienced significant declines in numbers due to historically high commercial fishing pressure, widespread reduction in habitat, extensive construction of dams, weirs and other barriers to their migration, and declines in water quality due to widespread poor land use and urbanisation. These elements combined to provide the ideal conditions for a successful invader such as carp to flourish.

The possible solution

Since carp numbers exploded in Australia in the 1970s, a variety of measures have been used to try and control carp. However, all have been unsuccessful in reducing carp impacts on a large scale. Biological control (a virus) offers some key advantages over other control approaches as it can be species-specific and highly effective when used correctly. It is also relatively cost effective.



The National Carp Control Plan

To assess the feasibility of using *Cyprinid herpesvirus 3* (CyHV-3), as a tool to substantially reduce carp numbers, the FRDC established the National Carp Control Plan (NCCP) in December 2016. The NCCP was originally to run for two years but the Department of Agriculture approved a 12-month extension for the development of the plan, which will now be delivered to Government in December 2019.

The NCCP is addressing the questions: Is it feasible to release the carp herpes virus to control carp? If so what is the most effective way to release and manage the virus?

There are more than 15 research institutions working to deliver the research program to inform the plan. The results from this research will be combined with operational knowledge gathered from consultation with stakeholders in carp-affected areas. This information will then be used to compile a comprehensive case of the best way forward in relation to controlling carp in Australian waters and inform the government decision on whether or not to release of the virus.

The final decision on whether to release the carp virus to control carp will be made by government ministers from all federal jurisdictions. The FRDC's role is to ensure that a science-based plan is presented to government for its consideration on the next steps.

NCCP Coordinator change

In November 2019 after two years as the NCCP Program Manager Matt Barwick resigned from the role. Jamie Allnutt has now taken on the position. He has been working with the NCCP since December 2017 in the capacity of operations manager. Jamie has 30 years of experience working in resource environmental management in regional areas around Australia.

Research results

As we are nearing the end of the plan, research results are being peer reviewed externally to ensure a sound scientific process. Some preliminary results are outlined on the following pages.





Progress so far

Development of the NCCP includes a large research program, work to inform the legislative approvals required before possible release could occur, and consultation to understand community and stakeholder views relating to the virus. Since the program began nearly two years ago, much has been achieved:

- Researchers collaborating across several states and territories will release estimates of the total carp biomass in key habitats of Australia before the end of 2019. This information is vital to inform estimation of costs, risk and feed into computer modelling to predict likely impacts on carp populations.
- Computer modelling led by CSIRO to predict impacts on carp populations is generating a large number of simulations, and analysis reveals they differ widely in carp knockdown levels. Those scenarios with higher knockdown levels share three important attributes: carp exhibiting schooling behaviour, optimal water temperatures for virus transmission, and virus concentrations appropriate to cause infection. These findings indicate that where these preconditions are not present, carp mortality is not expected to be high. This suggests the virus may be able to be applied in a surgical targeted and strategic manner rather than everywhere all at once. This may present opportunities for management of risks, and minimising cost relating to clean-up should the virus be released.
- Research exploring risk of water quality impacts caused by carp kill events is showing that some habitats may be quite resilient to increased levels of organic matter from carp kill events, but that shallow, still-water habitats with high carp biomass are likely to require particular focus.

CARPMAP

When and where carp aggregations occur is a critical question for the research team working to understand the transmission of the virus. While there are many observations of carp aggregating, there is little hard data on exactly where and when carp exhibit this behaviour—which is why CARPMAP has been established. If the public see a carp aggregation (defined as more than 10 carp in a school), they can help researchers by documenting when and where this happened. CARPMAP is a simple online tool that enables people to contribute information on when and where carp aggregate easily.

Project update

Identifying synergistic genetic biocontrol options for *Cyprinus carpio* in Australia

This project was commissioned to assess the potential application of different biocontrol technologies to control common carp in Australia. It is apparent that a suite of different measures is likely to be most effective for the long-term control of common carp in Australian waterways. The project has been conducted by Claus Wedekind of Lausanne University in Switzerland.

The project's scope was limited to technologies that are advanced enough to enable deployment within 5–10 years. It also extended beyond the biological viability of the various techniques to include logistical considerations and social acceptability in an Australian context.

While project results are preliminary, the Trojan Y chromosome technique has emerged as having the best balance of biological effectiveness and social acceptability. The technique works by introducing 'Trojan Y' fish into a population. These are fish with an altered sex chromosomes that results in their offspring being mostly male. Over time, the target population's ratio of males to females becomes increasingly skewed in favour of males, until the population eventually collapses.





Expert elicitation project

Carp control is based on the premise that reducing the number of carp in Australia's waterways will improve the health of aquatic ecosystems. However, while there is experimental and anecdotal evidence for this, these have tended to involve small areas, such as single wetlands and over short periods of time. Longer-term predictions over broader geographic areas are complicated by the diversity of ecosystem types inhabited by carp in Australia, each with unique management histories and conditions.

Researchers from the University of Canberra have been working on a project to collect and analyse expert views, on the likely environmental responses to various levels of carp reduction over different time scales. These results will inform the formal cost-benefit analysis for carp control being done under the NCCP, which will include both market and non-market costs and benefits.

Contributors include experts from various branches of biology and ecology, physical sciences including hydrology and biogeochemistry. They considered likely responses to carp reduction among native fish, water plants and macroinvertebrates (molluscs, water bugs, yabbies, shrimp) water birds, amphibians, algae and zooplankton and water quality parameters.

For most of the ecosystems components considered, experts considered that there was potential for improvements following carp control, providing carp biomass was reduced by at least 70 per cent. Herbivorous waterbirds were an exception, with experts predicting only a minor response to carp control. For all ecosystem components, experts emphasised that responses to carp control would be context-dependent. This project also includes measures of certainty underpinning these predictions.





Risk of human infection

Dr Katrina Roper and Laura Ford worked on a project to investigate the risk of infections in humans from the carp herpes virus. They found no evidence that there is any risk and therefore there is no need for further work into the question of human susceptibility. The virus (CyHV-3) needs temperatures from 18°C to 28°C to grow, so the human body is too hot for it to survive.

The research team also addressed the possible psychological effects that witnessing a mass fish death event could have on humans, particularly children, and made recommendations on how to best mitigate such impacts.

Researchers suggested it would be important to prioritise clean-up of dead fish in areas that are highly visible, such as Lake Burley Griffin in the centre of Canberra. This would help reduce the psychological impact on humans of a mass carp death event. Children witnessing this event were identified as being particularly vulnerable and possibly needing additional information to help process the occurrence.

The recommendation is to develop age-appropriate pamphlets to help parents discuss the issue with their children.

Why control carp: Exploring potential ecosystem responses to carp reduction

This project examined the potential impact of a reduction in carp on a range of species and ecosystems using a process of expert elicitation. Experts considered four different carp reduction scenarios and the implications for seven different groups—fish, macrophytes, macroinvertebrates, waterbirds, amphibians, algae and zooplankton—as well as water quality.

There was broad agreement that all categories except herbivorous birds would be positively affected by a reduction in carp numbers. However, the report cautions that for this to be the case, carp numbers would have to be reduced to 125 kilograms per hectare (or approximately by 70 per cent of existing carp populations).

Carp biomass study

Understanding carp biomass and distribution is essential to inform planning for carp control. In addition, carp biomass mapping is needed to inform NCCP research projects modelling water quality impacts and epidemiology, and to assess the risks, costs and benefits of carp eradication.

The Arthur Rylah Institute has completed the first continental-scale assessment of carp biomass and distribution. The biomass estimates represent a single 'point in time' assessment of biomass during a wet year (May 2011) and a dry year (May 2018). The overall biomass estimates will be released shortly. The estimate is lower than was initially predicted.

The project has estimated carp density across a diverse range of aquatic environments, from individual wetlands to large river reaches. Carp are distributed across more than 16,000 square kilometres of Australia including southern Queensland, with lower-density populations in Western Australia. In addition, a national map of aquatic environments was created which will now provide a valuable planning tool for managers of inland water environments.

The project results show carp populations at densities from 200–400 kilograms per hectare through much of the middle and lower reaches of Australia's major southern river systems. The highest densities are recorded in lower system wetlands in the Murray, Murrumbidgee and Lachlan catchments.





A major project outcome is that sites where carp density is high enough to cause significant environmental damage can now be identified. Previous research indicates that carp cause environmental impacts at 80–100 kilograms per hectare. This project now identifies where carp control efforts should be directed to achieve an environmental outcome.

The researchers caution that the estimates do not include irrigation channels, small farm dams or validation for river systems. For Western Australia, inadequate data was an issue for the project. For Tasmania, only 20 carp are estimated to remain in Lake Sorell after a concerted eradication program.

A follow-up NCCP project has been commissioned to develop a model of carp biomass over time, to help predict carp populations under specific climatic conditions.

Water quality studies

The main messages from the water quality studies are:

- Increases in ammonia levels from carp biomass provide some risk to the environment and water treatment in very high biomass locations.
- Based on the assessed levels of carp biomass there are no significant broadscale risks to water quality or of blue-green algae outbreaks, although inland water quality conditions vary considerably.
- Water quality impacts can be managed with effective rapid clean-up at higher-risk locations.
- Biomass impacts can be substantially managed by existing water treatment processes.

Clean-up project

A desktop study looking into methods for clean-up was completed last year. A number of techniques were identified, but dip nets from small boats was the most common technique used. However, there were few examples of intentional fish kills around the world to draw upon.





Susceptibility of non-target species

The feasibility of the release of the carp virus depends on demonstrating that it is species-specific and does not affect non-target species. There is considerable evidence that the carp virus is species-specific. The virus has existed in 33 other countries and since its discovery there has been no evidence of it infecting other non-target species.

Research completed in 2016 established that the CyHV-3 virus killed carp effectively. It also tested 22 species, including 13 native fish species and Rainbow Trout, and found that none of these species were susceptible to the virus.

However, the NCCP is committed to requiring a high level of evidence to ensure stakeholders and decision makers can be confident that the virus will not harm other species. Based on questions from previous research, the NCCP identified the need to complete a review of non-target species research with the aim of ensuring that best practice testing was completed for virus susceptibility.

Understanding community attitudes to possible use of the carp virus

At the recent NCCP research workshop scientists from the University of Canberra reported on the preliminary results of their work assessing community views about the possibility of releasing the carp virus to control carp. The project surveyed more than 10,000 people across Australia at different times over the last few years.

The research shows that the community generally understands the importance of controlling carp. Over 40 per cent of survey respondents support the virus release, which is more than double the percentage of those who are against the release of the carp virus (less than 20 per cent). The research also showed that more than 50 per cent of people surveyed agree that carp are a problem.

Survey respondents qualified their answers by assuming that there is:

- good evidence from research that risks to environment and humans are low or manageable,
- sufficient funding to do the job well,
- clear governance and responsibility,
- multi-pronged long-term carp reduction strategy (not focusing solely on virus release or there is no 'silver bullet')
- investment in recovery action as well as carp reduction,
- monitoring of outcomes and adaptation.

Water quality was found to be a major concern for the community, especially for the tourism sector.

Risk assessment

The NCCP ecological risk assessment project is working to assess the possible risks to ecosystems from a possible virus release. The project considers risks to all types of water bodies including ephemeral (which sometimes dry out) wetlands, lakes and reservoirs and rivers, and the native species within them.

The risk assessment was informed by other NCCP research projects including the carp biomass project, water quality assessment, and a carp virus epidemiology study. It explores the potential impacts of a virus release on water quality, native fish, amphibians, water birds, crustaceans, threatened species, threatened ecological communities and Ramsar wetlands.

The risks have been found to be greater in ephemeral systems, shallow with not much water flowing and large carp populations. The assessment also highlighted a range of mitigation or management strategies to reduce or avoid risks.





Commercial fishing

On 18 July, a media release went out outlining research which indicated that commercial fishing carp out of Australian waters is unlikely to be a successful strategy in the long term on a continental scale. The work was conducted at La Trobe University in Mildura, Victoria in collaboration with the New South Wales Department of Primary Industries and Tasmania's Inland Fisheries Service.

The media showed keen interest in the news with several interviews being released and 10 media items published as a result.

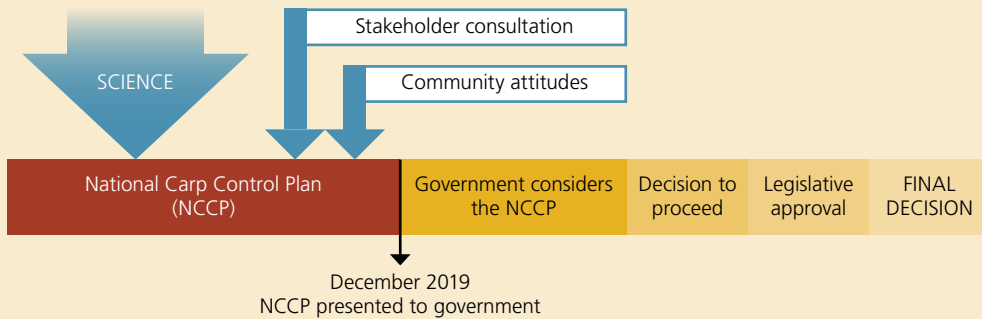
Finalising the NCCP

The NCCP will be presented to the Australian Government in December 2019. To finalise the plan a number of activities are underway that include:

- wrapping up the research program,
- consultation with key stakeholders,
- consolidating research into issues papers for consideration by a variety of stakeholders,
- development of the plan itself.

As the research projects are completed and reviewed, the NCCP team will integrate the results into issues papers, which will be incorporated into the plan, to be delivered to the Australian Government.

Developing the NCCP also includes input from the Scientific Advisory Group, the Operations Working Group, regional case study workshops, operational experts and stakeholder engagement.





OUTPUTS—ANALYSIS BY FRDC PROGRAMS

Program 2: Industry

Demand for high-quality seafood is predicted to outstrip supply in both domestic and export markets. Similarly, in the recreational and customary sectors the demand for high-quality fishing experiences will outstrip supply. There is a need to increase both the production and the value of the catch, and to take advantage of future opportunities. For the commercial sector, business profitability and international competitiveness are overriding concerns. This program aims to assist all sectors improve their overall performance. The following pages provide examples of the R&D currently underway. For a full listing of projects visit the FRDC website—www.frdc.com.au

Principal inputs

During 2018–19, there was \$14.48 million or around 49 per cent of the total R&D investment for this program. This is 9 per cent above the AOP forecast budget.

EXAMPLES OF PROJECT ACTIVITY DURING THE YEAR

Spotlight on Australian Salmon

**FRDC project numbers: 2006-018, 2013-711.3, 2016-121, 2017-023, 2018-306;
CRC 2008.794.10, 2008.794**

For further information: Janet Howieson, j.howieson@curtin.edu.au and
Christopher Izzo, christopher.izzo@frdc.com.au

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

Australian Salmon's image problem is twofold. One is its poor reputation as a fresh fish offering. The other is its unfavourable comparison with the market-leading Atlantic Salmon. For commercial fishers, both issues have contributed to falling demand and prices so low the fish is hardly worth catching.

During the past decade, the FRDC has invested in several research projects to identify ways to make better use of Australian Salmon. It is officially designated 'sustainable' in the 2018 SAFS reports, and it could be harvested in significantly larger quantities than it currently is.

As a fisheries resource, it has the potential to return a much greater value to fishers, and to the community, than it currently does. Among fishers, Australian Salmon is often considered not worth the care needed to prepare it for the dinner table.



A quick kill by brain spiking the fish, then bleeding and immediately chilling is considered best practice to maintain the quality of the flesh. However, Australian Salmon are often harvested in large numbers from shallow water by hauling nets onto beaches, which can make clean and speedy processing a challenge.

A FRDC-funded project has demonstrated that while difficult in these conditions, it is not impossible to maintain fish quality. The project has developed best practice processing techniques and quality standards for the fish in Western Australia.

Some foundational work for the species has already been completed. This includes the development of a quality index for grading the fish, assessment of processing practices to preserve quality, sensory comparison tests with other fish species, and product development options.

The challenge of consumer expectations was raised at the Australian Salmon workshop held in Melbourne earlier this year. The event was the first to bring together Australian Salmon fishers, seafood processors and wholesalers in the hospitality, retail and export markets.

Workshop participants developed three priorities for collaborative action to raise the profile and the value of the species, which were:

- collating national data,
- supplying detailed information on the species to supply chain partners,
- jointly investigating new markets.

Research reveals fishmeal alternatives

FRDC project number: 2016-200.40

For further information: David Stone, david.stone@sa.gov.au

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

Research into the composition of feeds for farmed Yellowtail Kingfish (*Seriola lalandi*) has found it is possible to reduce the wild-sourced fishmeal component of diets by two-thirds without any significant impact on fish health or growth rates.

A dietary source of lipids and protein, fishmeal is an essential component of aquaculture diets for carnivorous fish and typically makes up about a third of Yellowtail Kingfish feeds. However, wild-sourced fishmeal has several downsides. It is increasingly expensive due to growing demand, at more than \$2300 per tonne in 2018. Although it is a renewable resource, fisheries managers limit the quantities of fish taken out of the ocean.





Researchers propose that finding cheaper and more sustainable alternative proteins will help reduce production costs and improve the sustainability of aquaculture.

Alternative ingredients in the trials included fishmeal derived from the by-products of fish processing, poultry meal and soybean protein concentrate.

Six diets formulated to contain these ingredients were compared in a nine-month tank trial conducted at the South Australian Aquatic Sciences Centre from late summer to early spring.

The diets include:

- a control with 30 per cent wild-sourced fishmeal,
- twenty per cent wild-sourced fishmeal and 10 per cent fishmeal derived from fish waste by-products,
- ten per cent wild-sourced fishmeal and 20 per cent fishmeal derived from fish waste by-products,
- twenty per cent wild-sourced fishmeal and 10 per cent poultry meal,
- ten per cent wild-sourced fishmeal and 20 per cent combined fishmeal from waste by-products and poultry meal,
- twenty per cent wild-sourced fishmeal and 10 per cent soy protein concentrate.

Over the course of the trial the growth, feed and nutrient use for fish given fishmeal combined with alternative ingredients was similar to that of the control group, which was fed a diet containing 30 per cent wild-sourced fishmeal.

Fish grew from 2.5 to 4.3 kilograms and there was little difference in growth or feed conversion rates between the ingredients tested.

Information about the performance of a wider range of more sustainable proteins will provide manufacturers and producers with the flexibility to take advantage of fluctuations in the availability and prices of ingredients.





BENEFIT COST ANALYSIS

Program 2: Industry

An impact assessment of FRDC investment in project 2012-217: Atlantic Salmon aquaculture subprogram: Trial of a stock protection system for flexible oceanic fish pens

- FRDC program allocation: Industry (70%), Environment (30%)
- Period of funding: August 2012 to July 2017

What this analysis is about

This analysis presents the results of an impact assessment of the FRDC's investment in a project to develop fortress pens for Atlantic Salmon operations in Tasmania.

The Tasmanian Atlantic Salmon industry operates in an environment with native seals and birds. Native seals and birds both affect Atlantic Salmon operations, causing production losses through predation, a lower feed-conversion ratio and through increased Atlantic Salmon stress.

The number of seal interactions have increased with the expansion of the Tasmanian Atlantic Salmon industry. In the early 2000s, there were under 10 seals around all Huon Aquaculture leases, whereas in 2011, there have been as many as 50 seals around a single pen.

Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), seals and seabirds are protected species. Previously, barrier methods have been used but were not fully effective in stopping seal and seabird impacts. The issue has been controversial and has potentially eroded the social licence of aquaculture operations. Seals have been known to target weaknesses in pens, so the effectiveness of new types of pens cannot be known without prior testing comparing new pens to old pens.

Seal interactions increase risk both to farmed fish and aquaculture staff. There was a need to modernise net and barrier design to lower the number of incidents of seals in and around cages. With seals being able to target weak points in cages, improved barrier technology could reduce seal and bird interactions.

Results/key findings

The investment in this project has resulted in the development of fortress pens that have since been in operation at Huon Aquaculture sites. This has led to a reduction in Atlantic Salmon mortalities from seals and expansion of Huon Aquaculture operations into Storm Bay.





TRIPLE BOTTOM LINE CATEGORIES OF PRINCIPAL IMPACTS AND POTENTIAL IMPACTS FROM PROJECT 2012-217

Economic	<ul style="list-style-type: none">■ Increased profitability for Huon due to expansion into Storm Bay.■ Increased profitability for Huon finfish aquaculture operations through decreased mortality of Atlantic Salmon from seals.■ Increased profitability through reduced cost of production.■ Increased cost to Huon Aquaculture due to installing new pens.
Environmental	<ul style="list-style-type: none">■ Lower negative biodiversity effects due to escaped salmon.
Social	<ul style="list-style-type: none">■ Improved social licence due to improved human and animal welfare.■ Improved animal welfare.■ Improved human well-being due to lower personal risk of injury.

Public versus private impacts

The main impacts of the project are private in nature, but there are significant public benefits from the project. The direct public beneficiaries of this project would be the communities where Huon Aquaculture operates, with increased regional incomes due to expansion of their production, and improved human wellbeing due to increased safety for workers. There are also additional public benefits due to the increased animal welfare of seals and Atlantic Salmon due to the fortress pens.

Conclusion

The investment in project 2012-217 produced valuable outcomes, with the fortress pens being used in production and evidence that seals no longer cause significant losses at Huon Aquaculture sites, as well as expansion of aquaculture production into Storm Bay.

Funding for this four-year project totalled \$2.80 million (present value terms) and the project produced estimated total expected benefits of \$34.43 million (present value terms). This gave a net present value of \$31.63 million, a benefit-cost ratio of 12.30 to 1, an internal rate of return 9.6 per cent and a modified internal rate of return of 5.7 per cent.

The three primary economic impacts of this investment were valued. Additional environmental and social benefits are also anticipated but were unable to be readily valued. When inability to value all impacts is combined with conservative assumptions for the principal economic impacts valued, it is reasonable to conclude that the very positive valuation may even be an underestimate of the actual performance of the investment in project 2012-217.





OUTPUTS—ANALYSIS BY FRDC PROGRAMS

Program 3: Communities

The fishing industry forms an integral part of many rural and regional communities. For the long-term sustainability of the fishing industry, it is important the interactions and co-dependence between the community and industry is understood. For a full listing of projects visit—www.frdc.com.au

Principal inputs

During 2018–19, there was \$1.83 million or around 6 per cent of the total R&D investment for this program. This is 2 per cent above the AOP forecast budget.

EXAMPLES OF PROJECT ACTIVITY DURING THE YEAR

Fisher conversation helps shape industry pledge

FRDC project number: 2017-242

For further information: Seafood Industry Australia, info@seafoodindustryaustralia.com.au

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

The FRDC assisted Seafood Industry Australia's (SIA) members to make the industry's social licence their number one priority

Using data from the FRDC, risk management agency Futureye and the Marine Stewardship Council, SIA has assessed current and emerging community concerns and identified that the main ones relate to sustainability, the environment, accountability, animal welfare and industry safety.

From this process has grown 'Our Pledge', a statement, still in development, from industry that responds to community concerns and acknowledges the industry's responsibility for the future.

"Social licence is front and centre for our members and the wider industry, and SIA is taking a proactive approach to ensure our industry's ongoing acceptance within the community by developing 'Our Pledge'," SIA chief executive Jane Lovell says.





Fisher wellbeing in focus

FRDC project numbers: 2016-400; 2017-194

For further information: Emily Ogier, emily.ogier@utas.edu.au;

Julian Harrington, tsic@tsic.org.au and Steve Eayrs, seayrs@sesafe.com.au

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

The FRDC is seeking to halve the number of fatalities and accidents in the seafood sector by 2023.

Workplace fatalities have averaged five a year for the past five years, making the fishing and aquaculture workplaces the most dangerous in Australia—25 times more dangerous than mining or construction (based on fatalities per thousand workers). The most ‘at risk’ group are male workers aged 20 to 24 years, followed by those aged 45 to 54 years.

To address this important issue, the FRDC, in collaboration with the commercial seafood sector and the Australian Maritime Safety Authority allocated \$650,000 for the first two years to the SeSAFE program, a voluntary learning system being developed as part of the FRDC’s Seafood Industry Safety Initiative.

This will go towards the development of basic training modules for fisheries and aquaculture workers new to the sector, before they begin working on the water. It will also offer a refresher for experienced hands.

In addition, the FRDC recognises the important of achieving mental wellbeing as well as physical safety for the industry.

In 2017, the FRDC funded the first national survey on the health, safety and wellbeing of Australia’s commercial fishing industry, as part of a broader, three-year Sustainable Fishing Families project to provide better evidence of the extent of mental health issues in the sector. This indicated an alarming rate of psychological distress within Australia’s fishing industry and led to the Tasmanian Seafood Industry Council launching its ‘Stay Afloat’ campaign in October 2018.





Mental wellbeing has long been a hidden and neglected issue in the sector. Almost a decade ago in 2009 a report released jointly by the (then) Australian Department of Agriculture, Fisheries and Forestry and the country's RDCs, including the FRDC, identified fisher mental health as in need of attention.

Since then several programs have addressed mental health wellbeing in farming communities, but fishing communities continued to miss out.

In September 2018, the FRDC's Human Dimensions research subprogram hosted a workshop in Adelaide, in preparation for the development of a mental health strategy for the seafood sector.

A new generation takes on the challenge of change

FRDC project numbers: 2017-246, 2017-079, 2016-409

For further information: Karen Holder, dkholder@adam.com.au

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

Following a review of the organisation funded by the FRDC, the Women's Industry Network Seafood Community, now rebranded as Women In Seafood Australasia (WISA), celebrated its 20th anniversary this year.

