



Marsden Fund Investment Plan 2018-2020

Prepared by the Marsden Fund Council for the Minister of Science and Innovation

1 Introduction

The Marsden Fund Council manages the Marsden Fund on behalf of the Minister of Science and Innovation. In March 2017 the Minister directed the Council to prepare an Investment Plan for the Fund, as recommended in the Ministry of Business, Innovation and Employment's recent Assessment of Strategy and Management of the Fund.

This Investment Plan sets out the strategic direction of the Fund, including how it will be managed to achieve its objectives and contribute to the National Statement of Science Investment's vision and goals.

This first Investment Plan will take effect from the 2018 Funding Round and covers the three years to 2020. It presents a number of key changes to the way in which the Fund operates.

As well as replicating the Fund's enduring, overarching nature and objectives from the Fund Terms of Reference, the document sets out some specific goals and principles which the Council will use to guide decisions on Fund settings and to measure Fund performance.

Finally, the Investment Plan describes the categories of award and amount of funding available to support research over the next three years.

The Investment Plan will be updated each year. Annual updates are mainly intended to add an extra year to funding projections, reaffirm consistent, stable signals about the Fund's direction and to provide updates on changes which are being phased-in over several years. Un-signalled changes to critical fund settings from year-to-year are highly unlikely.

Note on relationship to other fund documents

This Investment Plan presents the Council's main policies and procedures to implement the Terms of Reference for the Marsden Fund.

The Council also publishes guidelines for applicants and assessors and a policy manual¹. If there is any discrepancy with these materials, the Investment Plan takes priority.

¹ <https://royalsociety.org.nz/what-we-do/funds-and-opportunities/marsden>

2 Nature and objectives of the Fund

The nature and objectives of the Marsden Fund are set in the Terms of Reference by the Minister of Science and Innovation.

The Terms of Reference have been updated to include a new objective relating to impact following the 2017 Assessment of Strategy and Management.

From the Marsden Fund Terms of Reference (2017)

Nature of the Marsden Fund

The Marsden Fund invests in excellent, investigator-led research aimed at generating new knowledge, with long-term benefit to New Zealand. It supports excellent research projects that advance and expand the knowledge base and contributes to the development of people with advanced skills in New Zealand. The research is not subject to government's socio-economic priorities.

The Marsden Fund encourages New Zealand's leading researchers to explore new ideas that may not be funded through other funding streams and fosters creativity and innovation within the research, science and technology system.

Objectives of the Fund

The primary objectives of the Marsden Fund are to:

- enhance the quality of research in New Zealand by creating increased opportunity to undertake excellent investigator-led research;
- support the advancement of knowledge in New Zealand, and contribute to, the global knowledge base.

The secondary objectives of the Marsden Fund are to:

- contribute to the development of advanced skills in New Zealand, including support for continuing training of post-doctoral level researchers and support for the establishment of early careers of new and emerging researchers

[New objective as recommended by 2017 Assessment of Strategy and Management of the Marsden Fund]:

- contribute in the long-term to economic, social, cultural, environmental, health or other impacts for New Zealand.

3 The Marsden Council's strategic direction for the Fund

The Council has developed a mission statement, goals and principles for the Fund to guide its fund-design decisions. These are consistent with, and complementary to, the Fund's high-level nature and objectives.

3.1 The Council's Mission Statement

To drive world-class research in New Zealand by supporting and incentivising excellent researchers to work on their best and boldest ideas and to connect internationally, leading to new knowledge and skills with the potential for significant downstream impact for New Zealand

The Mission Statement summarises how the Fund will be managed to deliver on its objectives, including impact.

Research activity supported by the Fund will generate **high scholarly impact** and develop crucial knowledge and skills. ***Whilst the long-term benefit to New Zealand of a proposal is not explicitly considered as an assessment criterion, the Council expects that the overall portfolio of the Marsden Fund investment will lead to significant long-term benefit to New Zealand.*** We will identify and report on these impacts through long term monitoring. Figure 1 illustrates this approach.

Scholarly impact is a demonstrable contribution to shifting understanding and advancing methods, theory and application across and within disciplines.