At a gala dinner in Adelaide in October 2018, the organisation has inducted 20 leading contributors to its inaugural roll of honour. More than 140 guests attended the dinner and unveiling of the honour roll, which recognises some of the industry's most effective 'quiet achievers' who have worked tirelessly to support fishing businesses, their communities and the broader seafood industry.

The FRDC provided bursaries that allowed nine young women to attend the workshop from around Australia, bringing valuable new perspectives and skills to the organisation.

Newly elected WISA president Karen Holder says the organisation has focused in particular on raising the profile of women in the industry and recognising their achievements. This has included broadening the recognition and focus from fishers and their families to the wider supply chain, resource management and research.

WISA will also pursue opportunities to build the personal and professional capacity of women to contribute to their industry, reaching out to a new generation of young women.

Karen says in its new form, WISA will work to expand its activities and to lead some new initiatives. Chief among these is the mental health initiative Project Regard.

WISA director Tanya King has played a pivotal role in this initiative as a social scientist and principal investigator of an FRDC-funded Sustainable Fishing Families project, which included a national survey of fisher health and wellbeing. The survey has identified high rates of psychological distress in the fishing community.

In addition to initiatives to support the health and wellbeing of the seafood community, Karen says access to a new training initiative for members will be pursued. She says this is the kind of first-step program that could be a precursor to something like the National Seafood Industry Leadership Program sponsored by the FRDC.





BENEFIT COST ANALYSIS

Program 3: Communities

An impact assessment of FRDC investment in project 2017-146: Building an evidence base—the point of order experience for seafood

- FRDC program allocation: Communities (70%), Adoption (30%)
- Period of funding: 8 November 2017 to 22 November 2017

What this analysis is about

This analysis presents the results of an impact assessment of the FRDC's investment in a small project to quickly assemble information on consumer experience with information available about country of origin of seafood when ordering cooked seafood at food service establishments such as restaurants and hotels.

On 28 November 2016, during the debate on the Competition and Consumer Amendment (Country of Origin) Bill 2016, the Australian Government committed to convening a working group to consider options for improving consumer access to seafood origin information in the food services sector.

With a Seafood Origin Working Group Meeting scheduled one year later (for 22 November 2017), a FRDC project was developed rapidly as there was a need to report some evidence about the consumer point of order experience at this November 2017 meeting. Hence the research was required to be brief and narrowly defined in order to quickly produce and present some useful information at this meeting. This meant that a longer-term approach for exploring such a complex issue thoroughly was not pursued by this project.

Results/key findings

The major contribution made by the investment was the information assembled on the level of information available when ordering. The resulting report was largely a descriptive analysis of the data and made no recommendations or developed any policy or management implications.

TRIPLE BOTTOM LINE CATEGORIES OF PRINCIPAL IMPACTS FROM PROJECT 2017-146

Economic	■ There are unlikely to have been any direct impacts to date from the project. However, the project assembled and communicated useful information available to consumers on the origin of seafood served in food service industries.
Environmental	■ Nil
Social	■ Potential marginal contribution to the management of food service industries serving seafood, as well as the extent of information available to the community purchasing cooked seafood from service industries.





Public versus private impacts

The potential public beneficiaries of this investment would have been the Australian community who purchase seafood from food service industries. Any impact is considered potential in that no evidence has been sighted on the extent to which the information, albeit valuable, has been used by food service industries (private). It appears the information has not been used directly by regulatory authorities (public).

Conclusions

The investment in this project has resulted in some useful information on the availability of country of origin information when ordering cooked seafood at food service establishments. Such information may be useful in futures studies relating to the value of such information and its relevance to food service businesses, not only for seafood but also for other Australian food producers.

Total funding (as well as FRDC funding) for the investment for the investment totalled \$19,228 in present value terms. Although it is possible that the information assembled by this small investment may be built on in the future, it is evident that the project did not produce any direct or clear industry or community impacts.





Program 4: People

People are the cornerstone of every industry. For the fishing industry, it is vital that it continues to attract and develop people who will take the industry to a sustainable and profitable future. The FRDC has taken a strong role in supporting people development, from employing and developing young researchers, through to facilitating access to leadership development for all levels of industry. Development of people is also a critical element and pathway to realising the benefits of FRDC’s investment in R&D.

Projects funded under Program 4 primarily address the FRDC’s People program. However, this is also addressed, as a secondary but very important element, by projects within programs 1 (Environment) and 2 (Industry). For a full listing of projects visit FRDC’s website—www.frdc.com.au

Principal inputs

During 2018–19, there was \$2.39 million or around 8 per cent of the total R&D investment for this program. This was equal to the AOP forecast budget.

EXAMPLES OF PROJECT ACTIVITY DURING THE YEAR

Skills shortage forecast for stock assessments

FRDC project number: 2014-039

For further information: Cathy Dichmont, cathydichmont@gmail.com

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

Stock assessments aim to provide fisheries managers with the best possible scientific information in order to calculate the volume of fish that can be harvested without depleting the stock for the following year’s catch and into the future.

The report *Stock Assessment Integration: a review*, funded by the FRDC, has taken a long, hard look at the state of Australia’s fisheries stock assessments and sounded a note of caution about the future.

The report’s authors found that, at times, Australian stock assessment work was hampered by an isolationist approach that has stymied international collaboration and the sharing of expertise. This has also limited stock assessment scientists from taking advantage of new technologies that could make stock assessments faster, cheaper and more accessible.





The authors considered 76 model-based stock assessments for Australian commercial species ranging from rock lobsters to prawns to finned fish. These stocks represent about a third of Australia's commercial harvest.

They concluded that 58 of these stock assessments could have just as easily been done using one of the many freely available stock assessment packages used in the United States or New Zealand as with the customised Australian modelling packages that had been used.

The sector is also crying out for forums—either online or offline—to enable scientists to collaborate and share methods more easily and more regularly. This is particularly important as many of these researchers are now close to retirement, and bright young scientists coming up through the ranks are needed to work directly with these experts.

Future at your fingertips

FRDC project number: 2016-407

For further information: Tom Robinson, tom@real-time-data.com.au

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

South Australian Pipi fisher Tom Robinson applied for his Nuffield Scholarship, sponsored by the FRDC, to explore how the collection of digital data can empower fishers and enhance fishery management by improving productivity and sustainability to provide a competitive edge.

Tom already had a vested interest in digital data, having developed the Deckhand app, used by South Australian Pipi and Southern Rock Lobster fishers. It is also about to be rolled out across every fishing sector in New Zealand as part of the country's move to the electronic reporting of commercial fishing.

The Nuffield Scholarship, he thought, would provide some insight into improving the offering. However, it has ended up doing much more, helping him develop ideas that could transform the collection of fisheries data around Australia.





For example, he says, reliable data is important when it comes to countering scare campaigns and maintaining a social licence to operate and he is not alone in this belief. The Nuffield Scholarship, he says, showed him there was a common agreement across agricultural industries about the need for improved, consistent, trusted data to maximise productivity and build social licence and market advantage.

But it also revealed common hurdles among producers to achieving such a goal. All producers were wary of where their data would be stored and if it could be used for purposes for which it was not originally provided.

For fishers, whose catch data is their commercial intellectual property and who “are obviously very sensitive about where that data goes and who uses it and for what purposes”, it’s a concern keenly felt, he says. But Deckhand and his Nuffield experience have shown there are ways to address these concerns both through technological and legal means.

With the data system Tom has in mind, fishers could record and upload all the information they need to monitor and improve their own businesses and then, with their permission, provide data more broadly for the collective benefit of the industry.

Aquaculture focus for science stars

FRDC project number: 2008-339

For further information: Kevin Rassool, kevin@freo2.org; Dale McClure, dale.mcclure@sydney.edu.au and Elliot Scanes, 0404 651 040, elliott.scanes@sydney.edu.au

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

Aquaculture is the beneficiary of the three most recent research projects to win the FRDC-sponsored Science and Innovation Awards for Young People in Agriculture, Fisheries and Forestry.

The awards are presented at the annual ABARES Outlook conference each March. The research awarded featured the microbiome of oysters, high-value nutritional supplements from algae, and systems to concentrate oxygen in aquaculture ponds.

The 2019 winner was marine biologist Elliot Scanes who plans to study the microorganisms that live within oysters and how these can help the molluscs cope with environmental changes and fighting disease. His work will study if breeding can be used to produce oysters with a more favourable set of microorganisms.

The 2018 winner was Dale McClure who targeted aquaculture wastewater for the production of high-value nutritional supplements for both animals and humans.

In 2017, the winner was Kevin Rassool, one of five engineers who established the start-up company FREO2 Aqua in Melbourne. They invented and patented a system to concentrate atmospheric air into medical-grade oxygen using only the power of running water. The design also won the 2017 Eureka Prize for Innovative Use of Technology.

The robust design features also make the system attractive to small-scale fish farmers in developing countries. Development work on these philanthropic applications is underway with in-country partner AQUADAPT in Thailand. There are also medical devices based on the FREO2 Aqua technology being rolled out in Africa by the FREO2 Foundation.





BENEFIT COST ANALYSIS

Program 4: People

An impact assessment of FRDC investment in project 2015-402: Growing future leaders in recreational fishing 2016 and beyond: Victoria, Tasmania, New South Wales and South Australia

- FRDC program allocation: People (100%)
- Period of funding: July 2015 to June 2016

What this analysis is about

This analysis presents the results of an impact assessment of the FRDC's investment in a project to build leadership capacity for future sustainable management and advocacy for the recreational fishing sector in the states of Victoria, Tasmania, New South Wales and South Australia. This resulted in a residential course for prospective young leaders. The framework and structure used by the course was an established framework developed for leadership training and progression for young people in an earlier FRDC-funded project (2011/403).

The recreational fishing sector in the south-eastern states of Australia wanted to strengthen the capability and capacity in leadership, administration and management of its representative organisations. Existing personnel were predominantly voluntary and in general were not keeping up with the continuing demands of administration, management and advocacy that were increasingly required. New and professional leadership skills within Victoria, Tasmania, New South Wales and South Australia were required to build capacity for the future to manage sustainable advocacy of the sector and manage the continuing threats likely to be confronted in the future.

By developing a succession plan, the project was intended to benefit current and future generations of fishers in the south-eastern states by improving the professional representation of the views of recreational fishers. The project was driven by the FRDC, state fisheries management, and RecFish Research.

The design of the training program was based on an earlier FRDC project (2011/403: Future leaders in recreational fishing). This earlier investment was the first project aimed at delivering a consistent approach in leadership development training for the recreational fishing sector across Australia.

Results/key findings

The major impacts identified and valued was a significant contribution to the development of a group of 11 future leaders in recreational fishing representation and advocacy. This potentially will lead to potentially improved professional input by the sector, in turn, leading to an enhanced position of the sector with regard to such factors as membership, access, sustainable resource management, regulation, and value of the sector within the four south-eastern states of Australia.





TRIPLE BOTTOM LINE CATEGORIES OF PRINCIPAL IMPACTS FROM PROJECT 2015-402

Economic	<ul style="list-style-type: none">■ Contribution to the development of a group of 11 future leaders in recreational fishing representation and advocacy, leading to potentially improved professional input by the sector, in turn, leading to an enhanced position of the sector with regard to such factors as membership, access, regulation, and value of the sector within the four south-eastern states of Australia.
Environmental	<ul style="list-style-type: none">■ Greater understanding and appreciation of the sustainable management imperative of fish resources by the future recreational fisheries leadership, leading to improved resource management outcomes.
Social	<ul style="list-style-type: none">■ Contribution to increased people capability with respect to effective and responsible prospective leadership, representation and management of the recreational fishing organisations across the four south-eastern states of Australia.■ Increasing contribution to the maintenance of the social licence for recreational fishers.

Public versus private impacts

Most impacts identified in this evaluation are related to improved future management of the recreational fisheries sector with both private and public impacts. Some long-term private benefits will accrue to individuals undertaking recreational fishing and the business input supply chains on which they depend across the four states.

Public impacts will be in the form of improved fisheries management that maintain ecological resource sustainability as well as improved relationships with other fisheries' resource users.

Conclusions

The investment in this project will likely be translated into improvements in the long-term management of recreational fishery industries across the south-eastern Australian recreational fishery industry.

Funding for the project over the two years totalled \$0.10 million (present value terms) and produced estimated total expected benefits of \$0.48 million (present value terms). This gave a net present value of \$0.38 million, a benefit-cost ratio of 4.80 to 1, an internal rate of return of 23.9 per cent and a modified internal rate of return of 11.0 per cent.

As one of the impacts identified was not valued, the investment criteria as provided by the valued benefit are likely to be potentially underestimates of the investment performance. On the other hand, confidence in the assumptions for the benefit valued was considered to be low.





Program 5: Adoption

Adoption is the use of knowledge arising from RD&E. A core activity in which the FRDC invests is extension (or adoption)—these activities assist to educate, make aware or facilitate end users taking the knowledge and utilising it. This ranges from undertaking communication activities such as direct communication (*FISH* magazine and websites), conferences and meetings, through to transforming R&D outputs into appropriate mediums to support stakeholder decision making, assist with achieving their objectives, and inform the broader community.

Principal inputs

During 2018–19, there was \$3.19 million or around 11 per cent of the total R&D investment for this program. This is 3 per cent above the AOP forecast budget.

EXAMPLES OF PROJECT ACTIVITY DURING THE YEAR

Connecting health professionals with sustainable seafood

FRDC project number: 2018-092

For further information: Nicole Senior 02 9760 2187, 0407 261 803

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

Evidence from a growing body of international research shows that eating fish and other seafood plays a powerful role to play in protecting your brain, heart, eyesight and bones.

But confusion over which species are sustainable has often stymied Australian healthcare professionals who want to recommend that their clients eat fish.

To address this issue the FRDC has worked with dietitians to create new resources specifically for health professionals that combine information on both the health benefits and sustainable Australian species.

The SAFS reports already provide a publicly accessible and rigorously tested scientific benchmark for the sustainability of commercially wild-harvested fish species. The reports are updated every two years, and the 2018 SAFS edition includes 120 species that make up the bulk of available Australian seafood.

Supplementing this is the FRDC's new Health Care Professionals Resource on Sustainable Seafood, prepared by dietitian and nutritionist Nicole Senior, from Professional Nutrition Services. In preparing the resource, she worked with fellow dietitian Shawn Somerset from the University of Canberra; and independent consultants Gabrielle O'Kane, who has researched sustainable seafood recommendations in nutrition professionals, and Michele Walton, who specialises in nutrition communications.





The resource package has three elements: a review of available evidence about the health benefits of seafood; resource material combining health evidence with general information about seafood and sustainable Australian seafood species; and a collection of recipes.

The key audience for the resource material includes dietitians, nutritionists, primary healthcare nurses and public health practitioners. Secondary influencers who will also be included are home economists (such as food educators), food scientists and food technologists. All these groups have a commitment to scientific evidence that is also shared by the FRDC.

Hooked on fish ‘n’ chips— Australia’s fish ‘n’ chippers step back up to the plate

FRDC project number: 2017-184

For further information: Peter Horvat, peter.horvat@frdc.com.au

NATIONAL PRIORITY	INFRASTRUCTURE	PARTNER: Jurisdiction	PARTNER: Industry	COLLABORATION
ENVIRONMENT	INDUSTRY	COMMUNITIES	PEOPLE	ADOPTION

The FRDC sent nine judges to sample the seafood of some 35 national finalists from Queensland, New South Wales, Victoria, Tasmania, South Australia, Western Australia and the Northern Territory, and to whittle the list down to state winners, and of course the national ‘numero uno’.

The aim was to sample one grilled, one battered and one crumbed fish—whatever species best suited each application. The FRDC asked about the finalist’s connection to local seafood suppliers and fishers, and their local community too, the information they supply about species and sustainability and considered cleanliness, freshness and how well it was seasoned, cooked and packaged.

In 2018, the FRDC discovered a whole new kettle of keenly competitive fish ‘n’ chippers: enthusiastic, passionate and eager to inform guests of every minor detail if they asked.

The 2019 Fish and Chips Awards were brought forward to align with the Seafood Industry Awards, which ran in conjunction with the biennial Seafood Directions conference held this year in Melbourne, where the national winners will be awarded.

The awards launch followed the release of the FRDC’s 2018 SAFS reports. Throughout the Fish and Chips Awards the FRDC promoted the reports to consumers and businesses participating in the competition.

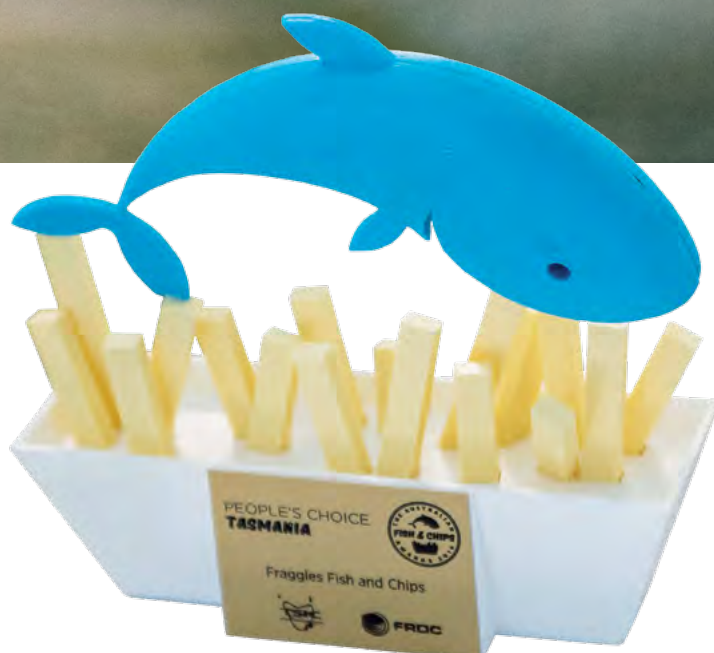


Several changes were implemented based on last year's feedback. Voting for the People's Choice category began simultaneously in all states and territories. Vote verification continued to be used as part of the online voting system and features were added to make the system more user-friendly and strengthen security.

The FRDC also tailored an online application system for shops to nominate themselves to be judged. The application was based on the criteria used by the judging panel and aimed to allow shops across all regions to be assessed.

The criteria has been weighted to reinforce the importance of great tasting seafood and good service. But importantly, the criteria also highlight the importance of details such as labelling, information and choice.

As part of FRDC's RD&E, the Fish and Chips Awards website received 28,000 interactions through the voting process with 20 per cent of those users also engaging with FRDC's research. Another key outcome was the referral from the Fish and Chips Awards site to the SAFS website highlighting the new SAFS phone app. This resulted in 633 downloads.





BENEFIT COST ANALYSIS

Program 5: Adoption

An impact assessment of FRDC investment in project 2011-404: National Angel Ring program

- FRDC program allocation: Adoption (70%), Communities (15%), People (15%)
- Period of funding: July 2011 to May 2018

What this analysis is about

This analysis presents the results of an impact assessment of FRDC's investment in the National Angel Ring program. The project was funded by FRDC over the period July 2011 to May 2018.

Fishers and tourists around Australia have drowned after being swept off coastal rock platforms. In response, the Guardian Angel Rings program was established by the Australian National Sportfishing Association (ANSA) in New South Wales (NSW) in 1994.

Angel Rings are life buoys installed at popular ocean rock fishing spots, on wharves, fishing platforms and along coastal bushwalking tracks. Individuals that can benefit from the Angel Rings include anglers, overseas tourists, children walking on the rocks, spear fishers and divers.

The establishment of the program in 1994 had demonstrated that the New South Wales program had saved lives at various coastal rock platform locations in the state and should be expanded nationally to areas where there was a risk of lives being lost. In 2007, ANSA NSW assisted ANSA Victoria to establish a pilot project at four known blackspots which had a history of rock fishing fatalities. Since that trial commenced no lives have been lost at these spots.

The Recreational Fishing Advisory Committee identified the national roll-out of the Angel Rings program as a key project as part of the Recreational Fishing Industry Development Strategy. In addition, Surf Life Saving Australia had recognised the value of the Angel Rings program and worked collaboratively with ANSA on rock fishing safety education and awareness around Australia. Both groups signed a memorandum of understanding supporting the concept of a national Angel Ring roll-out around Australia.

Results/key findings

The investment has likely contributed to a reduced number of deaths and injuries by extending the presence of Angel Rings in various locations around selected locations around the Australian coastline. The Angel Rings have not only reduced the number of deaths of those pursuing risky activities (such as rock fishing), but also has highlighted the danger and risk associated with such activities so improving personal management to avoid accidents.





TRIPLE BOTTOM LINE CATEGORIES OF PRINCIPAL IMPACTS FROM PROJECT 2011-404

Economic	■ Nil
Environmental	■ Nil
Social	<ul style="list-style-type: none">■ Reduced number of human fatalities and injuries from the utilisation of Angel Rings where they were installed.■ Reduced number of human fatalities and injuries from dissemination of information regarding risks.■ An increase in specific leisure activities due to greater awareness of risks and their management, as well as the knowledge of the presence of the Angel Rings in some locations.

Public versus private impacts

The main impacts of the project are largely public. The direct public beneficiaries of this project are the people whose lives are saved, and their families and friends through avoided physiological stress of a death of a relative. There is also improved recreational amenity value due to people being able to undertake rock fishing due to the improved safety of the activity.

Conclusions

Despite limited funding and a number of difficulties and setbacks faced in the rollout such as difficulties with obtaining state agreements and devolvement of management to local groups, the project has been successful in its objectives. The investment in the national extension of the Angel Ring program has resulted in the avoidance of at least three deaths in Western Australia as well as highlighting the dangers of rock fishing by disseminating information regarding risks.

Total investment in the project was estimated to be only \$0.22 million (present value terms) that produced estimated total expected benefits of \$6.48 million (present value terms). This gave a net present value of \$6.26 million, an estimated benefit-cost ratio of 29.17 to 1, an internal rate of return of 73.4 per cent and a modified internal rate of return of 19.3 per cent.

While several other social impacts were identified, no attempt was made to value them due to inadequate data from which to make credible assumptions. Hence, combined with conservative assumptions for the impact valued, investment criteria as provided by the valuation may be underestimates of the actual performance of the investment.





ASSESSMENT OF IMPACT AND OUTCOMES

Evaluating the results of RD&E investment

Evaluating impact

Evaluating the outcome of a research project in an annual report is difficult because many projects run over multiple years and there is a period of time between when R&D is undertaken, completed and then adopted by end users as to when the total value of the investment is realised.

The time scale can also vary depending on the activity undertaken. While there can be an instant impact from a project—resulting in change of practices or management arrangements for example—the total outcome may take time to accrue and that can only be measured when looking back.

The FRDC has in place metrics to anticipate potential value (ex ante, see Figure 2 on page 27) and if a formal measurement process to evaluate benefit cost (post ante), which aligns with the Council of Rural Research and Development Corporations (CRRDC) evaluation framework.

RDC impact assessment and performance reporting

The evaluation program being undertaken by the FRDC is part of the CRRDC work to collaboratively implement a framework of benefit cost analysis to evaluate R&D activities.

The FRDC assessment uses the methodology developed by the rural RDCs benefit cost framework which is based on the work of the Department of Finance in *Introduction to Cost-Benefit Analysis and Alternative Evaluation Methodologies*, and subsequent discussions with the department to refine the methodology.

Generating and documenting evidence of impact and demonstrating performance of the RDCs as a collective is also a key objective for the CRRDC.

The purpose of the cross-RDC impact assessment program is to:

- assess and report on the overall returns to rural industries from the portfolio of investments in RD&E by RDCs,
- assess and report on the non-market benefits (including public and spillover benefits) arising from the portfolio of investments in RD&E by RDCs,
- inform government and the public about the nature of those non-market (i.e. public and spillover) benefits from rural RD&E that are conditional on public contributions to the RDCs.



The cross-RDC impact assessment program provides for consistency in the evaluation of investments in rural RD&E made by the Rural RDCs in their respective industries. The program involves aggregating the results of regular and rigorous assessment of completed RD&E investments by each RDC. These assessments provide accountability to RDC stakeholders, including government, levy payers, researchers and the community. The aggregation will generate estimates of the performance of the RDC portfolio as a whole and over time.

CRRDC cross-portfolio evaluation

In 2016, the CRRDC commissioned an independent evaluation team to conduct a cross-RDC impact assessment and performance reporting update.

This project was undertaken in two stages carried out concurrently. Stage 1 reviewed and reported on existing impact assessment and performance information to fill in the gap since the last published cross-RDC impact assessment report with information covering the period 1 July 2009 to 30 June 2015. Stage 2 set out to identify and develop a future framework for the collection and reporting of data and evidence of impact across the RDCs, building on the existing cross-RDC guidelines and procedures.

In light of the findings of the 2016 cross-RDC impact assessment and performance update reporting process, the cross-RDC impact assessment working group sought to again update the guidelines and to also have the procedures rewritten and simplified. The purpose of these revisions was to provide an improved framework for conducting impact assessments of RD&E by all RDCs, to improve consistency and comparability of evaluation reporting, and to improve and simplify the future aggregation and analysis of individual RDC RD&E evaluations for cross-RDC impact assessment by the CRRDC. The following FRDC assessments utilise the new impact assessment process.

The 15 rural RDCs are: AgriFutures Australia, Australian Eggs Limited, Australian Meat Processor Corporation, Australian Pork Limited, Australian Wool Innovation, Cotton RDC, Dairy Australia, FRDC, Forest and Wood Products Australia, Grains RDC, Horticulture Innovation Australia, LiveCorp, Meat & Livestock Australia, Sugar Research Australia, and Wine Australia.





Evaluation of R&D projects (completed 2015–20)

Benefit cost assessment program—Evaluations (Year 3)

In 2015–16 the FRDC started a five-year program of impact assessments that would be carried out annually on a number of investments across the RD&E portfolio.

Agtrans Research and Consulting was contracted to complete the assessments which were required to meet FRDC evaluation reporting requirements.

The following summary presents an overview and aggregate results for the third year (2017–18) of the evaluation program.

Brief description of the selection process

At the commencement of the program FRDC identified that the unit of investment to be evaluated would be an individual FRDC project and that a total of 20 randomly-selected projects would be evaluated each year, see Table 12 for a list of these projects.

The third series of impact assessments, carried out in calendar year 2019, also included 20 randomly-selected FRDC investments. The investments were worth a total of approximately \$4.01 million (nominal FRDC investment) and were selected from an overall population of 87 FRDC investments worth an estimated \$12.81 million (nominal FRDC investment) where a final deliverable had been submitted in the 2017–18 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 31.3 per cent 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.





The 2017–18 evaluation sample

From the initial population of 87 projects the following 20 project investments were randomly selected for evaluation (see table below).

TABLE 12: KEY SAMPLE STATISTICS FOR FIRST YEAR OF ANNUAL FRDC ECONOMIC EVALUATIONS

Program area	Number of sample projects	Total FRDC investment (nominal \$)	Division of investment (%)	Small (<\$50,000)	Medium (\$50,001 to \$250,000)	Large (>\$250,000)
Environment	8	1,487,512	37.1	2	4	2
Industry	7	2,147,029	53.5	1	4	2
Communities	1	16,000	0.4	1	0	0
People	2	13,510	0.3	2	0	0
Adoption	2	348,703	8.7	1	0	1
Total	20	4,012,754	100.0	7	8	5

General evaluation method

The economic impact assessments followed general evaluation guidelines that are now well entrenched within the Australian primary industry research sector including RDCs, CRCs, 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.

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.

Preliminary aggregate results

The following section presents estimated investment criteria for each of the 20 FRDC RD&E investments evaluated, for all 20 investments in aggregate, and for the aggregate investment by program.

For the purposes of the investment analyses, the investment costs of all parties were expressed in 2018–19 dollar terms using the implicit price deflator for gross domestic product (Australian Bureau of Statistics, 2019). All costs and benefits were discounted to 2018–19 using a discount rate of 5 per cent and using a reinvestment rate of 5 per cent for calculating the modified internal rate of return (MIRR). The base analyses used the best available estimates for each variable, notwithstanding a level of uncertainty for many of the estimates. All individual analyses ran for the length of the project investment period plus 30 years from the last year of investment.

Results presented include the present value of costs (PVC), estimated present value of benefits (PVB), net present value (NPV), benefit cost ratio (BCR), internal rate of return (IRR) and MIRR.





For some projects, impacts identified were not able to be quantified. Detailed reasoning behind the decision not to value the impacts can be found in the individual project impact assessment reports submitted to FRDC. For projects where no impacts were valued, only the PVC was explicitly reported, all other investment criteria appear as NR (not reported). However, the cost cash flows for projects with no impacts valued were still taken into account for the calculation of the aggregate investment criteria for all 20 project investments.

TABLE 13: INVESTMENT CRITERIA BY INDIVIDUAL PROJECT (TOTAL INVESTMENT)

Project number	FRDC program allocation(s)	Project title	PVB (\$m)	PVC (\$m)	BCR
2011-404	Adoption (70%) Communities (15%) People (15%)	Recreational Fishing Industry Development Strategy: National Angel Ring program.	6.48	0.22	29.17
2012-021	Environment (60%) Industry (40%)	Trial and validation of respondent-driven sampling as a cost-effective method for obtaining representative catch, effort, social and economic data from recreational fisheries.	0.00	1.13	NR
2012-217	Industry (70%) Environment (30%)	Tasmanian Salmonid Growers Association IPA. Huon Aquaculture Company: Trial of a stock protection system for flexible oceanic fish pens.	34.43	2.80	12.30
2013-014	Environment (80%) Industry (20%)	Research to underpin better understanding and management of Western Gemfish stocks in the Great Australian Bight.	0.89	0.86	1.03
2013-221	Industry (100%)	Stock enhancement of the Western School Prawn in the Swan-Canning Estuary: Evaluating recruitment limitation, environment and release strategies.	0.00	1.64	NR
2013-222	Adoption (40%) Environment (40%) Industry (20%)	Tasmanian Salmonid Growers Association IPA. Tassal: Innovative seal exclusion technology.	4.63	1.82	2.51
2014-026	Environment (100%)	Improving the precision of estimates of egg production and spawning biomass obtained using the daily egg production method.	0.17	0.52	0.32
2014-207	Industry (70%) Environment (30%)	The social drivers and implications of conducting an ecological risk assessment of both recreational and commercial fishing: A case study from Port Phillip Bay.	0.00	0.27	NR
2015-014	Environment (100%)	Estimating the impacts of management changes on bycatch reduction and sustainability of high-risk bycatch species in the Queensland East Coast Otter Trawl Fishery.	2.12	0.94	2.25
2015-019	Environment (100%)	Refining a Nordmøre grid to minimise the incidental catch of cuttlefish and crabs in the Spencer Gulf Prawn Fishery.	1.05	0.5	2.08
2015-402	People (100%)	Growing future leaders in recreational fishing 2016 and beyond: Victoria, Tasmania, New South Wales and South Australia.	0.48	0.10	4.80





Project number	FRDC program allocation(s)	Project title	PVB (\$m)	PVC (\$m)	BCR
2016-051	Environment (100%)	Validating a defensible and robust method for data collection, species composition and reporting the harvest of protected coral species from the Great Barrier Reef World Heritage Area.	0.39	0.11	3.56
2016-054	Industry (100%)	Pilchard orthomyxovirus fast-track proof-of-concept vaccine.	8.34	0.81	10.35
2016-139	Environment (85%) Industry (5%) Communities (5%) Adoption (5%)	Decadal scale projection of changes in Australian fisheries stocks under climate change.	1.31	0.32	4.06
2016-147	Environment (60%) Industry (40%)	Development of sector-specific biosecurity plan templates and guidance documents for the Australian farmed Barramundi industry.	0.41	0.21	1.99
2017-084	Industry (100%)	Economic contribution of the Western Rocklobster industry to Western Australia and Australia.	0.50	0.12	4.13
2017-091	Industry (80%) Communities (20%)	Assessment of frozen uncooked imported prawns for antimicrobial-resistant micro-organisms of aquaculture and public health significance and residues of agricultural and veterinary chemicals.	0.00	0.12	NR
2017-121	People (100%)	People Development Program: Indigenous development scholarship: Culture-based fisheries training course in Vietnam.	0.00	0.01	NR
2017-136	Industry (100%)	Select Oyster Company Financial Strategy Workshop 17 (November 2017).	0.00	0.02	NR
2017-146	Communities (70%) Adoption (30%)	Building an evidence base: The point of order experience for seafood consumers.	0.00	0.02	NR





At the individual project level, the impacts from seven of the 20 project investments subjected to assessment were not valued in monetary terms. The total investment across all 20 individual RD&E projects (from all sources) ranged from \$5829 to \$2.80 million (present value terms) with FRDC contributions ranging from 8.4 per cent to 100 per cent of the total investment in each project. Estimated benefits for each project ranged from zero to \$34.43 million (present value terms). The weighted average BCR for all 20 projects was approximately 4.9 to 1. The simple average BCR for only those projects where investment criteria were report (13 projects) was approximately 6.0 to 1, whereas the weighted average BCR for only the 13 projects where impacts were valued was estimated at 7.5 to 1. All aggregate investment criteria were positive from a period of five years after the last year of investment (2018–19) indicating that positive aggregate benefits were delivered from the investments over a relatively short time frame.

At the program level, all five FRDC program areas reported a positive BCR (greater than, or equal to, one). Based on the investment criteria presented, the Communities program reported the best performance with an estimated BCR of 11.9 to 1. This positive result was influenced strongly by the high total PVB (\$6.48 million) estimated for project 2011-404 (Recreational Fishing Industry Development Strategy: National Angel Ring program) that was given a 15 per cent attribution to the Communities program. The People program also performed well with an estimated BCR of 10.5 due to the program also receiving a 15 per cent allocation of costs and benefits from project 2011-404.

TABLE 14: INVESTMENT CRITERIA BY FRDC PROGRAM (TOTAL INVESTMENT)

Program	PVB (\$m)	PVC (\$m)	NPV (\$m)	BCR	IRR (%)
Environment	17.97	5.49	12.48	3.27	9.65
Industry	34.27	5.92	28.36	5.79	10.29
Communities	1.04	0.09	0.95	11.85	67.07
People	1.45	0.14	1.31	10.52	51.52
Adoption	6.45	0.91	5.55	7.13	37.92

The overall, average leverage ratio for the 2017–18 project sample, defined as the ratio of investment from non-FRDC sources to FRDC investment, was estimated to be 1.22. That is, for every dollar that FRDC invested in the 20 projects, funding partners contributed 1.22 dollars. Leverage ratios for the individual project investments ranged from zero to 10.9 (for project 2016-147: Development of sector-specific biosecurity plan templates and guidance documents for the Australian farmed Barramundi industry).

Total funding from all sources across all 20 RD&E project investments totalled \$12.54 million (present value terms) and produced estimated total expected benefits of \$61.18 million (present value terms). This gave an aggregate NPV of \$48.65 million, a weighted average BCR of approximately 4.9 to 1, an IRR of 10.8 per cent and an MIRR of 1.6 per cent.

The overall positive results should be viewed positively by FRDC, the various fisheries and aquaculture industries, and policy personnel responsible for allocation of public funds.





REPORT OF OPERATIONS PART 3: SERVICES



Marketing

During 2018–19, the FRDC did not undertake any marketing activities.

Priority area activities	PBS target 2018–19	Achievement
Commence collection of voluntary marketing funds, pending legislative changes.	An amount of \$250,000 to be collected.	Not achieved. On 16 August 2018 the Primary Industries Research and Development Amendment Bill 2017 was passed. No voluntary funds collected.
Coordinate the delivery the Love Australian Prawns campaign, pending legislative changes.	Campaign activities delivered in line with marketing plan.	Not achieved. Following the legislative change, Love Australian Prawns continued to be administered by industry.
Establish full statutory marketing levy collection with industry sectors for sectors, where requested and pending levy being established.	One marketing levy established.	Not achieved. Marketing levy development still underway.

Marketing legislation passes

On 16 August 2018, the Primary Industries Research and Development Amendment Bill 2017 was passed by both houses of parliament.

Until then any marketing activities wanted by the fishing and aquaculture industry meant they had to go through the lengthy process of establishing a mandatory marketing levy. Without this restriction more flexible and custom programs can be developed.

It allows the FRDC to partner with, and deliver, any marketing activities on behalf of the seafood industry. For example, running a trade event (either here or overseas) to promote Australian seafood.

Marketing levies development

As part of developing the appropriate systems and knowledge, the FRDC has continued to meet with the levies area of the Department of Agriculture as part of assisting APFA and the Abalone Council of Australia move to implementing a marketing levy. These meetings have helped establish a clear picture of the processes, steps and time frames required to put in place a statutory levy, if industry decides to go down this path.

Prawn farmers to pave path to market

A second round of APFA consultation was completed in early 2019. This was undertaken due to the delays following the outbreak of white spot disease. Following the delay, the APFA re-initiated the marketing levy consultation process. The vote was commenced late in July 2019. It is expected APFA will make a decision following the vote process on whether to proceed with a levy later in the year.

Australian Wild Abalone™

The Abalone Council of Australia has continued discussions with fishers on establishing an abalone marketing levy with a view to funding the continuation and expansion of the Australian Wild Abalone™ program. Development of a business case and marketing plan was completed during the year. The voting process on adopting a levy will be undertaken in the second half of 2019.

Trade

Trade statistics

International trade and exporting plays an important role for many in the Australian seafood industry. The FRDC continues to provide access to the latest Australian Bureau of Statistics trade data that covers import and exports to and from Australia.

The data is updated monthly, can be filtered and allows in-depth analysis of import and export trends based on key attributes—country, state, product type. Export codes have been grouped together in logical blocks for ease of use. Visit the trade portal at www.frdc.com.au/Services/Trade-data.

Seafood industry engagement in the Australia–European Union Free Trade Agreement

The 28 countries of the European Union (EU) annually import seafood valued at around US\$53 billion and represent the largest global importer with 39 per cent of total seafood trade. European Union seafood imports are more than six times that of China (US\$8.7 billion). Australian seafood exporters currently face commercially onerous EU import regulations and procedures as well as tariff barriers of between 12–26 per cent, making many seafood products uncompetitive in that market.

Australia started negotiations for a free trade agreement (FTA) with the EU in 2018 with two principal goals from the negotiations: the reduction of tariffs on all seafood products; and ensuring that the agreed technical trade rules and export regulations minimise the cost of exporting seafood to the EU.





Outcomes (to date)

1. Forty-one Australian seafood exporters, producers, industry associations and stakeholders have expressed an interest in participating in the Australia–EU FTA negotiations.
2. Industry views were incorporated into an initial Australian seafood industry submission for the Australia–EU FTA. The submission was tabled with the Australian Government Department of Foreign Affairs and Trade in June 2019.
3. Following the development of a Government consultation and engagement strategy, regular meetings have been held with chief negotiators from the Department of Agriculture and the Department of Foreign Affairs and Trade to discuss industry priorities and progress of negotiations.
4. Technical discussions with the Department of Agriculture on relevant chapters of the draft text of the agreement are ongoing.
5. Updates on the progress of negotiations have been provided to industry stakeholders via e-mail and through meetings with the Seafood Export Consultative Committee and Seafood Trade Advisory Group.

Update of progress in the Australia–EU FTA negotiations

The fourth round of negotiations for the Australia–EU FTA was held in Brussels from 1–5 July 2019. Negotiators reported progress across the majority of the 18 working groups involved in the FTA negotiation with both parties seeking to identify areas of common interest that could be readily agreed while commencing preliminary discussions on sensitive areas of trade and investment which will require significant negotiation.

Trade bursary program

During the year the FRDC sponsored a number of young seafood industry members or exporters to attend major seafood expositions held in Boston (United States), Brussels (Belgium) and Qingdao (China). In addition, those participating attended short industry tours (three days before and/or after) to gain a better understanding of the seafood industry and market.

In 2019 the FRDC took a slightly different approach to selecting trade bursary participants, by linking the bursary to the National Seafood Industry Leadership program. The goal was to provide the next level of development for the young leaders by exposing them to international markets and how they operate.

Twelve industry people participated in the tour over the year. The European Bursary Group were also able to be part of the first global seafood leaders meeting in Brussels with 20 leaders from the United States, Canada and the United Kingdom. This was a fantastic networking opportunity and a chance to gain understanding of what is happening in other countries that we may also be facing in Australia. The meeting was supported by the United States National Fisheries Institute, Sea Fish Industry Authority (United Kingdom) and Fisheries Council of Canada.



Standards

The FRDC is an approved by the Accreditation Board for Standards Development Organisations as a Standards Development Organisation AS/NZS ISO 9001:2015 organisation for quality, and undertakes internal and external audits annually with a recertification audit of its quality system each three years.

The FRDC carried out both an internal and an external three-year recertification audit in 2019. SAI Global recertified FRDC on 25 June 2019.

The FRDC has continued to work with industry partners throughout the year looking at a number of potential options to create future fisheries-related standards. Over the coming year there will be more work to formalise and finalise groundwork already completed by a number of research projects. Standards being developed include responsible fishing, science, and fisheries management standards. During the year, FRDC agreed to take over responsibility for *AS4470-1997 Fishing line—Determination of breaking load* from Standards Australia. This will require the standard to be reviewed for currency and updated. Further information is available at www.seafoodstandards.com.au

Australian Fish Names Standard

The Fish Names Committee met on 4–5 September 2018 and 8 May 2019.

The Australian Fish Names Standard is a searchable online database (www.fishnames.com.au) that includes all species listed in the standard. Users can find a fish by name and check its previous or non-standard names, as well as seeing an image in some cases.

This increases consumer confidence in the seafood they buy because standard names allow for more effective fisheries monitoring and management, which in turn results in greater sustainability of fisheries resources. Traceability and food-safety management can also be improved with more efficient seafood marketing campaigns, which should lead to increased industry profitability.

Having a standard in place also allows more efficient and effective management of food safety and reduces the potential for misleading and deceptive conduct as more accurate trade descriptors can be used.





FISH NAMES COMMITTEE MEMBERSHIP

Independent Chair	Gus Dannoun
Fisheries agencies appointee as nominated by AFMF	Jason Gibson
Expert member (seafood marketing and fish and invertebrates taxonomy)	Don Tuma
Expert member (hospitality)	Glenn Austin
Expert member (fish taxonomy)	Gordon Yearsley
Expert member (seafood processors)	Anthony Mercer
CSIRO fish taxonomy representative	Karen Gowlett-Holmes
Australian seafood industry appointee	Renee Vajtauer
Recreational fishing appointee	Russell Conway
Expert member (seafood imports)	Mark Boulter
Expert member (major supermarkets)	Hamish Allen
Expert member (seafood marketing)	Anni Conn
Department of Agriculture representative	Lisa McKenzie
Expert member (Master Fish Merchants' Association of Australia representative)	Kerry Strangas

OBSERVERS AND NON-VOTING MEMBERS

Standards Development Organisation representative	Dr Patrick Hone
Standards Development Organisation representative	Nicole Stubbing

PROJECT MANAGER AND ADMINISTRATION

Alan Snow	Project Manager
Meaghan Dodd	Co-Investigator

Development of Australian Standard for aquatic plant names

Work has commenced on the development of Australian Standard for aquatic plant names. The first aquatic plant names workshop was scheduled for 6 September 2018.

Plants from marine and freshwater environments are covered by this standard, irrespective of the country of origin.





Information and communications technology

Aligning information management systems for the future

During 2018–19, FRDC is continuing to leverage the benefits of Microsoft 365 Cloud Services by implementing Microsoft Teams software to enhance communication and collaboration, driving forward efficient and effective outcomes.

Further efforts were put into the continual improvements of the information and communications technology (ICT) systems to:

- streamline some of the manual steps in the project management life cycle,
- expand capability to store project-related information,
- drive efficient business processes.

FRDC digital strategy

In line with the ICT Strategy, a new digital strategy was developed to determine effective positioning of digital resources to:

- optimise use and data sharing,
- address key challenges,
- aid in securing the opportunities available to FRDC, and the fishing and aquaculture community.

Data management

The ICT Team also focused on the delivery of the backend system capability to manage various data driven websites, such as the following.

Status of Australian Fish Stocks (SAFS)

In collaboration with multiple levels of stakeholders across eight jurisdictions, the ICT Team managed the complex data collection process for the SAFS 2018–19 project. This included independent status assessments of 120 wild-caught Australian species and the development of the SAFS cross-platform app. The data is also dynamically used in other websites such as the www.fishfiles.com.au

Fish and Chips Awards

The ICT Team implemented a new management portal for the Fish and Chips Awards website. The comprehensive portal allowed the communications team a central source to:

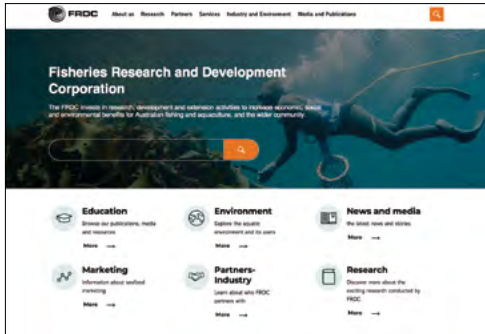
- manage a streamlined and more user-friendly voting process that was redesigned to minimise invalid votes,
- undertake quality assurance of data on-the-go,
- rapidly report on voting progress to the public,
- monitor votes through a comprehensively business intelligence analytics.



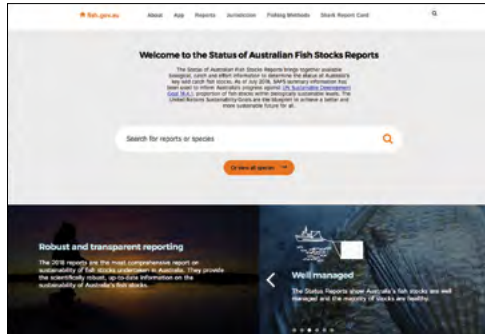
Web services

FRDC continues to operate five key website platforms (frdc.com.au; fish.gov.au; fishfiles.com.au; fishnames.com.au and seafoodstandards.com.au), in addition to a number of project-related sites. To lower the management cost and future proof these websites, FRDC has initiated a process to integrate these various websites into one controlled environment.

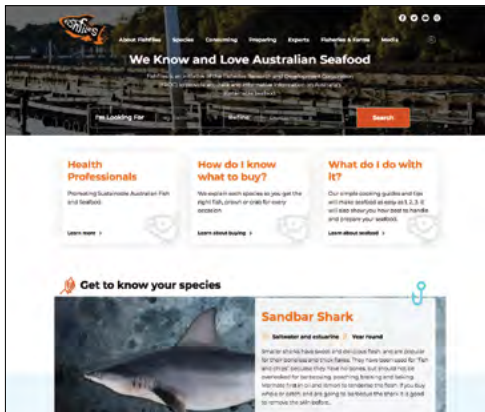
FRDC.COM.AU



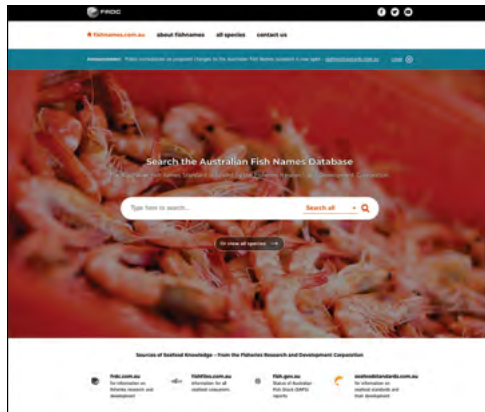
FISH.GOV.AU



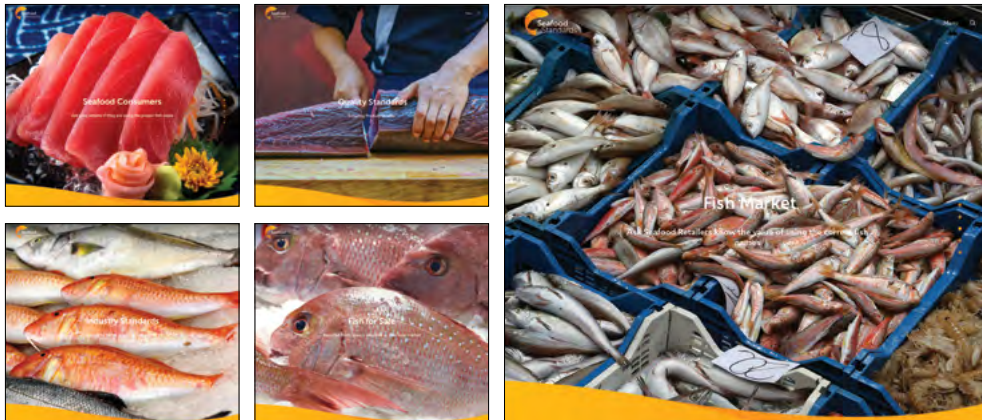
FISHFILES.COM.AU



FISHNAMES.COM.AU



SEAFOODSTANDARDS.COM.AU OPENING SCREENS



Corporate communications

During the year the FRDC communications team has evaluated and recalibrated the organisation's communications activities. While the mix of activities has remained largely the same—media releases, digital communications, *FISH* magazine, communications collateral and events—the way content is shaped has been shifted to emphasise FRDC as a research organisation, cementing its role to inform the messages released by other organisations such as Seafood Industry Australia. To this end, the FRDC communications team has coordinated regular meetings with communications staff from industry organisations around the country to understand the issues being faced, and how FRDC can supply the most up-to-date, robust information based on science.

In addition, the FRDC communications team has aimed to be more proactive versus reactive in its approach, sending out regular media releases on research completed and approved. This serves to both get greater recognition for the research invested in through FRDC, but also to build a more prominent for the organisation with the media through concerted consistent communication and emphasis of the FRDC brand as a research-based organisation.

During the year, the FRDC attended and presented at industry events across the country to ensure stakeholders had the opportunity to have their say. This was further supported by a greater emphasis placed on mediums that allowed for two-way dialogue, such as face-to-face or via social/digital media and FRDC's *FISH* magazine (see below).

Project communications and extension

The last stakeholder workshop in Adelaide identified the need to further expand the extension activities that FRDC should engage in. This will include directing more resources into the extension of projects that require it. A focus will also be to undertake an analysis and synthesis of important research areas—for example trawl bycatch, safety, gear or energy efficiency—to summarise the key findings/impacts, to be made available as a resource for both FRDC and a broader audience, and identify gaps where further research is required.

FISH magazine

FISH is the leading fisheries research magazine in Australia and has gained widespread recognition for its quality and accuracy. The publication provides the FRDC with a platform for extending knowledge generated from research as well to discuss key policy, practice and management issues that are relevant to fishing and aquaculture stakeholders. The data-driven approach continues to receive positive feedback and underpins that *FISH* (and the FRDC) is well respected and trusted by its readers.