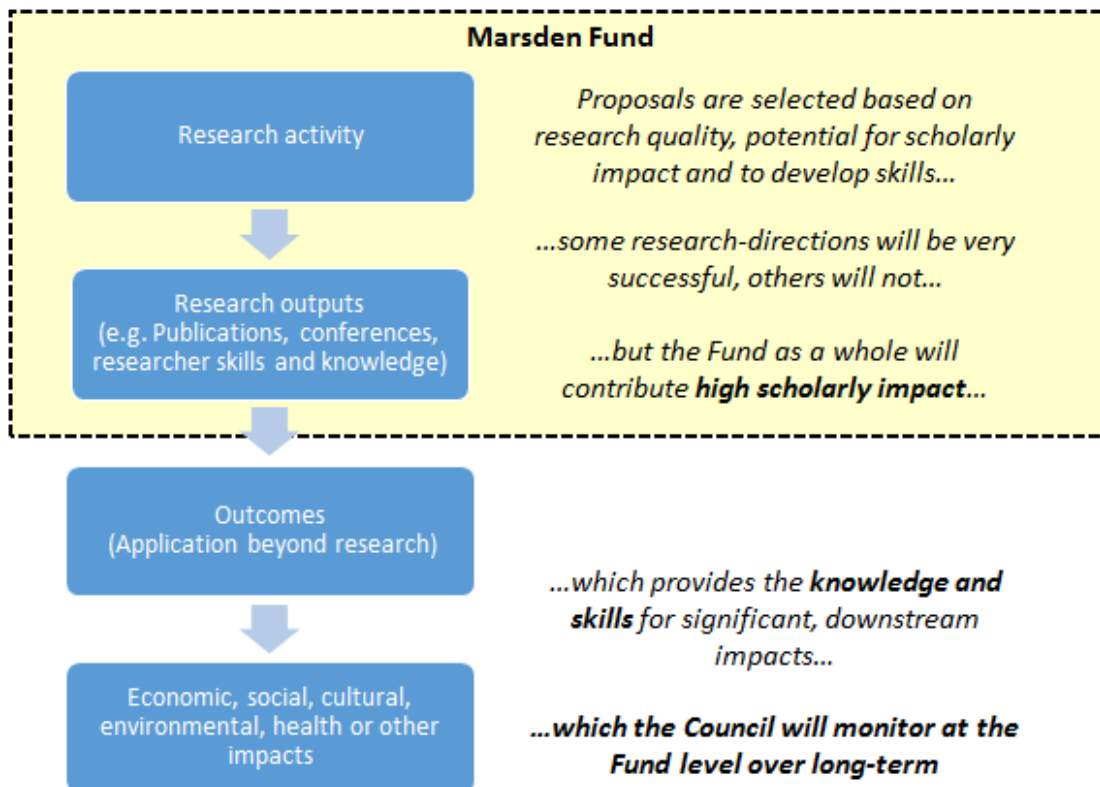


Figure 1 The Marsden Fund's contribution to knowledge, skills and impact

3.2 The Council's Goals for the Fund

The Council has the following specific goals for the Fund. The Council will work towards these goals, as well as the overarching Fund objectives in its management of the Fund and the portfolio of research it supports.

1. Support bold, innovative research with high potential for scholarly impact

For the 2018 Round we are adding an assessment criterion which emphasises researchers should **target significant scholarly impact** even if this means taking risks.

Scholarly impact is a demonstrable contribution to shifting understanding and advancing methods, theory and application across and within disciplines.

Marsden-funded researchers should be expansive and uninhibited in their search for knowledge to maximise the scholarly impact; this can lead to discoveries with significant downstream impact over the long-term. Taking risks also means that some projects will fail to produce impacts, but the knowledge generated is still valuable.

From the 2018 Round, the Council will also allow applications for follow-on awards at the end of a grant, so that significant research leads can be pursued.

2. Stimulate and support creativity and innovation among researchers

This is vital to the generation of new insights and approaches for use in research and may be supported through traditional and/or interdisciplinary approaches.

3. Maintain a New Zealand community of experts in the full, and expanding, range of research fields

The Council wants to support the search for new knowledge across the academic disciplines. This recognises that ground-breaking discoveries could occur in any field (or across multiple fields) and builds a broad community of experts who can help New Zealand better meet future challenges.

The Council will monitor the success rate and participation rate of disciplines, encourage proposals from less successful fields and consider the strategic implications of the balance of disciplines represented across the research funded. The Council will monitor the development of new disciplines and interdisciplinary developments to ensure that important new research areas are not neglected and that assessors with relevant expertise are available.

4. Feed the pipeline of future New Zealand research leaders

A key pathway to impact for the Marsden Fund is feeding the pipeline of future leaders for key research institutions and public science initiatives. The Council wants the Fund to allow for the development of research careers and expertise in New Zealand and to attract and retain the brightest researchers.