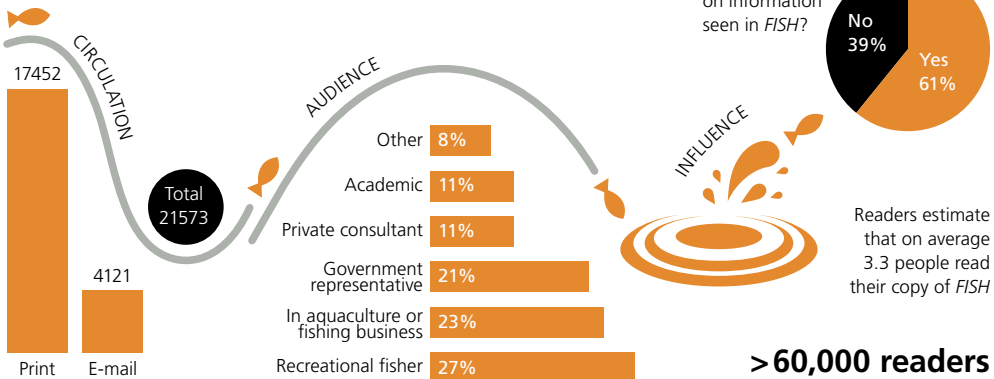




FISH is a major tool for the FRDC to communicate with industry and its broader stakeholders. It provides a way to deliver information on RD&E projects that are underway or have been finalised. Over the past year the *FISH* team has made design changes to the magazine to highlight stories that are explorations of FRDC research. This has been done by allocating a slightly greater word count to research stories, including headshots of researchers and a distinct layout from less research-focused stories.

FISH magazine continues to grow—with both digital and print copies having a total circulation of more than 21,000. The communications team is also exploring the take up of the magazine as a resource in school libraries.

FISH



Digital communications

The internet and associated enabling technologies will continue to be the central point from where FRDC will distribute information.

The FRDC produces a range of digital only communication materials including quarterly stakeholder briefings (<https://www.frdc.com.au/Media-Publications/Stakeholder-briefings>), issues papers and e-mail updates. These materials are e-mailed to subscribers and key stakeholders on the FRDC's customer database.

All FRDC websites continue to be refined to provide better integration as part of FRDC's ICT strategy. Over the past year the FRDC has worked to improve its digital platforms—the FRDC's home, Fishfiles and SAFS websites—and the manner in which the content on each interacts and relates. The curation and collation of online content in relation to particular projects and issues has been a focus and work is ongoing. Project specific sites and pages have been developed, for example the SeSAFE website (sesafe.com.au) which is focusing on safety training for the seafood sectors. Pages addressing particular issues and collating FRDC information on those topics have also been developed during the year. These include issues related to particular fisheries or concerns such as white spot disease which FRDC has played a major role in combating.

A major achievement for the FRDC over the past year was the completion of the latest SAFS reports. Concurrent was ensuring that the latest information is available on the SAFS website (fish.gov.au). In addition, a smartphone app which links to the full reports on the website was launched this year. The SAFS site has been further expanded with information from a major report on the status of many of Australia's sharks and rays now included.





Social media

Social media allows FRDC to interact and engage with consumers by addressing their questions and responding to their concerns. Embracing social media opens up the way FRDC can communicate with consumers and the community more broadly. The FRDC has built a powerful presence with just over 20,000 followers on Facebook and 1000 on Twitter. Across all social media platforms FRDC has now in excess of 38,000 followers. A library of YouTube videos has also been created to cover topics from cooking seafood to fishing and aquaculture practices.

FRDC social media include:

- www.facebook.com/FRDCAustralia,
- twitter.com/FRDCAustralia,
- www.facebook.com/fishfiles,
- www.facebook.com/catchoftheyear,
- [@frdc_au](https://www.instagram.com/frdc_au),
- www.youtube.com/FisheriesResearchAU.



National Carp Control Plan

Communications activities in relation to the NCCP have been a focus for FRDC over the past year. Activities have included a regular progress report in *FISH* magazine as well as provided to stakeholders at workshops and other events, as well as the sending regular media releases to inform the public of both research completed as part of the program and of the more general activities being undertaken by the NCCP team. The NCCP exists in a contested space of complex and controversial research. For this reason, communications activities have been guided by an ethos of adherence to the research results and to maintain both transparency and an agnostic stance in relation to the outcome of the NCCP. For more on the NCCP see the section starting on page 59.





REPORT OF OPERATIONS PART 4:

MANAGEMENT AND ACCOUNTABILITY





Management and accountability

Management and accountability activities focus on continually improving how the FRDC operates and manages its organisation. A large part of the activities undertaken align and respond to legislative and financial requirements. These also align with the corporate governance section starting on page 115.

FRDC strategic planning and reporting documents (comprising RD&E plan, annual operating plan and annual report) were completed and presented within their duly legislated time frames to the Minister for Agriculture and the department. These documents aim to identify the key issues that face the FRDC, and outline strategies to take advantage of opportunities, and to minimise or mitigate against negative risks.

Principal inputs

During 2018–19, there was \$5.41 million or around 15.3 per cent of total FRDC expenditure for management and accountability.

Performance indicators

Since the management and accountability outputs contribute to the planned outcome of the FRDC's R&D programs, they are crucial to the FRDC's effectiveness and efficiency. These outputs are outlined on the following pages.

Performance indicators	Target	Achievement
Projects focus on the FRDC Board's assessment of priority research and development issues.	Ninety-five per cent are a priority.	Achieved. Projects align with strategic priorities set out in AOP and partner plans.
Projects are assessed as meeting high standards/ peer review requirements for improvements in performance and likely adoption.	Ninety-five per cent are a high priority.	Achieved.
Maintain ISO9001:2008 accreditation.	FRDC maintains certification.	Achieved, see page 99.
Submit planning and reporting documents in accordance with legislative and Australian Government requirements and time frames.	One hundred per cent met Government requirements.	Achieved, all documents submitted in accordance with requirements.
Implement best practice governance arrangements to promote transparency, good business performance and unqualified audits.	Achieve unqualified audit result.	Achieved, see audit report pages 131–133.
Demonstrate the benefits of RD&E investments by positive benefit cost analysis results.	Benefit analysis undertaken on one investment area.	Achieved. Average benefit cost analysis results, pages 87–93. See also pages 57, 70, 75, 80 and 85.

Staffing

The FRDC is governed by a board of directors (see pages 119–129) appointed for their expertise and is led by an Managing Director who manages the day-to-day operations of the organisation.

In 2018–19, the FRDC employed 26 people (five staff are part time) across its operations with an average staffing level of 21.5. FRDC's staff are one its most important resources, and are key to the Corporation's ongoing success.



Equal employment opportunity

The FRDC promotes a work environment that is free from discrimination on the basis of race, colour, sex, sexual preference, age, physical or mental disability, marital status, family responsibilities, pregnancy, religion, political opinion, national extraction or social origin, or on the basis that an individual either is, or is not, a member of a union of employees, or of a particular union of employees.

The FRDC has a policy of equal employment opportunity. Merit-based principles are applied in recruitment and promotion to ensure discrimination does not occur.

ALL ONGOING EMPLOYEES CURRENT REPORT PERIOD (2018–19)

State/territory*	Male			Female			Total
	Full time	Part time	Total	Full time	Part time	Total	
Australian Capital Territory	4	–	4	3	–	3	7
Total	4	–	4	3	–	3	7

* There were no on-going employees in New South Wales, the Northern Territory, Queensland, South Australia, Tasmania, Victoria or Western Australia.

ALL NON-ONGOING EMPLOYEES CURRENT REPORT PERIOD (2018–19)

State/territory*	Male			Female			Total
	Full time	Part time	Total	Full time	Part time	Total	
Australian Capital Territory	4	–	4	3	3	6	10
New South Wales	1	–	1	1	1	2	3
South Australia	2	–	2	3	1	4	6
Total	7	–	7	7	7	12	19

* There were no on-going employees in the Northern Territory, Queensland, Tasmania, Victoria or Western Australia.

ALL ONGOING EMPLOYEES PREVIOUS REPORT PERIOD (2017–18)

State/territory*	Male			Female			Total
	Full time	Part time	Total	Full time	Part time	Total	
Australian Capital Territory	4	–	4	3	–	3	7
Total	4	–	4	3	–	3	7

* There were no on-going employees in New South Wales, the Northern Territory, Queensland, South Australia, Tasmania, Victoria or Western Australia.

ALL NON-ONGOING EMPLOYEES PREVIOUS REPORT PERIOD (2017–18)

State/territory*	Male			Female			Total
	Full time	Part time	Total	Full time	Part time	Total	
Australian Capital Territory	2	–	2	2	3	5	7
New South Wales	1	–	1	1	–	2	3
South Australia	1	–	1	2	–	2	3
Total	4	–	4	5	3	8	19

* There were no on-going employees in the Northern Territory, Queensland, Tasmania, Victoria or Western Australia.



Industrial democracy

The FRDC's staff members work as a team in which all contribute freely. This process is strongly reinforced by the FRDC's total quality management philosophy and the attendant emphasis on continual improvement. Staff members are provided with the opportunity at regular meetings to raise issues and discuss options to resolve how they are handled.

Disability and accessibility

The FRDC's employment policies and procedures align with the *Disability Discrimination Act 1992* in the broader context of the National Disability Strategy 2010–2020. The FRDC's recruitment and staff development practices seek to eliminate disadvantage that may be contributed to by disabilities. Consultation with people with a disability and when required, with appropriate specialist organisations, is a component of the FRDC's policies and practices, recognising the effect of a disability differs widely between individuals and that often a little thought makes a big difference in meeting a person's needs.

Final report requirements

Under the *Disability Discrimination Act 1992*, Australian Government agencies are required to ensure information and services are provided in a non-discriminatory accessible manner—the FRDC aims to make all project reports meet these requirements. Where information is not accessible, the FRDC will ensure that it is made available in a suitable format.

Behaviour

Corporate governance practices are evolving rapidly, both in Australia and overseas. The FRDC is proactive in adopting better practices, including those governing ethical behaviour, into its own processes. The FRDC has a code of conduct that is appropriate to its structure and activities. New directors and staff are briefed and sign off agreeing to comply with the code during induction training.

Records management

The National Archives of Australia undertakes an annual assessment (Check-up PLUS) looking at maturity and performance in information and data management. Check-up PLUS is structured to align with the National Archives' Information Management Standard, which was developed to assist Australian Government agencies to create and manage business information effectively.

A total of 160 agencies completed the 2018 Check-up PLUS survey, representing 100 per cent of in-scope agencies who were asked to take part. This survey assesses agency maturity and performance in information and data management, in line with the Digital Continuity 2020 Policy.

	FRDC scores	Rank (out of 160 agencies)	Position
Governance index	3.00	34	Middle third of agencies
Information creation/generation index	5.00	1	Top third of agencies
Interoperability index	3.65	51	Top third of agencies
Storing information digitally index	4.50	21	Top third of agencies
Disposing index	3.29	55	Middle third of agencies
Overall index	3.64	38	Top third of agencies

The FRDC scored an overall maturity score of 3.6 out of 5. This is 0.5 above the Australian Government average of 3.1.





Risk management

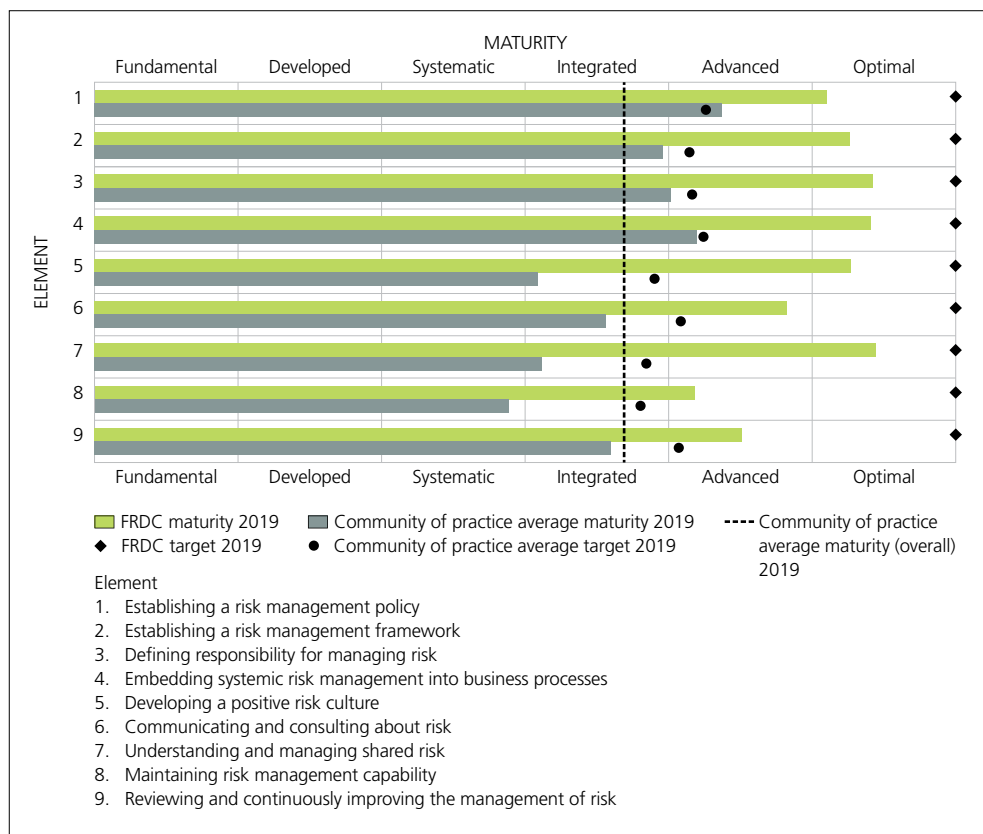
There was no incidence of fraud detected at the FRDC during 2018–19.

Risk management is incorporated into FRDC's activities in accordance with its risk management policy, which is integrated into its quality management system and internal audit program. The risk management policy also incorporates a fraud control framework in accordance with the Fraud Control Guidelines produced by the Attorney-General's Department which seeks to minimise the likelihood and impact of fraud.

The Board reviewed and approved the FRDC risk management framework at its meeting in February 2017. All staff participated in an internal risk workshop on 5 March 2019 which was used to update the FRDC's risk register. Additionally, the Board reviews the highest-ranked strategic risks at every meeting.

The FRDC completed the Comcover Risk Management and Benchmarking Survey—which is conducted annually—and achieved a risk maturity of 'optimal', noting that the average maturity level of all survey participants was 'integrated'. The program measures FRDC's risk management maturity across the nine elements of the Commonwealth Risk Management Policy (the Policy).

FIGURE 5: COMPARISON OF CURRENT AND TARGET MATURITY STATES ACHIEVED ACROSS ELEMENTS 1–9 FOR THE FRDC RELATIVE TO YOUR COMMUNITY OF PRACTICE





Agreements and contracts

Each year the FRDC engages companies, research institutions and government agencies to undertake RD&E activities. The process for applying for funding is outlined on the FRDC's website. Each organisation selected is directly engaged under contract for that project. The FRDC engages each organisation using a contract or consultancy agreement that outlines the requirements and responsibilities associated with undertaking work for the FRDC. This includes obligations around government policy and standards such as privacy, fraud, and work health and safety. A list of all active projects, including projects approved by the FRDC Board is available on the website—www.frdc.com.au

Industry contributions

At the core of FRDC's finances is maintaining solid partnerships with those contributing stakeholders, namely the state and territory fisheries agencies and individual industry sectors. The FRDC has currently 12 Industry Partnership Agreements (IPAs). These partnerships offer both parties a number of advantages. For industry, they provide more involvement in determining and undertaking RD&E. For the FRDC they provide a more certain flow of industry funds and ultimately a greater understanding of the fishing industry.

An overview of state and territory contributions against the maximum matchable contribution is shown in Table 8: Contributions, maximum matchable contributions by the Australian Government and returns on investment (page iii).

FRDC also holds a share in Australian Seafood Co-products (ASCo) which is a company developed to look at alternate uses for fish processing waste.

Consultancy services and selection of suppliers

During the year, the FRDC engaged 12 consultancies which were valued at \$10,000 or more (see the tables that follow).

When selecting suppliers of goods and services, the FRDC follows its procurement policy procedure which seeks to achieve value for money and to deal fairly and impartially with its suppliers. Obtaining value for money does not necessarily require the cheapest supplier to be selected. Other factors considered are urgency, quality, ethical conduct of the supplier, and whole-of-life costs.

The FRDC policies and procedures align with principles contained in the Commonwealth Procurement Rules and are available from the FRDC website.

CONSULTANCY SERVICES

Consultancy	Description	Amount GST inclusive
IT Payroll Solutions	Delivery of quality management advice	\$44,759.55
UBranding Pty Ltd	Communications and media services	\$25,261.78
PricewaterhouseCoopers	Internal auditors	\$22,275.00
Forest Hill Consulting	Performance review/partner agreement review	\$60,002.38
Be Sustained Pty Ltd	Leadership development	\$38,644.67
Contiguous	Cost allocation model	\$15,000.00
Ashurst Lawyers	Legal advisory services	\$49,481.58
XSP Consulting	IT provider	\$23,400.00
Dot Zone	IT provider	\$60,190.81
Versecorp Pty Ltd	IT provider	\$29,490.66





CONSULTANCY SERVICES AS REQUIRED UNDER SECTION 311A OF THE *COMMONWEALTH ELECTORAL ACT 1918*

Consultancy	Description	Amount GST inclusive
Making Data Easy	Stakeholder data analytics and e-mail services	\$108,329.22
Intuitive Solutions	Market research	\$96,650.00

The FRDC has met Office of Legal Services Coordination obligations and submitted the signed Annual Compliance Certificate and Legal Services Directions Expenditure report to the Attorney-General's Department on 27 July 2018.

Ministerial directions

The PIRD Act provides that the portfolio Minister may give direction to the Corporation with respect to the performance of its functions and the exercise of its powers. In addition, the Finance Minister, under the PGPA Act, may notify the Board of any general Australian Government policies that apply to the FRDC.

In 2018–19, the FRDC received no ministerial directions or notifications.

Government policy

The FRDC complied with all relevant Australian Government policy requirements:

- Australian Government Cost Recovery Policy,
- Australian Government Commonwealth Procurement Rules,
- Australian Government Commonwealth Property Management Framework,
- Commonwealth Fraud Control Guidelines 2011,
- Foreign Exchange (Forex) Risk Management,
- National Code of Practice for the Construction Industry and the Commonwealth's Implementation Guidelines.

See the compliance index starting on page 188.

Protective Security Policy Framework

The FRDC wrote to the Minister on 27 July 2018 to report that the FRDC was compliant with the framework.

The FRDC has worked consistently during the year to align FRDC practices with the Protective Security Policy Framework. It has implemented a number of physical and system changes to meet the requirements of the framework, which include installing both physical security and information technology improvements. The FRDC continues to work on improving its security policies and procedures with regards to security risk management.

Work health and safety

The FRDC is committed to providing a safe and healthy environment for all staff, contractors and visitors to its workplace. The Corporation recognises that its people are its greatest asset and its most valuable resource. The FRDC's ultimate goal is that its workplace is free of injury, illness and disease. The FRDC complies with its legislative obligations under the *Work Health and Safety Act 2011* (WHS Act) and takes all reasonably practicable steps to ensure a safe working environment. Regular maintenance of equipment and testing of electrical cables is also undertaken.





The FRDC's Workplace Health and Safety Policy and procedure has been developed in accordance with the requirements under the WHS Act in consultation with FRDC's employees. The FRDC also recognises that continued reviewing and improvement of its health and safety management system makes good sense legally, morally and from a business perspective.

PART 4 OF THE WORK HEALTH AND SAFETY ACT 2011

Statistics of any notifiable incidents of which the entity becomes aware during the year that arose out of the conduct of businesses or undertakings by the entity.	<ul style="list-style-type: none">■ No injuries occurred on FRDC premises during 2018–19.
Initiatives taken during the year to ensure the health, safety and welfare of workers who carry out work for the entity.	<ul style="list-style-type: none">■ Consultation of WHS issues includes all staff.■ Agreed health and safety management arrangements policy and procedures.
Health and safety outcomes (including the impact on injury rates of workers) achieved as a result of initiatives mentioned under paragraph (a) or previous initiatives.	<ul style="list-style-type: none">■ Health and safety awareness and incidents are a standing item for all staff meetings.■ Occupational rehabilitation physiotherapist provides ergonomic assessments to all new staff in their immediate working environment, and when requested.■ Staff provided with access to influenza vaccinations.■ Workplace safety training.■ Annual fire safety and warden training, and six-monthly checks of fire safety equipment.■ Annual testing and tagging of electrical appliances.■ Qualified first aid officer and fire warden.■ Assessment of risks in line with the risk framework annual review.
Investigations conducted during the year that relate to businesses or undertakings conducted by the entity, including details of notices given to the entity during the year under part 10 of the Act.	<ul style="list-style-type: none">■ Increased awareness of roles and responsibilities in WHS including responsibilities of managers.■ No requests were received from staff and no undertakings were given by the FRDC.■ No directions or notices were given to the FRDC.

Notifiable incidents	2014–15	2015–16	2016–17	2017–18	2018–19
Deaths	0	0	0	0	0
Dangerous occurrences	0	0	0	0	0
Serious personal injury	0	0	0	0	0
Incapacity	0	0	0	0	0
Total	0	0	0	0	0





Comcare Australia is responsible for worker's compensation insurance coverage within the FRDC. The insurance premiums are levied each year based on the level of salaries and wages costs and experience in claims made by employees.

Judicial reviews and administrative tribunals

There were no judicial or administrative tribunal decisions that had a significant effect on the operations of the FRDC in 2018–19.

Freedom of information

During 2018–19, the FRDC received four requests pursuant to the *Freedom of Information Act 1982* (FOI Act). The FRDC is required to comply with the FOI Act.

FOI03092018	10 October 2018	The applicant requested reports by organisations visited by the National Carp Control Plan (NCCP).	A report is publicly available.
FOI06092018	10 October 2018	The applicant requested systematic and quantitative risk assessment process conclusions from NCCP workshop processes.	Once work has concluded, it will be made publicly available.
FOI17042018	15 August 2018	The applicant requested a transcript of a question and answer session for Goolwa South Australia Lecture.	One transcript released in full, with deletion of irrelevant material.
FOI11052018	17 July 2018	The applicant requested a list of overseas organisations consulted by the NCCP.	One document released with reference to the organisations.

In many cases it may not be necessary to request the information under the FOI Act—the FRDC may simply provide it when asked. At all times, however, individuals have the option of applying under the FOI Act.

More information on freedom of information see Appendix E on page 181 or the FRDC website to view the FOI Disclosure Log <https://www.frdc.com.au/About/Freedom-of-information/Disclosure-Log>.

Energy efficiency

The Commonwealth Government has established energy efficiency targets in its document *Energy Efficiency in Government Operations Policy* which seek to improve energy efficiency in relation to vehicles, equipment and building design.

The FRDC adheres to this policy. It is a minority tenant occupying part of an office building and does not own motor vehicles or large equipment. Prudent management of power consumption is followed within the FRDC's premises. For example, energy efficient lighting has been installed and timer switches have been placed in offices to reduce the time lights are left on.





REPORT OF OPERATIONS PART 5: CORPORATE GOVERNANCE







Corporate governance

Governance refers to processes by which organisations are directed and controlled—including, characteristics such as authority, accountability, stewardship and leadership. Corporate governance is concerned with structures and processes for decision making, and with controls and behaviour within organisations that support effective accountability for performance outcomes.

The FRDC's general governance arrangements are established by legislation and government policies and reporting requirements. In addition to the requirements of the PIRD Act, which includes an annual operational plan, a research and development plan and an annual report, the Corporation also operates under the provisions of the PGPA Act which applies high standards of accountability for statutory authorities.

The Board and staff are strongly committed to ensuring good corporate governance. In doing so, the focus is on policies, structures, processes, controls, behaviours and transparency. To support the FRDC's high level of commitment to these principles, a full list of FRDC policies and copies of the financial statements are available from the FRDC website—www.frdc.com.au

The Board

The Board comprises a number of directors who are appointed in accordance with sections 17 and 77 of the PIRD Act. Directors are selected on the basis of their expertise in a variety of fields including commodity production and processing, conservation, science, economics, and business and financial management. All directors, except the Managing Director, are appointed for three years on a part-time basis.

The Minister for Agriculture and Water Resources, the Hon. David Littleproud MP, appointed five new directors to the FRDC Board in October 2018. Two directors of the previous Board were reappointed. This expands the Board from eight to nine members.

At the commencement of a term all directors undergo a formal induction including a workshop run by the Australian Institute of Company Directors. In addition, to ensure the Board has a strong understanding and connection to the fishing industry and its stakeholders, it meets outside Canberra three times a year in regions key to the fishing industry. This provides directors with the opportunity to discuss issues with relevant industry stakeholders, as well as see first hand, the fishing industry in action.

The Board plays a fundamental role in guiding the FRDC and provides management with strong leadership. It oversees the FRDC's corporate governance, ensuring the FRDC has a good framework of policies and procedures, playing a strong role in the approval and oversight of financial matters including the approval of new projects.

Details of the directors who held office during the year are shown on the following pages.





Directors' biographies

The Hon. Ron Boswell: Chair

Appointed as Chair 1 September 2016.

Ron Boswell represented the National Party in the Australian Senate for Queensland from 1983 to 2014 and led the party in the Senate from 1990 to 2007. In 2008 he became Father of the Senate.

Over the course of his political career Ron was the leader of the Nationals in the Senate from 10 April 1990 to 3 December 2007, holding many positions in the Coalition shadow ministry including Shadow Minister for Regional Development and External Territories (September 1988 to April 1990), Shadow Minister for Northern Australia and External Territories (April 1993 to May 1994) and Shadow Minister for Consumer Affairs (May 1994 to December 1994). Boswell was appointed Parliamentary Secretary to the Minister for Transport and Regional Services in July 1999 but left the position in October 2003.

Ron is a strong advocate for Australia's primary producers and improving their productivity and profitability based on the best knowledge available.

Dr Kate Brooks: Director

Appointed Director from 10 October 2018.