5. Support the flow of international knowledge, expertise and research-related funds into New Zealand

Global connectivity is vital to connect researchers to new developments, and bring new ideas and techniques to New Zealand. By presenting their work on the world stage, New Zealand researchers can attract the attention of overseas researchers and companies and discover opportunities to leverage overseas research funding.

6. Help unlock the potential of Māori knowledge, people and resources

The Council will ensure that the Fund recognises and supports the themes of Vision Mātauranga², including supporting Council members and researchers to develop their understanding and experience of Vision Mātauranga and how to 'bring it to life'.

7. Champion excellence in research and scholarship

The Council will actively celebrate new and historical Marsden research and showcase the difference this has made to New Zealand.

8. Run fund administrative processes which are cost-effective for the Royal Society, researchers and research institutions.

Fund administrative processes should achieve Fund objectives while providing good value for government money and being user-friendly for researchers.

3.3 The Council's principles

The Council also applies the following principles in its decisions and management of the Fund.

1. Decisions are evidence-based
2. Processes are transparent, fair and stable
3. The Fund is managed as a whole to achieve its goals
4. Funding decisions are made by world class thought leaders

² <http://www.mbie.govt.nz/info-services/science-innovation/unlocking-maori-potential>

4 Current Fund processes and investment

4.1 Types of Award

Two categories of award are available:

Fast-Start awards are aimed at emerging researchers (up to seven years after the conferment of their PhD). Funding is set at NZ\$100,000 (excluding GST) per year for three years.

Standard awards are larger grants open to established researchers as well as emerging researchers. Funding is for three years and the amount of funding is capped at between NZ\$240,000 - NZ\$320,000 (excluding GST) per year (cap varies by discipline).

4.2 Application and assessment process

The Marsden Fund runs annual investment rounds through a two-stage, competitive process. Proposals are assessed against each other and funds are allocated on a project-by-project basis.

Applications are considered by discipline-based panels of assessors and by international peer-reviewers at the second stage. The Marsden Council makes final funding decisions taking into account advice from the convenor of each assessment panel.

4.3 Research supported by the Fund

Figure 2 shows the value of Fast-Start and Standard awards made in each round over the last five years.

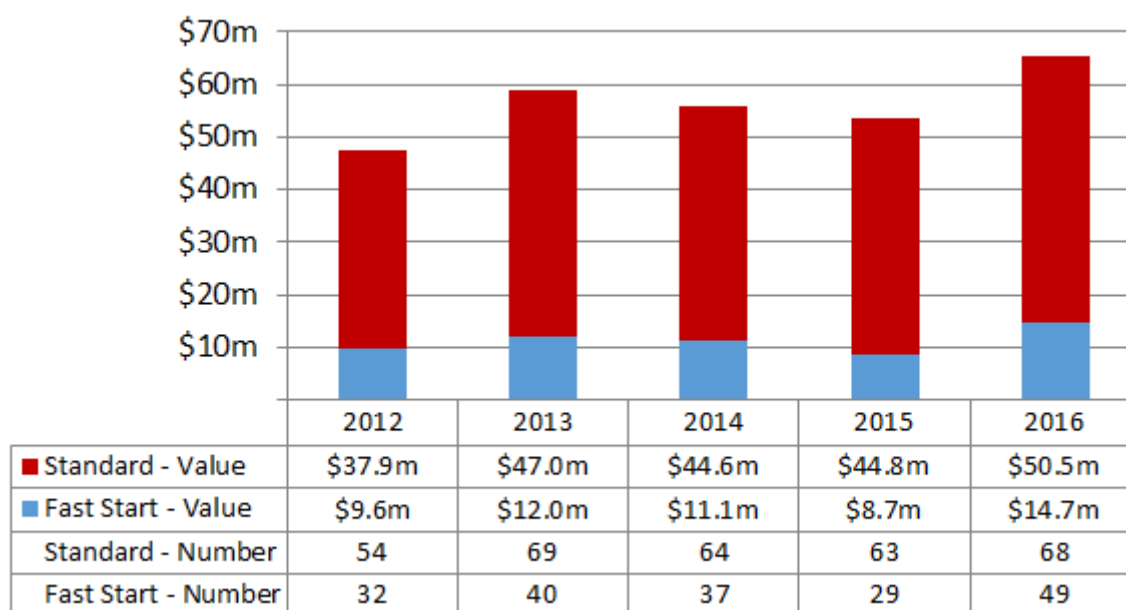


Figure 2 Value of Fast Start and Standard awards made, 2012-2016

Figure 3 shows the share of funding awarded through each assessment panel over the last five years. This is an indication of the mix of disciplines covered by research under the fund. In reality, a given research contract may span several disciplines.