Kate Brooks is an established consulting sociologist, working almost exclusively in the fishing and seafood industry and related areas, since 2007. She is an experienced executive and non-executive director, and an internationally recognised social researcher in the area of marine and natural resource management and reputational risk. For over 20 years she has collaborated with clients across Australia, New Zealand, Canada, Dubai, Europe and the United Kingdom. Her application of intellectual rigour and curiosity to planning and implementation is focused on delivering strategically sustainable development and growth.

Kate has worked with the seafood industry since 2000, when she joined the Department of Agriculture, Fisheries and Forestry, subsequent to a career in marketing and corporate affairs. She holds a Masters in social impact assessment, and a PhD in social capital, both with the focus on supporting and developing community and industry. In that time, she has played a key role in bringing the social dimension to triple bottom line approaches in the management of fisheries and the seafood industry as a whole.





Professor Colin Buxton: Deputy Chair

Director from 1 September 2015 to 31 August 2018, reappointed 10 October 2018.

Colin Buxton is an independent director and principal consultant at Colin Buxton & Associates. In 2014 he retired as Director of the Fisheries, Aquaculture and Coasts Centre at the Institute for Marine and Antarctic Studies at the University of Tasmania (UTAS), where he is now Adjunct Professor. Colin has held senior management positions at the Port Elizabeth Museum, Rhodes University and the Australian Maritime College, as well as being the inaugural director of the Tasmanian Aquaculture and Fisheries Institute at UTAS. A fellow of the Australian Institute of Company Directors, he has served on the board of several organisations including the Aquaculture, Finfish and Seafood CRCs, Southern Rock Lobster Ltd (Chair) and the Tasmanian Environment Protection Authority. He is also chair of the National Fisheries Advisory Council and serves on the Tasmanian Marine Farming Review Panel. Colin has a broad knowledge and experience in coastal marine environments, fisheries and aquaculture and is a frequent consultant and advisor to government and industry in Australia, Africa and the United States. A graduate of the University of Cape Town (Masters) and Rhodes University (PhD), he is internationally recognised and has published widely on his work on the life histories and effects of exploitation on reef fishes. Much of his research has been focused on understanding the role of Marine Protected Areas as a conservation and fisheries management tool.

Dr Saranne Cooke: Director

Appointed Director from 10 October 2018.

Saranne Cooke is a professional director and chair with experience on a variety of boards across the education, health, sport, superannuation and not-for-profit sectors. Saranne is a Charles Sturt University Council member, Racing NSW Board member, HESTA Trustee Board member, director of the Western NSW Primary Health Network, director of Leading Age Services Australia, and the inaugural chair of the Western Region NSW Committee of the Australian Institute of Company Directors.

Prior to her career as a professional director, Saranne held a number of senior roles within energy, banking, education and manufacturing industries. Saranne holds a Bachelor of Commerce, Master of Business (Marketing) and a Master of Commercial Law. She is a graduate member of the Australian Institute of Company Directors, a Fellow Certified Practising Accountant, a fellow of the Australian Marketing Institute, a Certified Practising Marketer and a member of the Golden Key International Honour Society. Saranne has recently submitted a PhD in board governance across ASX 200 companies.





Ms Katina (Katie) Hodson-Thomas: Director

Appointed Director from 10 October 2018.

Katie Hodson-Thomas represented the Western Australian metropolitan electorate of Carine from 1996–2008. During her time in parliament she served as a Parliamentary Secretary to the Minister for Health; held shadow portfolio responsibilities for transport, tourism, small business, environment, and road safety; and was deputy chair of the Community Development and Justice Standing Committee. After retiring from parliament, she joined several membership-based industry associations holding senior positions. Prior to joining FTI Consulting in 2012 she ran her own consultancy practice specialising in government relations. Katie was elected as the first female independent chair of the Western Australian Fishing Industry Council (WAFIC) at its 2017 annual general meeting, is a member of the Western Australian Gaming and Wagering Commission and has served as a Justice of the Peace since 1997.

Mr Mark King: Director

Appointed Director from 10 October 2018.

Mark King is a third generation dried fruit grower and has a 100-hectare family farm growing sultanas and currants at Pomona, which is irrigated from the Darling River. Pomona is located in the far south west corner of New South Wales, is 50 kilometres from South Australia and close to the Victorian border. Mark grew up on the Darling River and has witnessed the many changes to river health and irrigation demands. He is a former councillor and deputy mayor of the Wentworth Shire Council and was a former chair of the lower Murray–Darling Catchment Management Authority from 2000–12. During this time he had undertaken many projects that explored river and fish health in the Darling and Murray Rivers. Mark is now the current chair of Dried Fruits Australia which is the peak industry body, and has held this position for nine years. He is also a current board member of National Farmers' Federation. Mark has had experience with industry and a range of government boards and authorities. Mark ventured into aquaculture in 2012 growing Murray Cod, Silver Perch and Golden Perch within a dam system. With aquaculture growing in the surrounding area (Sunraysia), Mark sees this as a sustainable way to meet the increased demand for fish, without affecting native fish numbers.





Dr Lesley MacLeod: Director

Director from 1 September 2015 to 31 August 2018, reappointed 10 October 2018.

Lesley MacLeod is the former CEO of Dairy Innovation Australia and a former board member of Murray Dairy, Barley Australia and MBQIP Ltd. She was educated in Edinburgh, Scotland and has a first class honours degree in marine biology and PhD from Heriot-Watt University. Following a 12-year research career in Edinburgh and Adelaide focusing on grains research Lesley moved into industry in Victoria where she gained over 20 years' experience in senior agribusiness management for Australian and multinational companies. Lesley has a focus on research management, innovation and commercialisation and has established a number of national R&D programs and not-for-profit companies. She has a Diploma in Business Management and is a graduate of the Australian Institute of Company Directors.

Mr John Lloyd: Director

Appointed Director from 10 October 2018.

John Lloyd is the former chief executive of Horticulture Innovation Australia (formerly Horticulture Australia Limited) leading both organisations over a nine-year period of significant growth, change and transition. He is a current director of Agribusiness Australia and Menari Business Solutions Pty Ltd. Recently relocating to Orange, New South Wales, he and his family run a small agricultural enterprise at Borenore. John's career has spanned most parts of the Australian agribusiness sector with senior leadership positions including managing director Case IH/New Holland ANZ, general manager Commercial Incitec Pivot, and general manager merchandise Wesfarmers Dalgety. More recently John has led a significant restructure of the research corporation for the \$10 billion horticulture sector, creating new funding models that have catered for its longer-term strategic issues as well as accessing broader and non-traditional sources of investment. These issues include Asian export markets, biosecurity, health and nutrition, pollination, major pests, intensive farming systems and urban greening. John has a Bachelor of Applied Science from the University of New South Wales as well as an MBA from Macquarie University.





Dr Patrick Hone: Managing Director

Appointed Managing Director from 21 April 2005.

Patrick Hone is Managing Director of the FRDC and a member of the National Marine Science Committee. Patrick has extensive knowledge of all sectors of the fishing and aquaculture industries. He has more than 20 years working for the FRDC and has played a key role in the planning, management and funding of fishing and aquaculture related research, development and extension in Australia. In recent years Patrick has become one of Australia's leading spokespeople on the role of marine science.

Patrick has a PhD from Adelaide University, and previously worked for the South Australian Research and Development Institute (SARDI) on a wide range of aquaculture research for Southern Bluefin Tuna, Pacific Oysters, mussels, Yellowtail Kingfish and abalone.

Independent committee member

Christine Feldmanis—Non-executive director

Appointed as an independent member of the Finance, Audit and Risk Management Committee September 2014. Retired 21 November 2018.

Christine Feldmanis has more than 30 years' experience in the financial arena, in both government and private sectors. She has extensive experience in investment management, finance, accounting and risk management, legal and regulatory compliance, governance and business building in both the listed and unlisted financial product markets.

Christine formerly held senior executive and C-suite positions with firms including Deloitte, Elders Finance, Bankers Trust, NSW TCorp and Treasury Group Ltd. She currently works as a professional non-executive director and is a director and chair of the Audit and Risk Committees of Perpetual Equity Investment Company Ltd, Delta Electricity and Netball NSW. She is also a director of Uniting Financial Service and Bell Asset Management Ltd; an independent member of the Audit and Risk Committees for a number of New South Wales government agencies and an independent compliance committee member for Australian financial services licensees in the boutique funds management sector.





Board directors finishing 31 August 2018

Ms Renata Brooks: Deputy Chair

**Director from 1 September 2009 to 31 August 2018
(with a short break in appointment from 1–11 September 2012).**

Renata Brooks is an independent director and consultant. Previously she was Deputy Director General, Land and Natural Resources in the NSW Department of Primary Industries, with responsibility for the New South Wales crown land estate, natural resource policy and programs, and coordination of primary industry policy. She has held senior executive positions within the NSW Department of Primary Industries in the areas of science and research, agriculture, fisheries, biosecurity, compliance and mine safety. She holds a Bachelor of Veterinary Science from the University of Sydney with first class honours, a Graduate Certificate in Bioethics from the University of Technology Sydney, and is a Fellow of the Australian Institute of Company Directors.

Mr John Harrison: Director

Director from 1 September 2015 to 31 August 2018.

John Harrison was appointed as chief executive officer (CEO) of the Western Australian Fishing Industry Council in November 2013. In August 2017 he was appointed to the Board of the WA Marine Science Institution. Previously he was CEO of the Western Rock Lobster Council and executive officer of the Professional Fishermen's Association in New South Wales. He has been a member of many committees including estuary floodplain management; NSW Seafood Industry Advisory Council; and NSW, Northern Territory, Commonwealth and Western Australian Fisheries Research Advisory Bodies. He was CEO of Recfish Australia, participating in the National Oceans Advisory Group, National Shark Recovery Group, Co-management of Fisheries Task Force, and the Aquatic Animal Working Group under the Australian Animal Welfare Strategy. He was also executive director of the Amateur Fishermen's Association of the Northern Territory from 1998 to April 2005.





Professor Daryl McPhee: Director

Director from 1 September 2015 to 31 August 2018.

Daryl McPhee is Head of Higher Degree Research at Bond University. His core expertise is in fisheries and marine ecology. He has published over 90 reports and publications include *Fisheries Management in Australia* (Federation Press) and the *Environmental History and Ecology of Moreton Bay* (CSIRO Publishing). Daryl has undertaken consulting projects on a range of projects including the impacts of dredging and spoil disposal, liquefied natural gas plants and pipelines, sand extraction, bauxite mining, port developments, desalination, thermal discharge from power generation, and fisheries and marine aquaculture. He is internationally recognised as a leader in fisheries management research and in terms of recreational fishing, is one of the most well-published researchers in Australia. Much of his recent work has focused on understanding and mitigating the risk of unprovoked shark bites on people, and the environmental history of Australian coastal areas.

Mr John Susman: Director

Director from 1 September 2015 to 31 August 2018.

John Susman is Managing Director and owner of FISHTALES, a seafood industry marketing consultancy. While completing a Bachelor of Arts (commerce) and his postgraduate studies, John ventured into restaurants at a crucial stage in the evolution of the Australian hospitality industry. Cutting his teeth alongside a cadre of legendary chefs provided him with a thorough knowledge and passion for what it takes to prepare, cook and present great food. He set up the legendary Flying Squid Bothers, an integrated scallop fishing business which became Australia's first water-to-plate operation. He is consistently regarded as a foremost authority on seafood, not only in Australia, but globally, John is a regular judge in consumer and industry awards and regularly appears on television, radio and print media to lend his expertise and views on sustainability and seafood. In 2004, John was admitted in to the Fairfax Australian Food Industry Hall of Fame, for his services to the Australian food industry and in 2012 *Delicious* magazine also awarded him Outstanding Provedore of the Year.



Attendance at Board meetings held during 2018–19

The tables below and on the following page show attendance at Board and committee meetings held during the year. The Chair approved all absences from Board meetings in accordance with section 71(2) of the PIRD Act.

TABLE 15: ATTENDANCE BY DIRECTORS, COMPANY SECRETARY AND SECRETARIAT AT BOARD MEETINGS

Date	14/08/ 2018	20/11/ 2018	11/12/ 2018	26/02/ 2019	17/04/ 2019	12/06/ 2019
The Hon. Ron Boswell (Chair)	Yes	Yes	Yes	Yes	Yes	Yes
Dr Patrick Hone (Managing Director)	Yes	Yes	Yes	Yes	Yes	Yes
Dr Kate Brooks	n/a	Yes	Yes	Yes	No	Yes
Professor Colin Buxton (Deputy Chair)	Yes	Yes	Yes	Yes	Yes	No
Dr Saranne Cooke	n/a	Yes	Yes	Yes	Yes	Yes
Ms Katina (Katie) Hodson-Thomas	n/a	Yes	Yes	Yes	Yes	Yes
Mr Mark King	n/a	Yes	Yes	Yes	Yes	Yes
Mr John Lloyd	n/a	Yes	Yes	Yes	Yes	Yes
Dr Lesley MacLeod	Yes	Yes	Yes	Yes	Yes	Yes
Ms Renata Brooks (Deputy Chair)	Yes	n/a	n/a	n/a	n/a	n/a
Mr John Harrison	Yes	n/a	n/a	n/a	n/a	n/a
Associate Professor Daryl McPhee	Attended 16/08	n/a	n/a	n/a	n/a	n/a
Mr John Susman	Yes	n/a	n/a	n/a	n/a	n/a
Mr John Wilson (Company Secretary)	Yes	Yes	Yes	Yes	Yes	Yes
Cheryl Cole (Secretariat)	Yes	Yes	Yes	Yes	Yes	Yes

n/a: Signifies the director was not eligible to attend the meeting (either they had not yet been appointed or their tenure had ended).



Board committees

The Board had two committees and one working group operating during the year.

The Finance, Audit and Risk Management Committee comprises at least two non-executive directors. It provides a forum for the effective communication between the Board and the external and internal auditors. It also oversees the FRDC Risk Management Framework.

The People and Culture Committee was established as a result of a recommendation by Forest Hill Consulting after they conducted an independent performance review of the FRDC. This Committee considers succession planning for FRDC's senior management.

The Investment Mechanisms Working Group was established to look at the future investment strategy and planning for the FRDC.

TABLE 16: ATTENDANCE BY DIRECTORS, INDEPENDENT MEMBER, OBSERVER AND COMPANY SECRETARY AT FINANCE, AUDIT AND RISK MANAGEMENT COMMITTEE MEETINGS

Date	14/08/ 2018	11/12/ 2018	08/02/ 2019	06/03/ 2019	07/05/ 2019
Dr Saranne Cooke (Member)	n/a	Yes	Yes	Yes	Yes
Mr John Lloyd (Member)	n/a	Yes	Yes	Yes	Yes
Ms Renata Brooks (Committee Chair, retired 31 August 2018)	Yes	n/a	n/a	n/a	n/a
Professor Colin Buxton (Member)	Yes	n/a	n/a	n/a	n/a
Dr Lesley MacLeod (Committee Chair, appointed 10 October 2018)	Yes	Yes	Yes	Yes	Yes
Ms Christine Feldmanis (Independent Member, retired 21 November 2018)	Yes	n/a	n/a	n/a	n/a
Dr Patrick Hone (Observer)	Yes	Yes	Yes	Yes (late arrival)	Yes
Mr John Wilson (Company Secretary)	Yes	Yes	Yes	Yes	Yes

n/a: Signifies the Committee Member was not eligible to attend the meeting (either they had not yet been appointed or their tenure had ended).

TABLE 17: ATTENDANCE BY DIRECTORS AT THE PEOPLE AND CULTURE COMMITTEE

Date	07/12/ 2018	03/06/ 2019
Mr Mark King (Committee Chair)	Yes	Yes
Ms Katina (Katie) Hodson-Thomas (Member)	Yes	Yes
The Hon. Ron Boswell (Member)	Yes	Yes
Dr Patrick Hone (Observer)	Yes	Yes

TABLE 18: ATTENDANCE BY DIRECTORS AT THE INVESTMENT MECHANISMS WORKING GROUP

Date	07/02/ 2019	15/03/ 2019	13/05/ 2019
Mr John Lloyd (Chair)	Yes	Yes	Yes
Dr Kate Brooks (Member)	Yes	Yes	Yes
Professor Colin Buxton (Member)	Yes	Yes	Yes
Dr Patrick Hone (Member)	Yes	Yes	Yes



Record of meetings

Minutes of each meeting are kept and agreed to by the Board. The Managing Director prepares a letter to the Minister on behalf of the Chair after Board meetings, highlighting significant events and items. The same occurs if a significant event occurs between Board meetings.

Directors' interests and related entity transactions

The FRDC's policy on directors' interests, complies with section 27 and 29 and Rule 13–16B of the PGPA Act. The policy centres on the principle that a director must disclose an interest whenever he/she considers there is a potential conflict of interests.

A standing notice (register) about directors' interests is updated at each Board meeting. All declarations of interests, and their consideration by the Board, are recorded in the minutes.

Importantly, where the director has declared a 'material personal interest' in a matter that relates to the affairs of the FRDC, in addition to the duty of disclosing that interest, the director must not be present while the Board is discussing that matter and, importantly, must not vote on the matter unless one of a number of specific exceptions applies.

Indemnities and insurance premiums for officers

The Corporation holds directors' and officers' liability insurance cover through Comcover. During the year, no indemnity-related claims were made.

When appropriate, the FRDC may take out insurance policies to mitigate insurable risk.

Remuneration policy

Remuneration of non-executive directors is determined by the Remuneration Tribunal.

Remuneration of the Managing Director and staff is determined by an FRDC policy set by the Board. The amount of individual remuneration of the Managing Director and staff is based on advice by Mercer Human Resources Consulting Pty Ltd. The amount is also influenced by performance measured against individual performance agreements and by the size of the program support component within the total FRDC budget, from which salaries are paid.

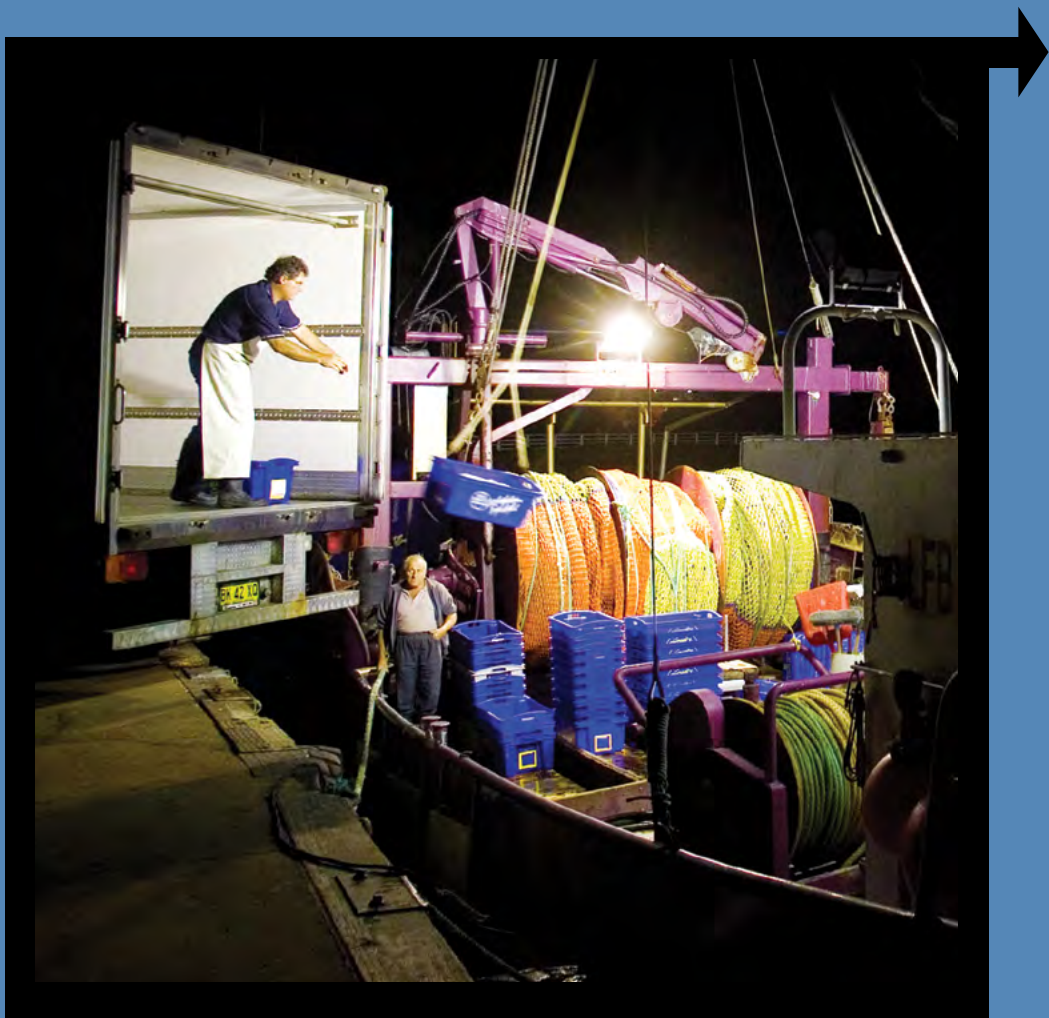
PIRD ACT REQUIREMENTS

Year	2017–18	2018–19	2019–20	2020–21
Remuneration and allowances to non-executive directors and independent committee members	\$306,254	\$409,000	\$422,000	\$435,000
Selection Committee expenses and liabilities	\$37,488	\$10,000	–	\$60,000

Liabilities to staff

The FRDC provides for liabilities to its staff by ensuring its financial assets (cash, receivables and investments) are always greater than its employee provisions. Compliance with this policy is evidenced in the Statement of Financial Position in the Corporation's monthly financial statements.





2018–19 AUDITOR-GENERAL'S REPORT





INDEPENDENT AUDITOR'S REPORT

To the Minister for Agriculture

Opinion

In my opinion, the financial statements of the Fisheries Research and Development Corporation ('the Entity') for the year ended 30 June 2019:

- (a) comply with Australian Accounting Standards – Reduced Disclosure Requirements and the *Public Governance, Performance and Accountability (Financial Reporting) Rule 2015*; and
- (b) present fairly the financial position of the Entity as at 30 June 2019 and its financial performance and cash flows for the year then ended.

The financial statements of the Entity, which I have audited, comprise the following statements as at 30 June 2019 and for the year then ended:

- Statement by the Accountable Authority (Chair and Chair Finance, Audit and Risk Management Committee), Managing Director, and Chief Financial Officer;
- Statement of Comprehensive Income;
- Statement of Financial Position;
- Statement of Changes in Equity;
- Cash Flow Statement; and
- Notes to the financial statements.

Basis for opinion

I conducted my audit in accordance with the Australian National Audit Office Auditing Standards, which incorporate the Australian Auditing Standards. My responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Financial Statements* section of my report. I am independent of the Entity in accordance with the relevant ethical requirements for financial statement audits conducted by the Auditor-General and his delegates. These include the relevant independence requirements of the Accounting Professional and Ethical Standards Board's APES 110 *Code of Ethics for Professional Accountants* (the Code) to the extent that they are not in conflict with the *Auditor-General Act 1997*. I have also fulfilled my other responsibilities in accordance with the Code. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

Accountable Authority's responsibility for the financial statements

As the Accountable Authority of the Entity, the Directors are responsible under the *Public Governance, Performance and Accountability Act 2013* (the Act) for the preparation and fair presentation of annual financial statements that comply with Australian Accounting Standards – Reduced Disclosure Requirements and the rules made under the Act. The Directors are also responsible for such internal control as the Directors determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Directors are responsible for assessing the ability of the Entity to continue as a going concern, taking into account whether the Entity's operations will cease as a result of an administrative restructure or for any other reason. The Directors are also responsible for disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the assessment indicates that it is not appropriate.

Auditor's responsibilities for the audit of the financial statements

My objective is to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes my opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with the Australian National Audit Office Auditing Standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with the Australian National Audit Office Auditing Standards, I exercise professional judgement and maintain professional scepticism throughout the audit. I also:

- identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control;
- obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Entity's internal control;
- evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the Accountable Authority;
- conclude on the appropriateness of the Accountable Authority's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Entity's ability to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify my opinion. My conclusions are based on the audit evidence obtained up to the date of my auditor's report. However, future events or conditions may cause the Entity to cease to continue as a going concern; and
- evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

I communicate with the Accountable Authority regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I identify during my audit.

Australian National Audit Office



Lorena Skipper

A/g Executive Director

Delegate of the Auditor-General

Canberra

16 August 2019



FINANCIAL STATEMENTS

FOR THE YEAR ENDED 30 JUNE 2019



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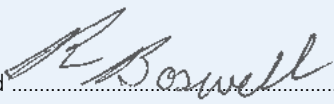



**STATEMENT BY THE ACCOUNTABLE AUTHORITY
(CHAIR AND CHAIR FINANCE, AUDIT AND RISK
MANAGEMENT COMMITTEE), MANAGING DIRECTOR
AND CHIEF FINANCIAL OFFICER**

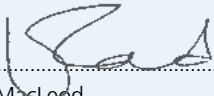
In our opinion, the attached financial statements for the period ended 30 June 2019 comply with subsection 42(2) of the *Public Governance, Performance and Accountability Act 2013* (PGPA Act), and are based on properly maintained financial records as per subsection 41(2) of the PGPA Act.

In our opinion, at the date of this statement, there are reasonable grounds to believe that the FRDC will be able to pay its debts as and when they fall due.

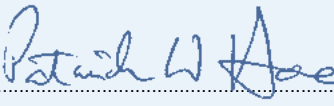
This statement is made in accordance with a resolution of the directors.

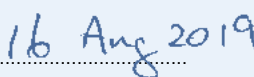
Signed 
The Hon. Ronald Boswell
Chair
Accountable Authority


Date


Signed 
Dr Lesley MacLeod
Chair Finance, Audit and Risk Management Committee


Date

Signed 
Dr Patrick Hone
Managing Director


Date

Signed 
Cheryl Cole
A/g Chief Financial Officer


Date



Statement of Comprehensive Income

FOR THE PERIOD ENDED 30 JUNE 2019

		2018–19	2017–18
	Notes	\$	\$
NET COST OF SERVICES			
Expenses			
Employee benefits	1.1A	3,605,110	3,300,256
Suppliers	1.1B	1,612,684	1,917,886
Projects	1.1C	29,803,871	25,999,419
Depreciation and amortisation	2.2A	183,464	174,655
Write-down and impairment of assets	1.1D	12,073	–
Total expenses		35,217,202	31,392,216
Own-source income			
Own-source revenue			
Sale of goods and rendering of services	1.2A	–	345
Interest	1.2B	544,651	393,904
Grants	1.2C	3,418,716	2,019,497
Contributions	1.2D	10,181,347	9,037,070
Other revenue	1.2E	1,931,438	1,838,425
Total own-source revenue		16,076,152	13,289,241
Total own-source income		16,076,152	13,289,241
Net cost of services		19,141,050	18,102,975
Revenue from the Australian Government	1.2F	23,478,957	22,710,840
Surplus on continuing operations		4,337,907	4,607,865
OTHER COMPREHENSIVE INCOME			
Items not subject to subsequent reclassification to net cost of services			
Changes in asset revaluation reserves	2.2A	(1,664)	2,126
Total other comprehensive (loss)/income		(1,664)	2,126
Total comprehensive income		4,336,243	4,609,991

The above statement should be read in conjunction with the accompanying notes.

Statement of Financial Position

AS AT 30 JUNE 2019

		2018–19	2017–18
	Notes	\$	\$
ASSETS			
Financial assets			
Cash and cash equivalents	2.1A	24,553,443	22,293,822
Trade and other receivables	2.1B	4,826,305	2,706,322
Other investments	2.1C	5,001	5,001
Total financial assets		29,384,749	25,005,145
Non-financial assets			
Property, plant and equipment	2.2A	74,450	116,650
Intangibles	2.2A	686,425	779,889
Other non-financial assets	2.2B	11,258	11,038
Total non-financial assets		772,133	907,577
Total assets		30,156,882	25,912,722
LIABILITIES			
Payables			
Suppliers and other payables	2.3A	255,499	257,103
Projects	2.3B	210,786	308,446
Total payables		466,285	565,549
Provisions			
Employee provisions	3.1A	1,019,845	1,012,664
Total provisions		1,019,845	1,012,664
Total liabilities		1,486,130	1,578,213
Net assets		28,670,752	24,334,509
EQUITY			
Asset revaluation reserves		411,236	412,900
Retained earnings		28,259,516	23,921,609
Total equity		28,670,752	24,334,509

The above statement should be read in conjunction with the accompanying notes.

Statement of Changes in Equity

FOR THE PERIOD ENDED 30 JUNE 2019

	2018–19	2017–18
	\$	\$
RETAINED EARNINGS		
Opening balance	23,921,609	19,313,744
Balance carried forward from previous period	23,921,609	19,313,744
Opening balance as at 1 July 2018		
Comprehensive income		
Surplus for the period	4,337,907	4,607,865
Total comprehensive income	4,337,907	4,607,865
Closing balance as at 30 June 2019	28,259,516	23,921,609
ASSET REVALUATION RESERVE		
Opening balance		
Balance carried forward from previous period	412,900	410,774
Opening balance as at 1 July 2018	412,900	410,774
Comprehensive income		
Other comprehensive (loss)/income	(1,664)	2,126
Total comprehensive (loss)/income	(1,664)	2,126
Closing balance as at 30 June 2019	411,236	412,900
TOTAL EQUITY		
Opening balance		
Balance carried forward from previous period	24,334,509	19,724,518
Opening balance as at 1 July 2018	24,334,509	19,724,518
Comprehensive income		
Surplus for the period	4,337,907	4,607,865
Other comprehensive (loss)/income	(1,664)	2,126
Total comprehensive income	4,336,243	4,609,991
Closing balance as at 30 June 2019	28,670,752	24,334,509

The above statement should be read in conjunction with the accompanying notes.

Cash Flow Statement

FOR THE PERIOD ENDED 30 JUNE 2019

		2018–19	2017–18
	Notes	\$	\$
OPERATING ACTIVITIES			
Cash received			
Receipts from the Australian Government		22,248,062	26,987,372
Contributions		10,604,532	10,587,269
Grants		3,418,716	2,019,497
Interest		519,160	330,623
Net GST received		1,646,468	1,601,195
Other		2,124,582	2,022,613
Total cash received		40,561,520	43,548,569
Cash used			
Employees		(3,597,929)	(3,213,576)
Suppliers		(1,760,515)	(1,970,060)
Projects expenditure		(32,881,918)	(28,429,077)
Total cash used		(38,240,362)	(33,612,713)
Net cash from operating activities		2,321,158	9,935,856
INVESTING ACTIVITIES			
Cash used			
Purchase of property, plant and equipment		(16,799)	(14,031)
Purchase of intangibles		(44,738)	(87,873)
Total cash used		(61,537)	(101,904)
Net cash used by investing activities		(61,537)	(101,904)
FINANCING ACTIVITIES			
Cash used			
Other ¹		–	(153,722)
Total cash used		–	(153,722)
Net cash used by financing activities		–	(153,722)
Net increase in cash held		2,259,621	9,680,230
Cash and cash equivalents at the beginning of the reporting period		22,293,822	12,613,592
Cash and cash equivalents at the end of the reporting period	2.1A	24,553,443	22,293,822

1. This amount was Love Australian Prawn campaign funds received on 29 June 2017 and held in trust by FRDC on behalf of the Seafood Cooperative Research Centre (CRC), then paid to Australian Council of Prawn Fisheries on 8 August 2017.

The above statement should be read in conjunction with the accompanying notes.



Overview

Objectives of the FRDC

The FRDC is an Australian Government controlled entity. It is a not-for-profit entity established as a statutory corporation on 2 July 1991 under the provisions of the *Primary Industries Research and Development Act 1989* (PIRD Act). The objectives of the FRDC are to plan and invest in fisheries research, development and extension (RD&E) activities and in related marketing activities.

As a national organisation with strong linkages to industry, managers, and researchers the FRDC has a fundamental role in providing leadership and coordination. The FRDC achieves this through establishing strong relationships, and putting in place mechanisms to identify and address priorities with industry and government stakeholders. In addition, the FRDC monitors and evaluates the adoption of RD&E and marketing outputs to better inform future decisions.

The FRDC is structured to meet the following outcome:

Increased economic, social and environmental benefits for Australian fishing and aquaculture, and the wider community, by investing in knowledge, innovation, and marketing.

The continued existence of the FRDC in its present form, and with its present outcome, is dependent on Australian Government policy, and on continuing funding from the Australian Government for the FRDC's outcome.

The basis of preparation

The financial statements are general purpose financial statements, and are required by section 42 of the *Public Governance, Performance and Accountability Act 2013*.

The financial statements have been prepared in accordance with:

- a) Public Governance, Performance and Accountability (Financial Reporting) Rule 2015 (FRR), and
- b) Australian Accounting Standards and Interpretations—Reduced Disclosure Requirements issued by the Australian Accounting Standards Board (AASB) that apply for the reporting period.

The financial statements have been prepared on an accrual basis, and in accordance with the historical cost convention, except for certain assets and liabilities at fair value. Except where stated, no allowance is made for the effect of changing prices on the results or the financial position. The financial statements are presented in Australian dollars.

New Australian Accounting Standards

Adoption of new and future Australian Accounting Standard requirements

No accounting standard has been adopted earlier than the application date as stated in the standard.

The new standards, revised standards, interpretations and amending standards that were issued prior to the signing of the statements by the: Board Chair; Finance, Audit and Risk Management Committee Chair; Managing Director; and Chief Financial Officer; and are applicable to the current reporting period, did not have a material impact, and are not expected to have a future material impact, on the FRDC's financial statements.

Taxation

The FRDC is exempt from all forms of taxation except Fringe Benefits Tax (FBT) and the Goods and Services Tax (GST).





Events after the reporting period

No reportable events have occurred after the Statement of Financial Position date.

Financial performance

Note 1.1: Expenses

Note 1.1A: Employee benefits

	2018–19	2017–18
	\$	\$
Wages and salaries	2,665,931	2,443,282
Superannuation		
Defined contribution plans	207,562	178,393
Defined benefit plans	382,025	389,762
Leave and other entitlements	349,592	288,819
Total employee benefits	3,605,110	3,300,256

Accounting policy

Accounting policies for employee related expenses are contained at Note 3.1A.



Note 1.1B: Suppliers

	2018–19	2017–18
	\$	\$
Goods and services supplied or rendered		
Agency staff	31,786	8,860
Annual report	23,765	20,080
Asset purchases less than \$5,000	52,196	57,315
Audit fees	36,000	32,000
External service providers	333,826	499,880
Insurance	37,149	37,223
Information technology	317,607	483,237
Joint research and development corporation (RDC) activities	56,347	28,553
Legal	11,381	40,212
Media monitoring and releases	43,780	28,116
Office supplies	19,192	27,069
Photographs	2,585	2,747
Postage and couriers	2,769	2,856
Property	44,421	30,309
RD&E plan	–	4,000
Recruitment/director selection costs	4,527	37,488
Representation	51,131	46,370
Representative organisations consultation	5,926	28,095
Telecommunications	34,662	36,468
Training	116,370	149,743
Travel	155,730	110,039
Other	45,609	40,677
Total goods and services supplied or rendered	1,426,759	1,751,337
Other suppliers		
Operating lease rental in connection with external parties		
Operating lease rentals ¹	172,022	150,657
Workers compensation expenses	13,903	15,892
Total other suppliers	185,925	166,549
Total suppliers	1,612,684	1,917,886

1. Operating lease commitments

Canberra office

Operating leases included were effectively non-cancellable. The lease for the office accommodation at 25 Geils Court, Deakin, Australian Capital Territory has been renegotiated for a further three years and expires 31 July 2020. Lease payments are subject to a 3 percent annual increase in accordance with the lease agreement.

Adelaide office

The lease for the office accommodation at Wine Australia, corner Botanic and Hackney Roads, Adelaide, South Australia commenced 31 March 2016 with an annual right of renewal until 30 March 2021. The current lease term expires 30 March 2020. Lease payments are subject to the annual increase in accordance with movements in the consumer price index.



	2018–19	2017–18
	\$	\$
Commitments for minimum lease payments in relation to non-cancellable operating leases are payable as follows:		
Within 1 year	182,306	171,456
Between 1 to 5 years	11,896	145,847
Total operating lease commitments	194,202	317,303

Note: Leasing commitments are GST inclusive.

Accounting policy

Operating lease payments are expensed on a straight-line basis, which is representative of the pattern of benefits derived from the leased assets.

Note 1.1C: Projects

	2018–19	2017–18
	\$	\$
Australian Government entities (related parties)	3,188,851	3,041,726
State and territory governments	7,050,061	5,586,487
Universities and educational bodies	7,851,284	5,800,078
Research and development corporations	15,804	6,733
Industry (commercial, recreational and Indigenous)	6,908,786	5,991,155
Overseas research entities	139,365	150,003
Private providers	4,649,720	5,423,237
Total projects	29,803,871	25,999,419

Accounting policy

The FRDC recognises project liabilities through project agreements that require research partners to perform services or provide facilities, or to meet eligibility criteria. In these cases, liabilities are recognised only to the extent that the services required have been performed, an invoice issued consistent with the contractual requirements, and the eligibility criteria have been satisfied by the research partner to the FRDC's satisfaction.





Project commitments

Project commitments comprise the future funding of approved projects that are contingent on the achievement of agreed deliverables over the life of those projects (project agreements are exchanged prior to release of the first payment on a project). Projects, where amounts were payable but were unpaid at the end of the period, have been brought to account as project payables. The FRDC contracts to fund projects in future years in advance of receipt of the income needed to fund them. FRDC manages this risk by having the project agreement allow for termination at its sole discretion for any reason. If the FRDC were to terminate a project agreement, it would only be liable to compensate the research partner for any reasonable costs in respect of unavoidable loss incurred by the research provider and directly attributable to the termination of the agreement, provided that the costs are fully substantiated to the FRDC.

	2018–19	2017–18
	\$	\$
Project commitments are payable as follows:		
Within 1 year (unpaid deliverables up to 30 June 2020)	35,014,593	36,771,967
Between 1 to 5 years (1 July 2020 to 30 June 2024)	16,352,491	14,722,921
Over 5 years (from 1 July 2024)	–	146,674
Total project commitments	51,367,084	51,641,562

Note: Project commitments are GST inclusive.





Note 1.1D: Write down and impairment of assets

	2018–19	2017–18
	\$	\$
Write down of intangible assets	12,073	–
Total write down and impairment of assets	12,073	–

FRDC's business process software was written down at 31 October 2018 (refer Note 2.2 Non-financial assets).

Note 1.2: Own-source income

Own-source revenue

Note 1.2A: Sale of goods and rendering of services

	2018–19	2017–18
	\$	\$
Sale of goods	–	345
Total sale of goods and rendering of services	–	345

Accounting policy

Revenue from the sale of goods is recognised when:

- a) the risks and rewards of ownership have been transferred to the buyer, and
- b) the entity retains no managerial involvement or effective control over the goods.

The stage of completion of contracts at the reporting date is determined by reference to the proportion that costs incurred to date bear to the estimated total costs of the transaction.

Receivables for goods, which have 30 day terms, are recognised at the nominal amounts due less any impairment allowance account. Collectability of debts is reviewed at the end of the reporting period. Allowances are made when collectability of the debt is no longer probable.

Note 1.2B: Interest

	2018–19	2017–18
	\$	\$
Deposits	544,651	393,904
Total interest	544,651	393,904

Accounting policy

Interest revenue is recognised using the effective interest method.



Note 1.2C: Grants

	2018–19	2017–18
	\$	\$
Australian Government		
Department of Agriculture ¹	3,418,716	2,019,497
Total grants	3,418,716	2,019,497

1. RD&E funding from the Department of Agriculture.

The FRDC has a Research & Development Funding Head Agreement with the Department of Agriculture under which it manages a suite of research activities. The activities are listed at Note 3.4B, page 161.

Accounting policy

Australian Government grants income is revenue paid to FRDC for the purpose of funding specific research and development projects, and is recognised when:

- a) the FRDC obtains control of the grant or the right to receive the grant,
- b) it is probable that the economic benefits comprising the grant will flow to the FRDC, and
- c) the amount of the grant can be reliably measured.

Note 1.2D: Contributions

	2018–19	2017–18
	\$	\$
Fisheries		
Australian Prawn Farmers Association	130,666	151,738
Australian Fisheries Management Authority	1,359,182	1,163,251
New South Wales	778,953	623,409
Northern Territory	183,439	195,767
Queensland	891,953	805,000
South Australia	1,500,969	1,209,200
Tasmania	3,166,903	2,904,469
Victoria	239,562	231,646
Western Australia	1,929,720	1,752,590
Total contributions	10,181,347	9,037,070

Accounting policy

Contributions are recognised when:

- a) the FRDC obtains control of the contribution or the right to receive the contribution,
- b) it is probable that the economic benefits comprising the contribution will flow to the FRDC, and
- c) the amount of the contribution can be reliably measured.



Note 1.2E: Other revenue

	2018–19	2017–18
	\$	\$
Project funds received ¹	1,808,250	1,527,337
Project refunds of prior years expenditure	123,188	302,201
Other ²	–	8,887
Total other revenue	1,931,438	1,838,425

1. Project funds received include project contributions for a Future Oyster Cooperative Research Centre Programme and project.
2. On 1 June 2017 the Seafood CRC Board, as part of its wind up process, resolved, in accordance with its constitution, to transfer its remaining funds to the FRDC. Note 1.2E: Other, includes an amount of \$3,924 that was transferred by Seafood CRC to FRDC on 4 July 2017.

Accounting policy

Project funds received are recognised when they are entitled to be received by the FRDC.

Project refunds from research partners are brought to account when received.

Note 1.2F: Revenue from the Australian Government

	2018–19	2017–18
	\$	\$
Department of Agriculture		
Corporate Commonwealth entity payment item of 0.50% of AGVP ¹	15,698,265	15,140,560
Matching of industry contributions ²	7,780,692	7,570,280
Total revenue from the Australian Government	23,478,957	22,710,840

1. AGVP is the average gross value of fisheries production for the current year and the two preceding financial years. The Australian Government's contribution of 0.50% of AGVP is made on the grounds that the FRDC exercises a stewardship role in relation to fisheries resources on behalf of the Australian community.
2. Matching of industry contributions (up to 0.25% of AGVP) by the Australian Government.

Accounting policy

Revenue from the Australian Government

Revenues from the Australian Government are recognised when they are entitled to be received by the entity. Funding received or receivable from non-corporate Commonwealth entities (appropriated to the non-corporate Commonwealth entity as a corporate Commonwealth entity payment item for payment to this entity) is recognised as Revenue from Government by the corporate Commonwealth entity unless the funding is in the nature of an equity injection or a loan.



Financial position

Note 2.1: Financial assets

Note 2.1A: Cash and cash equivalents

	2018–19	2017–18
	\$	\$
Cash on hand or at call	3,553,443	2,293,822
Cash on deposit:		
Fixed term deposit—original term 6 months	–	16,000,000
Fixed term deposit—original term 3 months	15,000,000	–
Fixed term deposit—original term 2 months	–	4,000,000
Fixed term deposit—original term 1 month	6,000,000	–
Total cash and cash equivalents	24,553,443	22,293,822

Accounting policy

Cash is recognised at its nominal amount. Cash and cash equivalents includes:

- cash on hand, and
- demand deposits in bank accounts with an original maturity of six months or less that are readily convertible to known amounts of cash and subject to insignificant risk of changes in value.



Note 2.1B: Trade and other receivables

	2018–19	2017–18
	\$	\$
Goods and services receivables		
Goods and services	1,561,369	1,025,302
Total goods and services receivables	1,561,369	1,025,302
Department of Agriculture		
Receivables	2,744,120	1,513,225
Total receivables from Department of Agriculture	2,744,120	1,513,225
Other receivables		
GST receivable from the Australian Taxation Office	520,816	167,795
Total other receivables	520,816	167,795
Total trade and other receivables	4,826,305	2,706,322
Trade and other receivables are expected to be recovered		
No more than 12 months	4,826,305	2,706,322
Total trade and other receivables	4,826,305	2,706,322
Trade and other receivables aged as follows		
Not overdue ¹	4,677,805	2,612,822
Overdue by		
0 to 30 days	148,500	–
31 to 60 days	–	93,500
Total trade and other receivables	4,826,305	2,706,322

1. Credit terms for goods and services are within 30 days (2017–18: 30 days).

Accounting policy

Financial assets

Trade receivables, loans and other receivables that are held for the purpose of collecting the contractual cash flows where the cash flows are solely payments of principal and interest, that are not provided at below-market interest rates, are subsequently measured at amortised cost using the effective interest method adjusted for any loss allowance.

Note 2.1C: Other investments

	2018–19	2017–18
	\$	\$
One-eighteenth share in Australian Seafood Co-Products Pty Ltd (ASCo), an unlisted company converting fish waste and fish nutrient into agriculture fertiliser products	5,001	5,001
Total other investments	5,001	5,001

Note 2.2: Non-financial assets

Note 2.2A: Reconciliation of the opening and closing balances of property, plant and equipment and intangibles

Reconciliation of the opening and closing balances of property, plant and equipment and intangibles			
	Property, plant and equipment	Intangibles (computer software)	Total
	\$	\$	\$
As at 1 July 2018			
Gross book value	116,650	1,252,896	1,369,546
Accumulated depreciation and amortisation	–	(473,007)	(473,007)
Total as at 1 July 2018	116,650	779,889	896,539
Additions			
Purchase	16,799	–	16,799
Internally developed	–	44,738	44,738
Revaluations recognised in other comprehensive income ¹	(1,664)	–	(1,664)
Write down recognised in net cost of services ²	–	(12,073)	(12,073)
Depreciation and amortisation	(57,335)	(126,129)	(183,464)
Total as at 30 June 2019	74,450	686,425	760,875
Total as at 30 June 2019 represented by			
Gross book value	74,450	1,272,074	1,346,524
Accumulated depreciation and amortisation	–	(585,649)	(585,649)
Total as at 30 June 2019	74,450	686,425	760,875

Revaluations of non-financial assets

- As at 30 June 2019, Jones Lang LaSalle Public Sector Valuations conducted a revaluation of property, plant and equipment. A revaluation decrement of \$1,664 for 2018–19 (2017–18: increment of \$2,126) was applied to the asset revaluation reserve by asset class and included in the equity section of the Statement of Financial Position.
- FRDC's business process software was written down at 31 October 2018 (refer Note 1.1D).
No indicators of impairment were found for property, plant and equipment and intangibles as at 30 June 2019.
No property, plant and equipment is expected to be sold or disposed of within the next 12 months.

Accounting policy

Assets are recorded at cost on acquisition except as stated below. The cost of acquisition includes the fair value of assets transferred in exchange and liabilities undertaken. Financial assets are initially measured at their fair value plus transaction costs where appropriate.

Assets acquired at no cost, or for nominal consideration, are initially recognised as assets and income at their fair value at the date of acquisition, unless acquired as a consequence of restructuring of administrative arrangements. In the latter case, assets are initially recognised as contributions by owners at the amounts at which they were recognised in the transferor's accounts immediately prior to the restructuring.



Asset recognition threshold

Purchases of property, plant and equipment are recognised initially at cost in the Statement of Financial Position, except for purchases costing less than \$5,000 that are expensed in the year of acquisition (other than where they form part of a group of similar items where the value is greater than \$5,000).

Revaluations

Following initial recognition at cost, property, plant and equipment are carried at fair value less subsequent accumulated depreciation and accumulated impairment losses. Valuations are conducted with sufficient frequency to ensure that the carrying amounts of assets do not differ materially from the assets' fair values as at the reporting date. The regularity of independent valuations depend on the volatility of movements in market values for the relevant assets.

Revaluation adjustments are made on a class basis. Any revaluation increment is credited to equity under the heading of asset revaluation reserve except to the extent that it reverses a previous revaluation decrement of the same asset class that was previously recognised in the surplus/deficit. Revaluation decrements for a class of assets are recognised directly in the surplus/deficit except to the extent that they reversed a previous revaluation increment for that class.

Any accumulated depreciation as at the revaluation date is eliminated against the gross carrying amount of the asset, and the asset restated to the revalued amount.

Depreciation

Depreciable property, plant and equipment assets are written off to their estimated residual values over their estimated useful lives to the FRDC using, in all cases, the straight-line method of depreciation.

Depreciation rates (useful lives), residual values and methods are reviewed at each reporting date and necessary adjustments are recognised in the current, or current and future reporting periods, as appropriate.

Depreciation rates applying to each class of depreciable asset are based on the following useful lives:

	2018–19	2017–18
Property, plant and equipment	up to 5 years	up to 5 years
Leasehold improvements	Lease term	Lease term

Impairment


All assets were assessed for impairment at 30 June 2019. Where indications of impairment exist, the asset's recoverable amount is estimated and an impairment adjustment made if the asset's recoverable amount is less than its carrying amount.

The recoverable amount of an asset is the higher of its fair value less costs of disposal and its value in use. Value in use is the present value of the future cash flows expected to be derived from the asset. Where the future economic benefit of an asset is not primarily dependent on the asset's ability to generate future cash flows, and the asset would be replaced if the entity were deprived of the asset, its value in use is taken to be its depreciated replacement cost.

Derecognition

An item of property, plant and equipment is derecognised upon disposal, or when no further future economic benefits are expected from its use or disposal.





Intangibles

The FRDC's intangibles comprise internally developed software and purchased software for internal use. These assets are carried at cost less accumulated amortisation and accumulated impairment losses.

Software is amortised on a straight-line basis over its anticipated useful life. The useful lives of the FRDC's software is 10 years (2017–18: 10 years).

All software assets were assessed for indications of impairment as at 30 June 2019.

Note 2.2B: Other non-financial assets

	2018–19	2017–18
	\$	\$
Prepayments	11,258	11,038
Total other non-financial assets	11,258	11,038

No indicators of impairment were found for other non-financial assets.

Note 2.3: Payables

Note 2.3A: Suppliers and other payables

	2018–19	2017–18
	\$	\$
Trade creditors and accruals	102,138	132,284
FBT payable	1,582	1,079
PAYG payable	151,779	68,297
Other	–	55,443
Total suppliers and other payables	255,499	257,103
Suppliers and other payables expected to be settled		
No more than 12 months	255,499	257,103
Total suppliers	255,499	257,103

Settlement is usually made within 30 days.

Note 2.3B: Projects

	2018–19	2017–18
	\$	\$
Australian Government entities (related parties)	–	10,000
State and territory governments	33,000	78,000
Other	177,786	220,446
Total projects	210,786	308,446

Accounting policy

Project payables are recognised at their nominal amounts, being the amounts at which the liabilities will be settled. They relate to payments approved on achievement of agreed deliverables, but which were unpaid at the end of the reporting period. Settlement is usually made within 30 days.



People and relationships

Note 3.1: Employee provisions

Note 3.1A: Employee provisions

	2018–19	2017–18
	\$	\$
Leave	1,019,845	1,012,664
Total employee provisions	1,019,845	1,012,664
Employee provisions that could be settled		
No more than 12 months	949,696	967,019
More than 12 months	70,149	45,645
Total employee provisions	1,019,845	1,012,664

Accounting policy

Liabilities for short-term employee benefits and termination benefits expected within 12 months of the end of reporting period are measured at their nominal amounts. Other long-term employee benefits are measured as net total of the present value of the defined benefit obligation at the end of the reporting period minus the fair value at the end of the reporting period of plan assets (if any) out of which the obligations are to be settled directly.