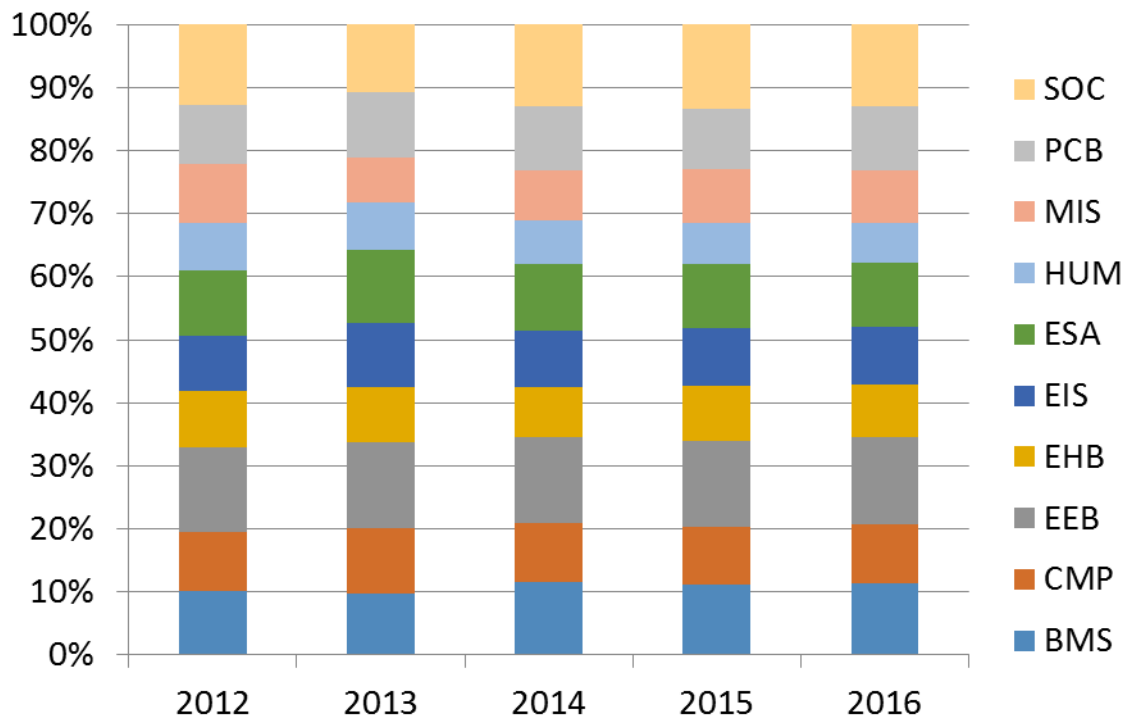


Figure 3 Share of investment by assessment panel, 2012-2016

Key

SOC	Social Sciences
PCB	Physics, Chemistry and Biochemistry
MIS	Mathematical and Information Sciences
HUM	Humanities
ESA	Earth Sciences and Astronomy
EIS	Engineering and Interdisciplinary Sciences
EHB	Economics and Human & Behavioural Sciences
EEB	Ecology, Evolution and Behaviour
CMP	Cellular, Molecular and Physiological Biology
BMS	Biomedical Sciences

5 Key changes to the Fund

5.1 New interdisciplinary award: the Marsden Fund Council Award

The Council is introducing a larger award category to complement Fast-Start and Standard grants: the Marsden Fund Council Award. These larger awards will be worth up to \$1 million per year for up to three years (\$3 million maximum total award). This will expand the opportunities for interdisciplinary researcher-led projects of the highest ambition, and encourage creativity and innovation through greater connections between specialists across disciplines with larger teams.

The Council will invest up to \$6 million from each funding round in awards under this category (i.e. this would support two awards per funding round at the maximum amount of \$3 million).

A Marsden Fund Council Award will not fund existing research programmes, nor will it fund straightforward extensions of existing research programmes, irrespective of their merit.

Marsden Fund Council Awards will be subject to the same eligibility criteria as currently apply to Standard and Fast-Start awards, i.e.

- Researchers cannot be a Principal Investigator on more than one Marsden Fund grant at a time, and

At the Preliminary Proposal stage, eligible applicants must:

- Be involved in no more than TWO Preliminary Proposals in total per funding round: either as a Principal Investigator on one and an Associate Investigator on another; or as an Associate Investigator on two proposals.

There will be a one-stage application process with proposals assessed by the Marsden Fund Council supported by international review.

If insufficient applications of sufficient merit are received, the Council may decide to make fewer or no Marsden Fund Council Awards in a given year and allocate funding to Standard and/or Fast-Start awards instead.

For further information on criteria, eligibility, and how to apply, potential applicants should see the 2018 Application Guidelines (to be made available November 2017).

Rationale and link to goals

As a result of this new award category, the Council expects to see an increase in the proportion of highly-interdisciplinary research, in domestic and international connectivity and in the Fund's scholarly impact per dollar invested.

5.2 Follow-on awards

From 2018, there is no restriction on applying for a second grant on the same research project on completion of a successful Marsden grant. This will enable reinvestment in successful research and enable researchers to continue to research beyond the three year grant. Existing award holders will compete alongside new applicants for Standard, Fast Start and Marsden Fund Council awards in annual funding rounds against the same assessment criteria and will not be privileged in that regard.

Assessors will take into account performance of researchers on any Marsden grants already held when assessing ability relative to opportunity. Applications for follow-on awards will be required to demonstrate performance to-date on existing grants, as well as how their proposal applies and

extends on this to pursue exciting research leads. Applicant and assessor guidelines will reflect this change.

Rationale and link to goals

The Council wants to re-invest in successful research ideas and researchers while maintaining significant support for a pipeline of new and emerging ideas. The Council will therefore monitor and report on the total number of awards to existing grant holders and will adjust the settings for the fund if the number of follow-on awards made becomes a major hindrance to new research being funded.

5.3 Assessment criteria

Applications to the Fund are assessed against assessment criteria.

The Council is modifying the assessment criteria to clarify the factors considered by assessors, including Vision Mātauranga, and to align them more closely with the National Statement of Science Investment. The updated criteria for specific proposals incorporate a requirement for scholarly impact, which reflects the Council’s strategy of supporting bold, novel research.

Previous assessment criteria were:

	Fast Start Award	Standard Award
Primary criteria	<ul style="list-style-type: none"> <i>The merit of the proposal, including originality, novelty, insight and rigour and the ability of the researchers to carry out the research</i> <i>The potential of the research to contribute to the advancement of knowledge</i> 	
Secondary criterion		<ul style="list-style-type: none"> <i>Ensuring an ongoing supply of top talent through the contribution to the development of research skills in New Zealand, particularly those at the post-doctoral level and emerging researchers.</i>

The revised criteria to be used from the 2018 Round onwards are:

	Fast Start Award	Standard Award	[NEW]Marsden Fund Council Award
	<ul style="list-style-type: none"> <i>Proposals must have the potential for significant scholarly impact because of the proposal’s novelty, originality, insight and ambition</i> <i>Proposals must be rigorous, and should have a basis in prior research and use a sound research method</i> <i>The research team must have the ability and capacity to deliver</i> <i>Proposals should develop research skills in New Zealand, particularly those at the post-doctoral level and emerging researchers</i> 		<ul style="list-style-type: none"> <i>Proposals must use an interdisciplinary approach to significantly expand research possibilities and ambition through new researcher and institutional links</i>
Where relevant to proposal	<ul style="list-style-type: none"> <i>Proposals should consider the relation of the research to the themes of Vision Mātauranga and, where relevant, how the project will engage with Māori</i> 		

How the new criteria will be assessed

Applications to the Fund must meet each individual criterion to the satisfaction of assessors to be considered for funding.

Once assessors are satisfied that a proposal meets each criterion individually, they will score the proposal based on a holistic assessment across all relevant criteria and relative to other proposals being considered by the panel. Proposals with an inspirational, exciting and compelling research goal that transcends the sum of the individual assessment criteria are likely to score more highly in this process.

The 'ability and capacity to deliver' criterion will be judged relative to opportunity, with career achievements assessed in the context of career history, allowing for breaks for family or other responsibilities. Where applicants already hold a Marsden contract in a related area (especially follow-on award applicants), performance on this will also be considered as evidence of ability, but existing award holders will not be privileged versus new applicants because of this.