Leave

The liability for employee benefits includes provision for annual leave and long service leave. The leave liabilities are calculated on the basis of employees' remuneration at the estimated salary rates that will be applied at the time the leave is taken, including the entity's employer superannuation contribution rates to the extent that the leave is likely to be taken during service rather than paid out on termination. The estimate of the present value of the liability takes into account attrition rates and pay increases through promotion and inflation.

Superannuation

The FRDC's staff are members of the Public Sector Superannuation Scheme (PSS), or the PSS accumulation plan (PSSap), or other superannuation funds held outside the Australian Government.

The PSS is a defined benefit scheme for the Australian Government. The PSSap and any other superannuation funds are defined contribution schemes.

The liability for defined benefits is recognised in the financial statements of the Australian Government and is settled by the Australian Government in due course. This liability is reported in the Department of Finance's administered schedules and notes.

The FRDC makes employer contributions to the employee's defined benefit superannuation scheme at rates determined by an actuary to be sufficient to meet the current cost to the Australian Government. The entity accounts for the contributions as if they were contributions to defined contribution plans.





Note 3.2: Key management personnel remuneration

Key management personnel are those persons having authority and responsibility for planning, directing and controlling the activities of the FRDC, directly or indirectly, including any director of the Board (whether executive or otherwise) of the FRDC. The FRDC has determined the key management personnel to be the non-executive directors, the Managing Director and three senior general managers. Key management personnel remuneration is reported in the table below:

	2018–19	2017–18
	\$	\$
Short-term employee benefits (salary)	1,182,248	1,145,604
Post-employment benefits (superannuation)	214,199	222,913
Other long-term employee benefits (annual leave and long service leave)	124,379	121,021
Total key management personnel remuneration expenses	1,520,826	1,489,538

The total number of key management personnel that are included in the above table is 16 (2017–18: 11). They are made up of:

- seven non-executive directors
- one non-executive director (Chair)
- one Managing Director
- three senior general managers
- four non-executive directors (retired 31 August 2018).

Note 3.3: Annual total remuneration ranges (including superannuation) paid to key management personnel and the independent Finance, Audit and Risk Management Committee member¹

	2018–19	2017–18
Nil to \$39,999 ¹	12	7
\$40,000 to \$69,999	1	1
\$180,000 to \$239,999	2	2
\$280,000 to \$309,999	1	1
\$340,000 to \$369,999	1	1
Total number of key management personnel	17	12

1. Independent Member Finance, Audit and Risk Management Committee

Ms Feldmanis was paid under a consultancy agreement from 1 July 2018 to 20 November 2018; and is included in Note 3.3 Annual remuneration ranges, but is not included in Note 3.2 Key management personnel remuneration.

Note 3.4: Related party disclosures

Related party relationships

The FRDC is an Australian Government controlled entity. Related parties to this entity are non-executive directors, the Managing Director, and three senior general managers and other Australian Government entities.

The non-executive directors and the Managing Director of the FRDC during the year were:

The Hon. Ronald Boswell	Chair (Appointed 1 September 2016) (Member People and Culture Committee)
Dr Kathryn Brooks	Director (Appointed 10 October 2018) (Member Investment Mechanisms Working Group)
Professor Colin D. Buxton	Director (Deputy Chair) (Re-appointed 10 October 2018) (Member Investment Mechanisms Working Group)
Dr Saranne Cooke	Director (Appointed 10 October 2018) (Member Finance, Audit and Risk Management Committee)
Ms Katina Hodson-Thomas	Director (Appointed 10 October 2018) (Member People and Culture Committee)
Dr Patrick Hone	Managing Director (Member Investment Mechanisms Working Group)
Mr Mark King	Director (Appointed 10 October 2018) (Chair People and Culture Committee)
Mr John Lloyd	Director (Appointed 10 October 2018) (Chair Investment Mechanisms Working Group) (Member Finance, Audit and Risk Management Committee)
Dr Lesley MacLeod	Director (Re-appointed 10 October 2018) (Chair Finance, Audit and Risk Management Committee)
Ms Renata Brooks	Director (Retired 31 August 2018)
Mr John Harrison	Director (Retired 31 August 2018)
Associate Professor Daryl McPhee	Director (Retired 31 August 2018)
Mr John Susman	Director (Retired 31 August 2018)
Ms Christine Feldmanis ¹	Independent Member Finance, Audit and Risk Management Committee (Retired 21 November 2018)

1. Independent Member Finance, Audit and Risk Management Committee

Ms Feldmanis was paid under a consultancy agreement from 1 July 2018 to 20 November 2018; and is included in Note 3.3 Annual remuneration ranges, but is not included in Note 3.2 Key management personnel remuneration.



Note 3.4A: Transactions with director-related entities

The FRDC's practice is to disclose all transactions with an entity with whom a director has an association. This means that directors who have disclosed a material personal interest have attributed to them all the transactions of that entity with the FRDC. Typically, the FRDC will not transact with all the entities for which a director has made such a declaration. The transactions that are not with related parties as defined by AASB 124 Related Party Disclosures, are identified in the table on pages 159–160 with an asterisk(*).

The FRDC's 'Board governance policy' provides guidance to directors on how the FRDC deals with material personal interests. Where a director has an association with an entity where a conflict has the potential to arise, in addition to the duty to disclose that association, the director absents him/herself from both the discussion and the decision-making process.

Given the breadth of Australian Government activities, related parties may transact with the government sector in the same capacity as ordinary citizens. Such transactions include the payment or refund of taxes, receipt of a Medicare rebate or higher education loans. These transactions have not been separately disclosed in this note.





The following transactions occurred during the directors' related period

Director	Organisation and position held	Nature of interest	2018-19		2017-18	
			Expenditure	Income	Expenditure	Income
Dr K. Brooks (Appointed 10 October 2018)	OzFish Unlimited <i>Non-Executive Director</i> 10 October 2018 to current	Research projects or work undertaken by the organisation	71,895	–	n/a ¹	n/a ¹
	Seafood Industry Victoria Inc. <i>Casual Director</i> 10 October 2018 to 5 May 2019	Research projects or work undertaken by the organisation	55,922	–	n/a ¹	n/a ¹
	Kai Analysis Pty Ltd <i>Director</i> 10 October 2018 to current	Research projects or work undertaken by the organisation	143,726	–	n/a ¹	n/a ¹
	Southern Rock Lobster Ltd <i>Chair</i> 2015 to 31 August 2018 10 October to current	Research projects or work undertaken by the organisation	810,590	–	201,529	–
Professor C. D. Buxton (Re-appointed 10 October 2018)	Institute for Marine and Antarctic Studies University of Tasmania * <i>Adjunct Professor</i> 2014 to 31 August 2018 10 October to current	Research projects or work undertaken by the organisation	3,561,224	3,250	3,175,222	300
	Council of Rural Research & Development Research Corporation <i>Member of the Executive and CEO's Committee</i> 1 July 2018 to current	Research projects or work undertaken by the organisation	33,093	–	–	–
Dr P. Hone	National Marine Science Committee (paid to University of Tasmania) <i>Member</i> 1 July 2018 to current	Research projects or work undertaken by the organisation	5,000	–	–	–



Director	Organisation and position held	Nature of interest	2018–19		2017–18	
			Expenditure	Income	Expenditure	Income
Ms K. Hodson-Thomas (Appointed 10 October 2018)	Western Australian Fishing Industry Council <i>Chair</i> 10 October 2018 to 30 November 2018	Research projects or work undertaken by the organisation	263	–	n/a ¹	n/a ¹
Ms R. Brooks (Retired 31 August 2018)	Australian Fisheries Management Authority <i>Commissioner</i> November 2016 to 31 August 2018	Research projects or work undertaken by the organisation	–	4,825	119,900	275,178
	South Australian Research and Development Institute * <i>Consultant</i> July 2017 to 31 August 2018	Research projects or work undertaken by the organisation	268,516	–	2,153,965	265,100
Mr J. Harrison (Retired 31 August 2018)	Western Australian Fishing Industry Council <i>Chief Executive Officer</i> 2013 to 31 August 2018	Research projects or work undertaken by the organisation	19,966	–	474,248	–
Mr D. McPhee (Retired 31 August 2018)	Department of Primary Industries New South Wales * <i>Consultant</i> November 2017 to 31 August 2018	Research projects or work undertaken by the organisation	52,811	–	608,261	633,500
	Department of Agriculture and Fisheries Queensland * <i>Client</i> February 2018 to 31 August 2018	Research projects or work undertaken by the organisation	396,465	107,324	568,990	225,500

All transactions were conducted under normal terms and conditions and include GST.

1. n/a—The director had not engaged in research projects or other work with the director-related entity in the reporting period.



Note 3.4B: Other related party disclosures

Department of Agriculture

The FRDC has a Research & Development Funding Head Agreement with the Department of Agriculture under which it manages the suite of activities detailed below:

- An assessment of the non-market value of recreational fishing of Southern Bluefin Tuna fishery
- Aquatic Animal Health Training Scheme 2019–2022
- Aquatic Deed activities
- Aquavetplan manuals
- Development of on-farm biosecurity plan implementation support programs for aquaculture industry
- Improve access to industry priority uses of Agvet chemicals
- National Carp Control Plan
- Non-tariff measures projects
- Rural R&D for Profit: Boosting farm profits through rural R&D activity: East Open Oyster automation
- Rural R&D for Profit: Growing a profitable, innovative and collaborative Australian Yellowtail Kingfish
- The role of the recreational fisher in the stewardship of the Southern Bluefin Tuna fishery.

The FRDC was provided grants in 2018–19 totalling: \$3,418,716 (2017–18: \$2,019,497) (refer Note 1.2C: Grants).



Financial instruments and fair value measurement

Note 4.1: Financial instruments

Note 4.1A: Categories of financial instruments

	2018–19	2017–18
	\$	\$
Financial assets under AASB 139		
Loans and receivables		
Cash and cash equivalents		22,293,822
Trade and other receivables		1,025,302
Total loans and receivables		23,319,124
Available-for-sale financial assets		
Other investments		5,001
Total available-for-sale financial assets		5,001
Total financial assets		23,324,125
Financial liabilities		
Other financial liabilities		
Suppliers and other payables		187,727
Projects		308,446
Total other financial liabilities		496,173
Total financial liabilities		496,173
Financial assets under AASB 9		
Financial assets at amortised cost		
Cash and cash equivalents	24,553,443	
Trade and other receivables	1,561,369	
Other investments	5,001	
Total financial assets at amortised cost	26,119,813	
Total financial assets	26,119,813	
Financial liabilities		
Financial liabilities measured at amortised cost		
Suppliers and other payables	102,138	
Projects	210,786	
Total financial liabilities measured at amortised cost	312,924	
Total financial liabilities	312,924	



Classification of financial assets on the date of initial applications of AASB 9

	AASB 139 original classification	AASB 9 new classification	AASB 139 carrying amount at 2018–19	AASB 9 carrying amount at 2018–19
			\$	\$
Financial assets class	Note			
Cash and cash equivalents	2.1A Loans and receivables	Amortised cost	24,553,443	24,553,443
Trade and other receivables	2.1B Loans and receivables	Amortised cost	1,561,369	1,561,369
Other investments	2.1C Available for sale	Amortised cost	5,001	5,001
Total financial assets			26,119,813	26,119,813

Accounting policy

Financial assets

With the implementation of AASB 9 Financial Instruments for the first time in 2019, the entity classifies its financial assets in the following categories:

- financial assets at fair value through profit or loss,
- financial assets at fair value through other comprehensive income, and
- financial assets measured at amortised cost.

The classification depends on both the entity's business model for managing the financial assets and contractual cash flow characteristics at the time of initial recognition. Financial assets are recognised when the entity becomes a party to the contract and, as a consequence, has a legal right to receive or a legal obligation to pay cash and derecognised when the contractual rights to the cash flows from the financial asset expire or are transferred upon trade date.

Comparatives have not been restated on initial application.

Financial assets at amortised cost

Financial assets included in this category need to meet two criteria:

- the financial asset is held in order to collect the contractual cash flows, and
- the cash flows are solely payments of principal and interest (SPPI) on the principal outstanding amount.

Amortised cost is determined using the effective interest method.

Effective interest method

Income is recognised on an effective interest rate basis for financial assets that are recognised at amortised cost.





Impairment of financial assets

Financial assets are assessed for impairment at the end of each reporting period based on expected credit losses, using the general approach which measures the loss allowance based on an amount equal to lifetime expected credit losses where risk has significantly increased, or an amount equal to 12-month expected credit losses if risk has not increased.

The simplified approach for trade, contract and lease receivables is used. This approach always measures the loss allowance as the amount equal to the lifetime expected credit losses.

A write-off constitutes a derecognition event where the write-off directly reduces the gross carrying amount of the financial asset.

Financial liabilities

Financial liabilities are classified as either financial liabilities 'at fair value through profit or loss' or other financial liabilities.

Financial liabilities are recognised and derecognised upon 'trade date'.

Financial liabilities at amortised cost

Financial liabilities, including borrowings, are initially measured at fair value, net of transaction costs. These liabilities are subsequently measured at amortised cost using the effective interest method, with interest expense recognised on an effective interest basis.

Supplier and other payables are recognised at amortised cost. Liabilities are recognised to the extent that the goods or services have been received (and irrespective of having been invoiced).

Note 4.1B: Net gain or loss from financial assets

	2018–19	2017–18
	\$	\$
Financial assets at amortised cost		
Interest revenue (Note 1.2B)	544,651	393,904
Net gains on financial assets at amortised cost	544,651	393,904





Note 4.2: Fair value measurement

Accounting policy

FRDC engaged Jones Lang LaSalle Public Sector Valuations (JLL) to conduct an asset revaluation of all non-financial assets as at 30 June 2019. An annual assessment is undertaken to determine whether the carrying amount of the assets is materially different from the fair value. Comprehensive valuations are carried out at least once every three years. JLL has provided written assurance to the FRDC that the models developed are in compliance with AASB 13.

The methods utilised to determine and substantiate the unobservable inputs are derived and evaluated as follows.

Physical depreciation and obsolescence—assets that do not transact with enough frequency or transparency to develop objective opinions of value from observable market evidence that have been measured using the depreciated replacement cost approach. Under the depreciated replacement cost approach, the estimated cost to replace the asset is calculated and then adjusted to take into account physical depreciation and obsolescence. Physical depreciation and obsolescence has been determined based on professional judgement regarding physical, economic and external obsolescence factors relevant to the asset under consideration. For all leasehold improvement assets, the consumed economic benefit/asset obsolescence deduction is determined based on the term of the associated lease.

FRDC's policy is to recognise transfers into, and transfers out of, fair value hierarchy levels as at the end of the reporting period.

Note 4.2A: Fair value measurement

	Fair value measurements at the end of the reporting period	
	2018–19	2017–18
	\$	\$
Non-financial assets		
Leasehold improvements	47,060	91,900
Plant and equipment	27,390	24,750
Total non-financial assets	74,450	116,650

The FRDC did not measure any non-financial assets at fair value on a non-recurring basis as at 30 June 2019.

As at 30 June 2019, Jones Lang LaSalle Public Sector Valuations conducted a revaluation of plant and equipment. The table above summarises the results of the valuation at fair value. A revaluation decrement was applied to the asset revaluation reserve by asset class and included in the equity section of the Statement of Financial Position. Refer Note: 2.2A.



Budgetary reports and explanations of major variances

Note 5.1: FRDC budgetary reports

The following tables provide a comparison of the original budget as presented in the 2018–19 Portfolio Budget Statements (PBS) to the 2018–19 final outcome as presented in accordance with Australian Accounting Standards for the FRDC. The budget is not audited.

Note 5.1A: FRDC budgetary reports

Statement of Comprehensive Income

FOR THE PERIOD ENDED 30 JUNE 2019

	Actual	Portfolio Budget Statements 2018–19 estimate	
	(A)	(B)	(C) = A–B
		Original	Variance
	2018–19	2018–19	2018–19
	\$	\$	\$
NET COST OF SERVICES			
Expenses			
Employee benefits	3,605,110	3,933,000	(327,890)
Suppliers	1,612,684	1,733,000	(120,316)
Projects	29,803,871	28,350,000	1,453,871
Depreciation and amortisation	183,464	210,000	(26,536)
Write-down and impairment of assets	12,073	–	12,073
Other expenses	–	450,000	(450,000)
Total expenses	35,217,202	34,676,000	541,202
Own-source income			
Own-source revenue			
Interest	544,651	300,000	244,651
Grants	3,418,716	–	3,418,716
Contributions	10,181,347	5,964,000	4,217,347
Other revenue	1,931,438	3,101,000	(1,169,562)
Total own-source revenue	16,076,152	9,365,000	6,711,152
Total own-source income	16,076,152	9,365,000	6,711,152
Net cost of services	19,141,050	25,311,000	6,169,950
Revenue from the Australian Government	23,478,957	25,332,000	(1,853,043)
Surplus on continuing operations	4,337,907	21,000	4,316,907
OTHER COMPREHENSIVE INCOME			
Items not subject to subsequent reclassification to net cost of services			
Changes in asset revaluation reserves	(1,664)	–	(1,664)
Total other comprehensive (loss)/income	(1,664)	–	(1,664)
Total comprehensive income	4,336,243	21,000	4,315,243



Major variance explanation

Project contractual commitments originally forecast can vary due to the timing of completion of project deliverables. Project deliverables are subject to significant variation due to research delays. 2018–19 project expenses increased largely driven by increased investments in research, development and extension and research provider delivery of project deliverables.

Other expenses forecast allowed for marketing expenses for marketing levy arrangements that are not yet established.

Commonwealth Government Grant for the National Carp Control Plan of \$2,015,000 was due and forecast for in 2018–19 and is included under 'Revenue from the Australian Government' in the Portfolio Budget Statements. The 2018–19 actuals disclose the grants as a separate line item. The grants received in 2018–19 were higher than the forecast due to a 2017–18 late achievement of the deliverable payment occurring in 2018–19.

Contributions forecast varied due to new research projects during the year that include additional third-party contributions. Increases to contributions also occurred where the jurisdiction's Australian Gross Value Production increased.

Other revenue original forecast allowed for additional increased project contributions that did not eventuate.

Revenue from Australian Government forecast includes funding for Average Gross Value Production (AGVP), grants, Australian Prawn Farmers Association levies, and Australian Fisheries Management Authority levies. These items are required to be represented in the Portfolio Budget Statements together, however the FRDC Financial Statements discloses them separately.



Statement of Financial Position

AS AT 30 JUNE 2019

	Actual	Portfolio Budget Statements 2018–19 estimate	
	(A)	(B)	(C) = A–B
		Original	Variance
	2018–19	2018–19	2018–19
	\$	\$	\$
ASSETS			
Financial assets			
Cash and cash equivalents	24,553,443	16,809,000	7,744,443
Trade and other receivables	4,826,305	7,540,000	(2,713,695)
Other investments	5,001	5,000	1
Total financial assets	29,384,749	24,354,000	5,030,749
Non-financial assets			
Property, plant and equipment	74,450	140,000	(65,550)
Intangibles	686,425	1,132,000	(445,575)
Other non-financial assets	11,258	30,000	(18,742)
Total non-financial assets	772,133	1,302,000	(529,867)
Total assets	30,156,882	25,656,000	4,500,882
LIABILITIES			
Payables			
Suppliers and other payables	255,499	172,000	83,499
Projects	210,786	200,000	10,786
Other payables	–	85,000	(85,000)
Total payables	466,285	457,000	9,285
Provisions			
Employee provisions	1,019,845	957,000	62,845
Total provisions	1,019,845	957,000	62,845
Total liabilities	1,486,130	1,414,000	72,130
Net assets	28,670,752	24,242,000	4,428,752
EQUITY			
Asset revaluation reserves	411,236	410,000	1,236
Retained earnings	28,259,516	23,832,000	4,427,516
Total equity	28,670,752	24,242,000	4,428,752



Major variance explanation

Cash and cash equivalents budget varied due to the timing of receipts for special appropriation payments, grant payments and higher than anticipated project contributions received.

Trade and other receivables vary due to the timing of the Department of Agriculture determination which can result in increases and decreases to special appropriation payments at year end. The forecast for 2018–19 was lower than anticipated due to revenue from Government and project contribution received earlier.

Intangibles varied to original forecast due to internalising components of IT development resulting in reduced costs.

Retained earnings increased due to the increase in net income as a result from increased revenue.



Statement of Changes in Equity

FOR THE PERIOD ENDED 30 JUNE 2019

	Actual	Portfolio Budget Statements 2018–19 estimate	
	(A)	(B)	(C) = A–B
		Original	Variance
	2018–19	2018–19	2018–19
	\$	\$	\$
RETAINED EARNINGS			
Opening balance			
Balance carried forward from previous period	23,921,609	23,811,000	110,609
Adjusted opening balance	23,921,609	23,811,000	110,609
Comprehensive income			
Surplus for the period	4,337,907	21,000	4,316,907
Total comprehensive income	4,337,907	21,000	4,316,907
Closing balance as at 30 June 2019	28,259,516	23,832,000	4,427,516
ASSET REVALUATION RESERVE			
Opening balance			
Balance carried forward from previous period	412,900	410,000	2,900
Adjusted opening balance	412,900	410,000	2,900
Comprehensive income			
Other comprehensive income	(1,664)	–	(1,664)
Total comprehensive income	(1,664)	–	(1,664)
Closing balance as at 30 June 2019	411,236	410,000	1,236
TOTAL EQUITY			
Opening balance			
Balance carried forward from previous period	24,334,509	24,221,000	113,509
Adjusted opening balance	24,334,509	24,221,000	113,509
Comprehensive income			
Surplus for the period	4,337,907	21,000	4,316,907
Other comprehensive income	(1,664)	–	(1,664)
Total comprehensive income	4,336,243	21,000	4,315,243
Closing balance as at 30 June 2019	28,670,752	24,242,000	4,428,752

Major variance explanation

The variance between actual and forecast surplus for the period is explained in the Statement of Comprehensive Income.



Cash Flow Statement

FOR THE PERIOD ENDED 30 JUNE 2019

	Actual	Portfolio Budget Statements 2018–19 estimate	
	(A)	(B)	(C) = A–B
		Original	Variance
	2018–19	2018–19	2018–19
	\$	\$	\$
OPERATING ACTIVITIES			
Cash received			
Receipts from the Australian Government	22,248,062	25,332,000	(3,083,938)
Contributions	10,604,532	9,436,000	1,168,532
Grants	3,418,716	–	3,418,716
Interest	519,160	300,000	219,160
Net GST received	1,646,468	–	1,646,468
Other	2,124,582	–	2,124,582
Total cash received	40,561,520	35,068,000	5,493,520
Cash used			
Employees	(3,597,929)	(3,927,000)	329,071
Suppliers	(1,760,515)	(1,725,000)	(35,515)
Projects expenditure	(32,881,918)	(28,810,000)	(4,071,918)
Total cash used	(38,240,362)	(34,462,000)	(3,778,362)
Net cash from operating activities	2,321,158	606,000	1,715,158
INVESTING ACTIVITIES			
Cash used			
Purchase of property, plant and equipment	(16,799)	(50,000)	33,201
Purchase of intangibles	(44,738)	(300,000)	255,262
Total cash used	(61,537)	(350,000)	288,463
Net cash used by investing activities	(61,537)	(350,000)	288,463
Net increase in cash held	2,259,621	256,000	2,003,621
Cash and cash equivalents at the beginning of the reporting period	22,293,822	16,553,000	5,740,822
Cash and cash equivalents at the end of the reporting period	24,553,443	16,809,000	7,744,443

Major variance explanation

Total cash received increased from original forecast due to the increased revenue relating to increases to GVP, and new project contributions.

Total cash used was higher than anticipated due to the increased project expenditure that occurred in 2018–19, largely driven by research provider delivery of project deliverables.

The variance between actual and forecast cash and cash equivalents for the period is explained in the Statement of Financial Position.





APPENDICES



Appendix A: The FRDC's principal revenue base

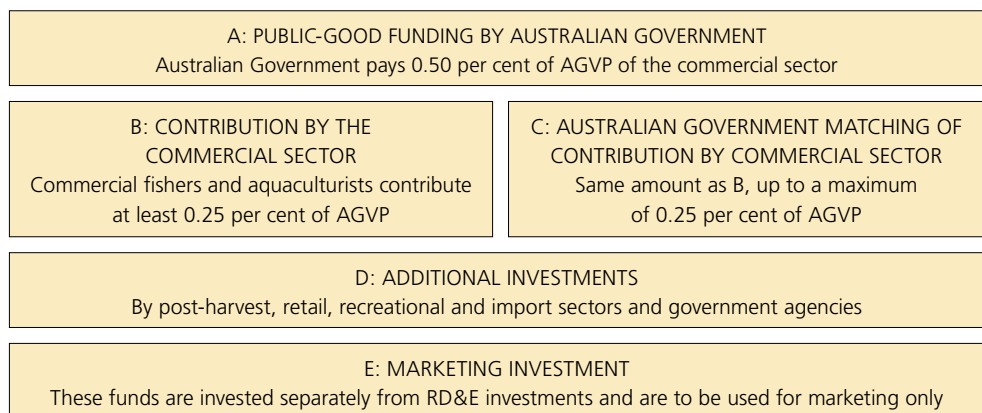
As stipulated in the PIRD Act, and shown in Figure 6, the FRDC's primary revenue source is based on:

- A. Australian Government providing unmatched funds equivalent to 0.50 per cent of the average gross value of Australian fisheries production (AGVP) for the current year plus the two preceding years.
- B. Fishers and aquaculturists providing contributions via government.
- C. Australian Government matching this amount up to a maximum of 0.25 per cent of AGVP.
- D. Funds received from RD&E providers, both as cash and in-kind contributions through projects that have been successful for funding.
- E. Marketing funds collected from the sectors through a statutory levy (or if approved voluntary contributions). Marketing funds are not eligible to be matched by the Commonwealth.