Cost of proposals

Panels and the Council will consider the relative cost of proposals only after scoring against criteria is complete. The cost of proposals, as well as their relative scores, will inform final funding decisions.

Vision Mātauranga

Vision Mātauranga³ is a policy about innovation, opportunity and the creation of knowledge that highlights the potential contribution of Māori knowledge, resources and people. There are four themes:

- Indigenous Innovation, which involves contributing to economic growth through distinctive research and development;
- Taiao, which is concerned with achieving environmental sustainability through iwi and hapū relationships with land and sea;
- Hauora/Oranga, which centres around improving health and social wellbeing; and
- Mātauranga, which involves exploring indigenous knowledge.

Applicants must consider whether or not Vision Mātauranga is relevant to their research and, if so, how. Assessors will make their own determination of whether Vision Mātauranga is relevant and if so include the proposal's Vision Mātauranga content in the overall assessment.

More information about Vision Mātauranga and how to address it in proposals can be found in MBIE's Vision Mātauranga Policy document, applicant guidance documents, and from the host institution's research office.

Rationale and link to goals

The update to funding criteria implements one of the Assessment report's recommendations by explicitly requiring an assessment of impact in a form that is consistent with the purpose of the Fund and investigator-led research.

By making criteria for funding more explicit, this change also ensures transparency and fairness of process for applicants.

³ <http://www.mbie.govt.nz/info-services/science-innovation/unlocking-maori-potential>

5.4 Trial of broader assessment panel

Currently proposals for Standard and Fast-Start awards are considered by one of ten assessment panels.

In the 2018 Round, the Council will be trialling a broader panel, 'Humanities, behavioural and social sciences' (HBS) which combines the following three panels:

- Social Sciences (SOC)
- Humanities (HUM)
- Economics and Human & Behavioural Sciences (EHB)

This new, broader panel will consider expressions of interest and full proposals in the research fields currently covered by the SOC, HUM and EHB panels.

Details of the processes to be followed by assessors in the broader panel trial will be published in due course in the guidelines for the 2018 Round. Processes for applicants are unlikely to change from current arrangements.

The Council will look at using a broader panel model in other disciplinary areas based on an assessment of its performance in this trial.

5.5 Additional moderation step by Council

As currently, before expressions of interest and full proposals are assessed, the Council will set an indicative total value of awards through each panel, based on historic awards made to those disciplines and the total funding available from government.

Based on assessment scores and indicative funding available, panel convenors will recommend proposals for funding to the Council (as currently).

In an additional moderation step, the Council will use scores from international referees to moderate across all panels for proposals near the funding cut-off. The cost of proposals will also be included in the overall assessment of the highest contribution to the Fund's objectives within the funding available. Based on this moderation step, the Council may reallocate funding between panels to increase the overall quality and scholarly impact potential of research funded.

Rationale and link to goals

The broader panel and additional moderation step are intended to allow greater moderation when assessing proposals from different disciplines, avoid perceptions and risk of disciplinary bias, increase expert availability, and allow better consideration of inter-disciplinary proposals while managing the burden on assessors.

Although the Council will set an indicative total value to award through each panel, the moderation step ensures final funding allocation will be driven by quality and scholarly impact potential, regardless of which panel researchers apply to.

5.6 Appointment of assessors

Assessors will be chosen by the Council (and appointed by the Royal Society) based on objective criteria relating to their relevant experience and expertise and on the overall breadth of knowledge required. There will be an open call for assessors from New Zealand, and assessors will be sought

overseas if necessary to provide relevant expertise and manage conflict of interest issues. The Council will document the decision-making process and its outcomes.

Rationale and link to goals

This is a formalization of current processes, to provide transparency and assurance that assessor appointment decisions are made on a rigorous and objective basis.

5.7 Feedback

Currently, applicants who are unsuccessful at the Expression of Interest stage are told whether they appeared in the top 40% of proposals or not.

From the 2018 Round, the Council will provide more feedback to unsuccessful applicants and institutions about relative performance of their proposals at the Expression of Interest stage.

Unsuccessful applicants and institutions will now be told:

1. Their proposal's score relative to all others considered by that panel, successful and unsuccessful, expressed as:
 - First quintile (*best proposals*)
 - Second quintile
 - Third quintile
 - Or 'Not ranked' (*Includes fourth and fifth quintile proposals because assessors do not rank these precisely*)
2. The percentage of all proposals considered by that panel which progressed to the Full proposal stage.

In a pilot process for the 2018 Round, the Council will also be testing ways of providing more detailed feedback, from one or more panels, to Fast-Start applicants who were unsuccessful but close to the cut-off for proceeding to the Full proposal stage.

Detailed feedback will be available for unsuccessful applicants at the Full proposal stage, as currently.

Rationale and link to goals

These changes ensure a more transparent process and provide incentives for institutions to develop and submit their highest-quality proposals.

Due to the large number of Expressions of Interest received (greater than 1000), it is not practical for the Council to provide more detailed feedback (than quintile brackets) to every unsuccessful applicant, without significantly increasing costs or taking resource away from other proposal assessment activities. The Council will make a decision on more detailed feedback in future rounds based on the additional assessor burden and response from applicants to the 2018 trial.

5.8 Performance monitoring

The Council intends to begin more systematic monitoring and reporting of the excellence and long-term impact of the research and researchers supported by the Fund. ***This will be used to provide information about aggregate fund performance in the long term (rather than individual project performance)***. It will help to inform fund design decisions in future and demonstrate value-for-money to Government and the New Zealand taxpayer.

Data on the outputs and outcomes of Marsden funded research will be collected through existing and new data collection routes, including assessor reports from site visits and self-reports by supported researchers. Monitoring will also take advantage of administrative data captured and linked through the new National Research Information System.

More details of the data captured and indicators used will be given in the fund Performance Framework, to be published later this year.

6 Funding opportunities

6.1 Funding rounds

An annual call for applications will normally be made in November and the initial closing date for applications will normally be late February. Fast-Start and Standard proposals are reviewed in a two-stage process:

1. Eligible researchers submit an Expression of Interest to one of the discipline-based assessment panels.
2. Selected applicants are then invited to submit a full proposal.

Applicants for Marsden Fund Council Awards submit a full proposal in a one-stage process to coincide with the Expression of Interest stage for Fast-Start and Standard proposals.

6.2 Award categories

Table 1 Maximum value and duration of awards

	Maximum amount per year (ex. GST)	Duration
Fast-Start	\$100K	Up to 3 years
Standard	Varies by panel – see table 2	Up to 3 years
Marsden Fund Council	\$1 million	Up to 3 years

6.3 Size of awards

The Council sets caps on the maximum annual value of Standard awards based on the relative cost of research in different disciplines and a trade-off between goals:

- Grants should provide resource for a significant portion of a Principal Investigator’s time and a post-doctoral researcher in those disciplines that need them; and
- Funding as many excellent research proposals as possible and stimulating creativity across the full range of research fields.

Caps for the 2018 Round are shown in Table 2. These caps are the same as the 2017 Round⁴. They were increased by 10% following the 2016 Round. The Council undertakes regular benchmarking exercises to ensure these levels remain appropriate and will publish the results of these exercises in future.

Applications need to justify the funding requested and this will be scrutinised during the application process to check that the research proposed presents good value. The value of grant awarded may be less than the amount applied for.

⁴ Note that the cap for the new HBS panel is equal to the highest cap which previously applied to the constituent panels (SOC \$290K, EHB\$290K, HUM \$220K).

Table 2 Maximum annual value of Standard awards by panel

Panel	Maximum award amount per year (excl. GST)
Biomedical Sciences (BMS)	\$320k
Cellular, Molecular and Physiological Biology (CMP)	\$320k
Engineering and Interdisciplinary Sciences (EIS)	\$320k
Ecology, Evolution and Behaviour (EEB)	\$320k
Earth Sciences and Astronomy (ESA)	\$320k
Mathematical and Information Sciences (MIS)	\$240k
Physics, Chemistry and Biochemistry (PCB)	\$320k
Humanities, behavioural and social sciences (HBS)	\$290k

The Council recognises that Standard awards may be insufficient to support the most ambitious research proposals, particularly in interdisciplinary fields. This is why it is also introducing the Marsden Fund Council Awards.

6.4 Types and numbers of awards offered each year

Figure 4 shows the dollars invested in awards, by category, in the 2016 award Round, as well as approximate projections for the 2017-2020 rounds⁵.

There is a slight drop in projected investment in the 2020 Round. This is because slightly higher annual investment in earlier rounds commits the Fund to supporting three year contracts, which reduces funding available for new contracts in later years from the total available from government. The actual annual investment may vary from this projection.