There is no legislative impediment to fishers and aquaculturists contributing to the FRDC above the maximum level at which the Australian Government will provide a matching contribution. Industry contributions for the past financial year and trends for the past five years are shown on page i.

Details of all FRDC revenue (including investments, royalties, and sales of products, information and services) are in the financial statements starting on page 135.

FIGURE 6: PROPORTIONS OF THE FRDC'S PRINCIPAL REVENUE BASE



Rationale for the FRDC's revenue base

The high component of public good in the operating environment of the fishing industry, has significance for the FRDC's revenue base. The Australian Government's contribution of 0.50 per cent of AGVP is made on the grounds that the Australian Government exercises a stewardship role in relation to fisheries resources on behalf of the Australian community.

Fishing and aquaculture contributes to the FRDC on the basis that RD&E will be targeted to its needs and will deliver economic and social benefits. The Australian Government matches industry contributions on the basis that the beneficiaries of research should pay approximately in proportion to the benefits received, but the government should contribute to spill over benefits to the wider community.



Appendix B: The FRDC's legislative foundation and the exercise of ministerial powers

The FRDC was formed as a statutory corporation on 2 July 1991 under the provisions of the PIRD Act. It also operates under the provisions of the PGPA Act, which applies high standards of accountability while providing for the independence required by the Corporation's role as a statutory authority.

The FRDC's objects, deriving from section 3 of the PIRD Act and shown in Appendix C, are incorporated in the FRDC's vision and planned outcomes. As reflected in Figure 3 on pages 28–29, the FRDC's five R&D programs mirror the industry development, natural resources sustainability and people development themes of, respectively, sub-sections 3(a), (b) and (c) of the Act. This alignment has brought simplicity and robustness to the FRDC's RD&E planning, implementation and reporting, and to many of the organisations with which it does business. Importantly, the alignment ensures the RD&E outputs resulting from the FRDC's investments fully address the legislative objects.

More information about the FRDC's legislative foundations can be found in Appendix C.

Enabling legislation

The FRDC's enabling legislation is the *Primary Industries Research and Development Act 1989* (PIRD Act).

The FRDC Board is responsible to the Minister for Agriculture and, through him/her, to the Parliament of Australia.

The objects, functions and statutory powers of R&D corporations are specified in the PIRD Act, the text of which is available via the FRDC website.

In the interests of clarity, the following statements of the FRDC's objects, functions and statutory powers mirror the wording of the PIRD Act but are specific to the FRDC and its business environment. Similarly, the statements of the FRDC's functions and statutory powers have been made shorter and simpler than the wording of the Act.

Objects

The objects of the FRDC, deriving from section 3 of the PIRD Act, are to:

- (a) make provision for the funding and administration of research and development relating to primary industries with a view to:
 - (i) increasing the economic, environmental and social benefits to members of primary industries and to the community in general by improving the production, processing, storage, transport or marketing of the products of primary industries, and
 - (ii) achieving the sustainable use and sustainable management of natural resources, and
 - (iii) making more effective use of the resources and skills of the community in general and the scientific community in particular, and
 - (iv) supporting the development of scientific and technical capacity, and
 - (v) developing the adoptive capacity of primary producers, and
 - (vi) improving accountability for expenditure on research and development activities in relation to primary industries, and
- (b) make provision for the funding and administration of marketing relating to products of primary industries.



Functions

The functions of the FRDC, deriving from section 11 of the PIRD Act, are to:

- investigate and evaluate the requirements for fisheries research and development and, on that basis, prepare a five-year R&D plan, review it annually and revise it if required,
- prepare an annual operational plan for each financial year,
- coordinate or fund the carrying out of R&D activities that are consistent with the annual operational plan,
- monitor and evaluate fisheries RD&E activities that are funded and report on them to the Parliament; the Minister for Agriculture, statutory levy payers and the FRDC representative organisations, and
- facilitate the dissemination, adoption and commercialisation of the results of fisheries R&D.

Statutory powers

Subject to the PIRD Act, the FRDC is empowered under section 12 of the Act to do all things necessary or convenient to be done for, or in connection with, the performance of its functions, which may include:

- entering into agreements for the carrying out of R&D activities by other persons,
- entering into agreements for the carrying out of R&D activities by the FRDC and other persons,
- making applications, including joint applications for patents,
- dealing with patents vested in the FRDC and other persons,
- making charges for work done, services rendered, and goods and information supplied by it,
- accepting gifts, grants, bequests and devices made to it, and acting as trustee of money and other property vested in it on trust,
- acquiring, holding and disposing of real and personal property,
- joining in the formation of a company, and
- doing anything incidental to any of its powers.

The description of ministerial powers that follows has been drawn from several sections of the PIRD Act and has been condensed from the original in the interests of clarity.





Ministerial powers

Ministerial powers under the enabling legislation may be exercised by the Minister for Agriculture. They relate to:

- directing the FRDC in writing as to the performance of its functions and the exercise of its powers,
- approving the RD&E plan and the annual operational plan,
- requesting and approving variation to the RD&E plan and the annual operational plan,
- requesting the establishment of a selection committee and determining certain conditions relating to the selection committee,
- appointing the presiding member and members of a committee for the selection of directors,
- determining the number of directors,
- determining the terms and conditions of appointment of directors (other than the Managing Director) in relation to matters not provided for by the PIRD Act,
- appointing the Chairperson,
- appointing directors, other than the Chairperson and Managing Director, from persons nominated by a selection committee,
- declaring one or more specified organisations to be representative organisations in relation to the FRDC,
- determining the gross value of production of the fishing industry for the purposes of establishing the maximum payments by the Australian Government to the FRDC,
- establishing written guidelines covering the payment by the FRDC to an eligible industry body, or member of an eligible industry body, for expenses reasonably incurred in connection with consultation with the FRDC,
- causing, at least once in each financial year, a coordination meeting to be held of all R&D corporations,
- granting leave of absence to the Chairperson, and
- terminating the appointment of the Chairperson or a director other than the Managing Director.

Additional powers under the PGPA Act relating to corporate governance and reporting are available from the Minister for Agriculture.

Exercise of ministerial powers during 2018–19 is described on page 113.





Appendix C: Principal legislative requirements for reporting

This annual report complies with the requirements of Commonwealth legislation. The principal reporting requirements, and some of their consequences for the FRDC, are outlined in this appendix. The Acts are:

- *Primary Industries Research and Development Act 1989* (PIRD Act),
- *Public Governance, Performance and Accountability Act 2013* (PGPA Act),
- *Environment Protection and Biodiversity Conservation Act 1999* (Section 16A).

PGPA Act requirements

The PGPA Act is one of the principal legislation that specifies the content and standards of presentation of statutory authorities' annual reports for parliamentary scrutiny.

Part 2–3: Planning, Performance and Accountability consolidates government policy for planning and performance reporting with budgets and actuals for both financial and non-financial measures. Section 46 of the PGPA Act requires the FRDC's directors to prepare an annual report in accordance with PGPA Rules, and to give it to the responsible minister by 15 October.

PIRD Act requirements

The PIRD Act also specifies matters that must be reported. In particular, section 28 states:

- (1) The annual report prepared by the directors of an R&D Corporation and given to the Minister under section 46 of the PGPA Act for a period must include:
 - (a) particulars of:
 - (i) the R&D activities that it coordinated or funded, wholly or partly, during the period, and
 - (ia) if a levy attached to the Corporation had a marketing component during the period—the marketing activities that it coordinated or funded, wholly or partly, during the period, and
 - (ii) the amount that it spent during the period in relation to each of those activities, and
 - (iib) the impact of those activities on the primary industry or class of primary industries in respect of which the Corporation was established, and
 - (iii) revisions of its R&D plan approved by the Minister during the period, and
 - (iv) the entering into of agreements under sections 13 and 14 during the period and its activities during the period in relation to agreements entered into under that section during or prior to the period, and
 - (v) its activities during the period in relation to applying for patents for inventions, commercially exploiting patented inventions and granting licences under patented inventions, and
 - (vi) the activities of any companies in which the Corporation has an interest, and
 - (vii) any activities relating to the formation of a company, and
 - (viii) significant acquisitions and dispositions of real property by it during the period, and



- (b) an assessment of the extent to which its operations during the period have:
 - (i) achieved its objectives as stated in its R&D plan, and
 - (ii) implemented the annual operational plan applicable to the period, and
- (c) an assessment of the extent to which the Corporation has, during the period, contributed to the attainment of the objects of this Act as set out in section 3, and
- (d) in respect of the grain industry or such other primary industry or class of primary industries as is prescribed in the regulations, particulars of sources and expenditure of funds, including:
 - (i) commodity, cross commodity and regional classifications, and
 - (ii) funds derived from transfer of assets, debts, liabilities and obligations under section 144.

EPBC Act requirements

Section 516A requires annual reports for Commonwealth entities to report against the criteria set out in that section of the Act.

Part 21—Reporting—Division 1—Annual reports

Section 516A: Annual reports to deal with environmental matters

- (6) A report described in subsection (1), (4) or (5) relating to a body or person (the reporter) for a period must:
 - (a) include a report on how the activities of, and the administration (if any) of legislation by, the reporter during the period accorded with the principles of ecologically sustainable development, and
 - (b) identify how the outcomes (if any) specified for the reporter in an Appropriations Act relating to the period contribute to ecologically sustainable development, and
 - (c) document the effect of the reporter's activities on the environment, and
 - (d) identify any measures the reporter is taking to minimise the impact of activities by the reporter on the environment, and
 - (e) identify the mechanisms (if any) for reviewing and increasing the effectiveness of those measures.



Appendix D: Government priorities

The FRDC works closely with the Minister for Agriculture and, Assistant Minister and the Department of Agriculture to ensure it delivers results that in line with the Australian Government's Science and Rural RD&E priorities—see Australian Government Science and Research Priorities section at Attachment 1. The FRDC invests in targeted projects that will assist in the delivery of Australian Government priorities. Government priorities are consistent with the FRDC's four legislated objects (section 3 of the PIRD Act) as shown in Figure 3: FRDC's framework for integrating legislative, government and industry priorities (pages 28–29).

The following tables summarise the total expenditure allocated against each set of priorities within the 2018–19 financial year. The allocation of funds is shown in both dollar and percentage terms for each investment theme—noting that totals may not equal 100 per cent as not all projects fit the Government priorities.

Government research priorities attributed to each RD&E program

RURAL RESEARCH PRIORITIES

RD&E priorities	Total expenditure	
	\$	%
Adoption of R&D	6,074,059	22.2
Advanced technology	5,608,220	20.5
Biosecurity	2,943,528	10.7
Soil, water and managing natural resources	12,758,993	46.6
Total	27,384,802	100.0

STRATEGIC RESEARCH PRIORITIES

	Total expenditure	
	\$	%
Advanced manufacturing	1,675,631	6.0
Cybersecurity	117,430	0.4
Energy	27,087	0.1
Environmental change	3,902,968	14.1
Food	11,172,219	40.3
Health	1,109,144	4.0
Resources	3,170,469	11.4
Soil and water	6,476,997	23.4
Transport	55,748	0.2
Total	27,707,693	100.0

Not all projects align to the priorities. Figures in these tables have been rounded, hence totals may not agree with component total RD&E financial figures.

Appendix E: Freedom of information statement

Australian Government agencies subject to the *Freedom of Information Act 1982* (FOI Act) are required to publish information to the public as part of the Information Publication Scheme (IPS). This requirement is in Part II of the FOI Act and each agency must display on its website a plan showing what information it publishes in accordance with the IPS requirements.

Further information on the FRDC's agency plan is available from the FRDC website—www.frdc.com.au/About-us/Freedom-of-information.

Role, structure and functions

The FRDC's role is described on page 17 of this annual report; its structure and functions and legislation under which it is established are described in Appendices A to C.

DOCUMENTS AVAILABLE FOR INSPECTION

RD&E plan (the FRDC's strategic plan)	File, publication and website *
FRDC policies	Unpublished documents, list on website *
Annual operational plan	File, publication and website *
Project details	Database, files and website *
Project agreements	Files and generic copy on website *
Final reports and non-technical summaries	Publications and website *
RD&E funding applications	Files
Annual report	File, publications and FRDC website *
FISH magazine	File, publications, iPad and FRDC website *
Administration	Files, unpublished documents
Mailing lists	Database

* The FRDC's website address is www.frdc.com.au

Some other information may be subject to assessment of access for such matters as commercial confidentiality or personal privacy in accordance with the FOI Act.





Access to documents

To seek access to FRDC documents, please contact the FRDC's FOI Officer: address, telephone and e-mail details are shown inside the back cover of this report. It may not be necessary to request the information under the FOI Act—the FRDC may simply provide it to you when you ask for it. At all times, however, you have the option of applying under the FOI Act.

Fees and charges for FOI

Request	Charge
Application	No fee
Search and retrieval	\$15 per hour (GST inclusive)
Decision making and consultation	First five hours free, after that \$20 per hour (GST inclusive)
When a FOI request is not responded to within the statutory time limit	No fee
Internal review	No fee
Request for personal information	No fee

The standard FOI application fee is nil when making your application, however processing charges will apply.

Documents are usually made available for direct access at the FRDC's office in Canberra. They may also be provided, depending on your preference:

- by post (photocopies) to an address specified in your request, or
- at the Information Access Office (established by the Attorney-General) nearest where you live.



Appendix F: Information about remuneration for key management personnel

TABLE 19: REMUNERATION FOR KEY MANAGEMENT PERSONNEL

Name	Position title	Short-term benefits	Post-employment benefits	Other long-term benefits	Total remuneration
		Base salary	Super-annuation contributions	Other long-term employee benefits (annual leave and long service leave)	
The Hon. Ronald Boswell	Chair	\$59,780	\$5,679	n/a	\$65,459
Dr Kathryn Brooks	Director	\$25,993	\$2,469	n/a	\$28,462
Professor Colin D. Buxton	Director – Deputy Chair	\$31,971	\$3,037	n/a	\$35,008
Dr Saranne Cooke	Director	\$25,993	\$2,469	n/a	\$28,462
Ms Katina Hodson-Thomas	Director	\$25,993	\$2,469	n/a	\$28,462
Dr Patrick Hone	Managing Director	\$303,240	\$57,009	\$41,588	\$401,837
Mr Mark King	Director	\$25,993	\$2,469	n/a	\$28,462
Mr John Lloyd	Director	\$25,993	\$2,469	n/a	\$28,462
Dr Lesley MacLeod	Director	\$31,971	\$3,037	n/a	\$35,008
Ms Renata Brooks	Director (retired)	\$5,978	\$568	n/a	\$6,546
Mr John Harrison	Director (retired)	\$5,978	\$568	n/a	\$6,546
Associate Professor Daryl McPhee	Director (retired)	\$5,978	\$568	n/a	\$6,546
Mr John Susman	Director (retired)	\$5,978	\$568	n/a	\$6,546
Mr Peter Horvat	General Manager Communications, Trade and Marketing	\$168,301	\$31,211	\$22,698	\$222,210
Mr John Wilson	General Manager Business	\$236,741	\$64,254	\$34,493	\$335,488
Mr Crispian Ashby	General Manager Research and Investment	\$196,367	\$35,353	\$25,599	\$257,320

Note: There were no bonuses or termination benefits paid during the financial year 2018–19.

n/a: not applicable.





ABBREVIATIONS AND ACRONYMS

AASB	Australian Accounting Standards Board
ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
AFMF	Australian Fisheries Management Forum
AGVP	average gross value of production
AOP	annual operational plan
APFA	Australian Prawn Farmers Association
ASX	Australian Securities Exchange
CEO	chief executive officer
CRC	cooperative research centre
CSIRO	Commonwealth Scientific and Industrial Research Organisation
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
FBT	fringe benefits tax
FOI Act	<i>Freedom of Information Act 1982</i>
FRDC	Fisheries Research and Development Corporation
GVP	gross value of production
GST	goods and services tax
IPA	Industry Partnership Agreement
IRG	Indigenous Reference Group
ISO	International Organization for Standardisation
ICT	information and communications technology
m	million
MP	member of parliament
NCCP	National Carp Control Plan
NSW	New South Wales
PAYG	pay as you go
PGPA Act	<i>Public Governance, Performance and Accountability Act 2013</i>
PhD	Doctor of Philosophy
PIRD Act	<i>Primary Industries Research and Development Act 1989</i>
PBS	Portfolio Budget Statements
R&D	research and development
RAC	Research Advisory Committee
RD&E	research, development and extension
RDC	research and development corporation
SAFS	Status of Australian Fish Stocks reports
WHS Act	<i>Work Health and Safety Act 2011</i>





INDICES





Compliance index

This index shows the page numbers on which the FRDC has reported on matters specified in Australian Government legislation and policies.

The requirements for annual reports acknowledges that agencies vary in role and size and there is discretion as to the extent of information to include in annual reports and the sequence in which it is presented. The Joint Committee on Publications has also observed that a departmental report will necessarily be different from that of a statutory authority; and a statutory authority, while accountable for its activities, has a degree of independence not shared by departments and its annual reports will thus have a greater freedom of expression and comment. The FRDC's reporting is, accordingly, appropriate to its legislative basis, functions and size.



TABLE 20: PRIMARY INDUSTRIES RESEARCH AND DEVELOPMENT ACT 1989 (PIRD ACT)

Section	Title	Comply	Page
Section 10	R&D corporation is a body corporate etc.	Yes	175–177
Section 11	Functions	Yes	176
Section 12	Powers	Yes	176–177
Section 19	R&D plans	Yes	11, 13, 20, 25–26
Section 20	Approval of R&D plans	Yes	25
Section 21	Variation of R&D plans	Yes	Nil
Section 24	Consultation	Yes	18, 22, 23, 26, 60
Section 25	Annual operational plans	Yes	iii, v, 9, 25, 108
Section 27	Compliance with R&D plans and annual operational plans	Yes	v, 108
Section 28	Annual report	Yes	Throughout
28(a)	(i) the R&D activities that it coordinated or funded, wholly or partly, during the period, and	Yes	31–94
28(a)	(ia) the marketing activities that it coordinated or funded, wholly or partly, during the period, and	Yes	vii, 9, 15, 96
28(a)	(iia) the amount that it spent during the period in relation to each of those activities, and	Yes	Nil
28(a)	(iib) the impact of those activities on the primary industry or class of primary industries in respect of which the Corporation was established, and	Yes	Nil
28(a)	(iii) revisions of its R&D plan approved by the Minister during the period, and	Yes	n/a
28(a)	(iv) the entering into of agreements under sections 13 and 14 during the period and its activities during the period in relation to agreements entered into under that section during or prior to the period, and	Yes	112
28(a)	(v) its activities during the period in relation to applying for patents for inventions, commercially exploiting patented inventions and granting licences under patented inventions, and	Yes	112, 151
28(a)	(vi) the activities of any companies in which the Corporation has an interest, and	Yes	n/a
28(a)	(vii) any activities relating to the formation of a company, and	Yes	n/a
28(a)	(viii) significant acquisitions and dispositions of real property by it during the period, and	Yes	n/a
28(b)	an assessment of the extent to which its operations during the period have:	Yes	iii, v, 9, 25, 31–94, 108
28(b)	(i) achieved its objectives as stated in its R&D plan, and	Yes	
28(b)	(ii) implemented the annual operational plan applicable to the period, and	Yes	iii, v, 9, 25, 31–94, 108
28(c)	an assessment of the extent to which the Corporation has, during the period, contributed to the attainment of the objects of this Act as set out in section 3, and	Yes	Throughout



Section	Title	Comply	Page
28(d)	in respect of the grain industry or such other primary industry or class of primary industries as is prescribed in the regulations, particulars of sources and expenditure of funds, including:	Yes	
28(d)	(i) commodity, cross commodity and regional classifications, and	Yes	n/a
28(d)	(ii) funds derived from transfer of assets, debts, liabilities and obligations	Yes	n/a
Section 29	Accountability to representative organisations	Yes	18, 22
Section 33	Expenditure of money of R&D corporations	Yes	131–172
	Spending must be in accordance with funding agreement	Yes	18
Section 33A	R&D money must not be spent on marketing	Yes	96, 131–172
Section 34	Commonwealth to be paid levy expenses from R&D corporation	Yes	23
Section 35	Commonwealth to be reimbursed for refunds of levy	Yes	23
Section 40	Separate accounting records	Yes	131–172
Section 47	Times and places of meetings	Yes	126–128
Section 53	Minutes	Yes	126–128
Section 76	Duties	Yes	119
Section 87	Employees	Yes	108–109
Section 143	Minister may give directions	Yes	113





The annual report for a corporate Commonwealth entity for a reporting period must include the following.

TABLE 21: PUBLIC GOVERNANCE, PERFORMANCE AND ACCOUNTABILITY ACT 2013 (PGPA ACT)

Requirement	Comply	Page
Report must be approved and signed by accountable authority responsible for the preparation and contents of the Annual Report	Yes	ix
Report must specify the enabling legislation and include a summary of its objects and functions and the purpose of the entity (from R&D Plan)	Yes	175–179
Report must specify the name of the responsible Minister(s)	Yes	8, 17
Report must provide details of: <ul style="list-style-type: none"> ■ Directions issued under legislation by the responsible Minister, or other Minister ■ General policy orders that apply to the RDC under s22 (PGPA Act), and ■ any non-compliance of a direction or general policy order 	Yes	113
Include a copy of relevant years annual performance statement	Yes	v–ix, 31–94
Include a statement of any significant issue, and remedy action taken, reported to the responsible Minister that relates to non-compliance with the finance law in relation to the entity	Yes	n/a
Must include information about the directors including names, qualifications, experience, attendance of board meetings, and whether the director is an executive or non-executive director	Yes	117–126
Must provide an outline of the organisational structure, including subsidiaries, location of major activities and facilities and information on the main corporate governance practices	Yes	107–129, 144
Must include information on the main corporate governance practices	Yes	107–129
Disclose the decision-making process undertaken by the board for related entity transactions	Yes	126–129
Highlight significant activities and changes that affected the operations or structure during the financial year	Yes	v–ix, 7–11
Include particulars of judicial decisions and, decisions of administrative tribunals	Yes	115
Include particulars of any report on the entity	Yes	9, 18–19
Must include details of any indemnity given to the accountable authority, any member of accountable authority or officer against a liability, including premiums paid, or agreed to be paid, for insurance against the authority, member or officer's liability for legal costs	Yes	129
Executive remuneration reporting	Yes	183



TABLE 22: GOVERNMENT POLICY AND ASSOCIATED REPORTING REQUIREMENTS

Section	Comply	Page
Australian Government Cost Recovery Policy	Yes	113
Australian Government Foreign Exchange Risk Management Guidelines	Yes	113
Australian Government priorities <ul style="list-style-type: none"> ■ Rural Research Priorities ■ Strategic Research Priorities 	Yes	180
Australian Government Commonwealth Procurement Rules	Yes	113
Australian Government Commonwealth Property Management Framework	Yes	113
Australian Government Protective Security Policy Framework (PSPF)	Yes	113
Australian Government Public Sector Workplace Bargaining Policy	Yes	113
Comcover Risk Benchmarking Survey	Yes	111
<i>Commonwealth Disability Discrimination Act 1992</i> (National Disability Strategy 2010–2020)	Yes	110
Commonwealth Fraud Framework 2014	Yes	111
<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Section 16A)	Yes	54–179
<i>Freedom of Information Act 1982</i> , quarterly and annual lodgements	Yes	115, 181–182
National Code of Practice for the Construction Industry and the Commonwealth's Implementation Guidelines	Yes	113
OLSC [Office of Legal Services Coordination] Legal Expenditure annual return	Yes	112
<i>Work Health and Safety Act 2011</i>	Yes	113–114





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Publications and other information

The following information is available from the FRDC	Printed	Website
The RD&E plan (<i>Knowledge for fishing and aquaculture into the future: The FRDC's research, development and extension plan 2015–20</i>), which provides comprehensive information on the FRDC; its business environment; the outlook for the fishing industry and the natural resources on which it depends; and the way in which the FRDC plans, invests in and manages fisheries R&D.	Yes	Yes
This and the previous annual report.	Yes	Yes
R&D plans for Commonwealth, states, Northern Territory, regions and industry sectors.	Yes	Yes
<i>FISH</i> (published in March, June, September and December, and on other occasions for special themes), which provides information on FRDC activities, summarises final reports on completed R&D projects released during the previous quarter, and lists projects that have been newly funded.	Yes	Yes
Information on completed projects (final reports and other related products).	—	Yes
Non-technical summaries of all final reports of FRDC projects.	—	Yes
Hyperlinks to other websites containing full final reports and fisheries R&D strategies, and to other important websites.	—	Yes
R&D funding application details.	—	Yes
Coming events of significance for the industry.	—	Yes
Research databases.	—	Yes

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The FRDC's website (www.frdc.com.au) provides easy access to information and publications, including the items on this page.

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About this report

This report describes the extent to which the FRDC implemented its approved annual operational plan during the previous financial year. It meets the requirements for reporting legislated by the Australian Government and informs the FRDC's other stakeholders—especially those in the commercial, recreational and Indigenous sectors of the fishing industry and in the research and development community.

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The FRDC is co-funded by our stakeholders, the Australian Government,
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The FRDC invests strategically across all of Australia in research, development
and extension activities that benefit all sectors of the fishing industry.
Our goal is for Australia's fisheries to be sustainably managed.