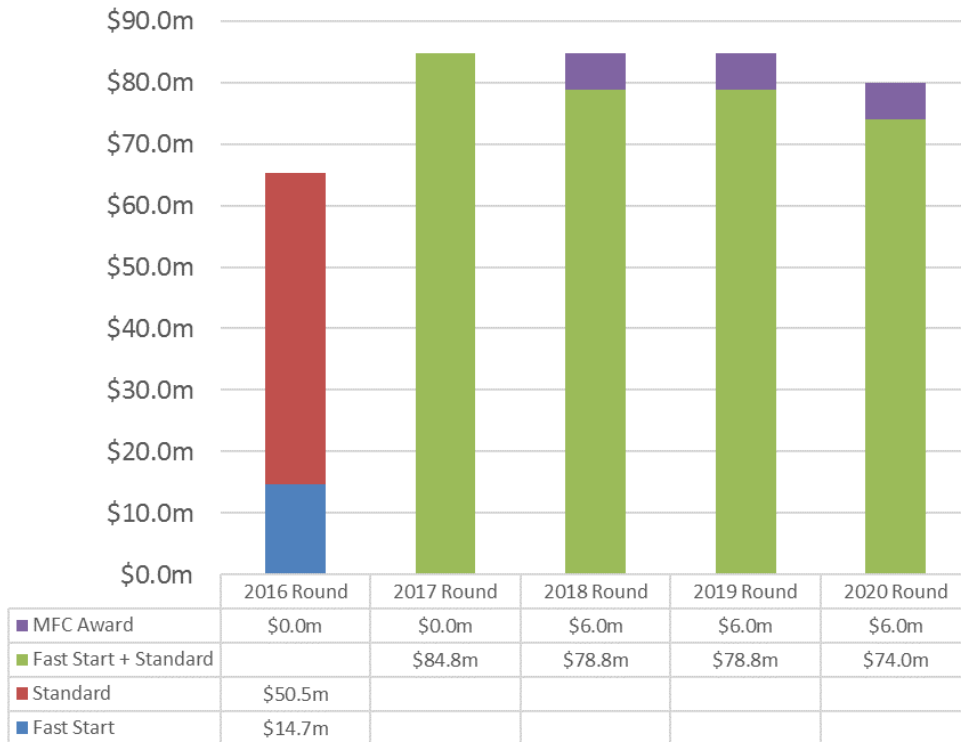
The split of funding between Fast-Start and Standard awards is not determined in advance, but arises from relative quality of the application pools each round.

In the 2016 Round the Council made 49 Fast-Start awards and 68 Standard awards.

⁵ These amounts do not match the annual amounts that appear for the Marsden Fund in the 2017 Estimates of Appropriations. This is because the Estimates show the annual outlay (i.e. on a cash basis) for research under the Fund, whereas Figure 4 is the value of new three-year contracts entered into in each Marsden Funding Round.

Figure 4 Actual and projected value of awards

**Annual dollar investment in awards (excl. GST)
Historic and projected**



7 Expected outcomes from the Investment Plan

This Investment Plan lays out the Council's strategic direction for the Fund, and changes to respond to the 2017 Assessment Report's recommendations.

A key change is to add impact as an explicit objective of the Marsden Fund, and to clarify the Council's strategy for achieving this alongside other Fund objectives, while maintaining the investigator-led nature of the Fund. The Council seeks high scholarly impact by supporting researchers to work on their best and boldest ideas. This will develop future research leaders and experts who can help New Zealand meet future challenges. High scholarly impact is the first step on the pathway to significant societal, economic, cultural, environmental and other impacts for New Zealand over the long-term.

The Council wants researchers to be ambitious and take risks in search of new knowledge. The bold nature of research means individual Marsden grants will vary widely in their actual scholarly impact. For the most successful proposals, the Council will now explicitly allow follow-on awards to pursue exciting research leads from existing Marsden awards. This means highly successful research can be supported to build on its accomplishments.

The Council will measure impact at the Fund level to champion excellence in research and scholarship and showcase the difference this has made to New Zealand in the long-term.

The new Marsden Fund Council Award will help stimulate creativity and take advantage of global knowledge by allowing much greater cross-discipline, institutional and international collaboration.

The Council is introducing greater moderation and trialling a broader panel model in the 2018 Round. The trial will provide evidence for use in continuous improvement of fund processes.

Increased feedback for unsuccessful Expressions of Interest will ensure a more transparent process and provide incentives for high quality proposals.

The Council will assess the effect of these changes with systematic monitoring and reporting. Data and indicators to be used will be developed and published in the Fund Performance Framework in 2017.