Australian Academy of Science

SUMMARY OF THE 2016-17 FEDERAL BUDGET: SCIENCE, RESEARCH, INNOVATION AND HIGHER EDUCATION

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Summary of the 2016-17 federal Budget – science, research, innovation and higher education

Chapter one – summary and commentary of the major announcements in the federal Budget by Professor Les Field, Secretary Science Policy, Australian Academy of Science

Chapter two – presentation of the forward estimates (four year spending plans), with comparisons to the previous federal Budget

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Chapter one – summary and commentary of the major announcements in the federal Budget

1 New spending announcements

The two major new spending announcements in the Budget were for the Antarctic program, and Geoscience Australia. There were also spending measures of note affecting the Australian Astronomical Observatory (AAO) and the Australian Nuclear Science and Technology Organisation (ANSTO).

1.1 Geoscience Australia

The Government will provide $100.5 million in additional funding to Geoscience Australia over four years from 2016-17 to produce geographical modelling of mineral, petroleum and groundwater resources in targeted areas across northern Australia and South Australia. This welcome funding announcement complements the objectives of the UNCOVER initiative that was instigated in 2010 by the Australian Academy of Science.

Revenue from government for Geoscience Australia will increase by 15% in 2016-17, and then by 8% in 2018-19.

1.2 Antarctica: Science, Policy and Presence

The Government will provide $55.0 million over 10 years from 2016-17 to undertake scoping studies and commence delivery of enhanced infrastructure capabilities in the Australian Antarctic Territory. Provision for this funding had already been provided in the forward estimates.

The Government will provide $83.1 million over four years from 2016-17 and further funding of $413.1 million over 29 years from 2020-21 with $10.3 million per annum ongoing from 2049-50, to support Australia's presence in Antarctica.

1.3 Australian Astronomical Observatory

The Government will also provide $12.6 million in 2019-20 for the operating costs of the Australian Astronomical Observatory.

1.4 Australian Nuclear Science and Technology Organisation (ANSTO)

The Government will redirect funding of $39.4 million over three years from 2016-17 to assist in the costs of reprocessing spent fuel.

Forecast revenue will be significantly higher than anticipated in the previous Budget, up $94 million over the next three years.

2 Significant policy announcements

Changes to the arrangements for higher education research block grants flagged last year were confirmed in the Budget, along with a change in direction for the government's higher education reform agenda.

2.1 Investing in Higher Education (university research block grants)

As outlined earlier this year, the university research block grants are to be rationalised from the current six programs into two programs, the Research Support Program and the Research Training Program. An additional $16 million will be provided in 2017-18 and $24 million in 2018-19 to assist

universities in adapting to the changes in the block grant formula. This funding was announced earlier this year and confirmed in the Budget.

Overall, there is no significant change in research block grant funding in the forward estimates compared to last year's Budget forecast.

2.2 Higher Education reforms and the deregulation of university fees

The Government will delay the implementation of the higher education reforms announced in the 2014-15 Budget. Higher education funding arrangements for 2017 will be in line with currently legislated arrangements so this gives some stability to funding of the University sector until the end of 2017.

The Government will not proceed with the deregulation of university fees announced in the 2014-15 Budget. However, the forecast 20% cut in funding for teaching support that universities were intended to be able to offset through fee deregulation is still in the forward estimates. The Government has released a consultation paper on the future direction of Higher Education funding and it seems inevitable that some further changes to the funding model will be proposed.

Universities will be refunded the "efficiency dividend" (1.25%) that was clawed out of payments for domestic undergraduate students in 2015.

3 Update on research council grant funding

3.1 Australian Research Council (ARC)

As outlined in last year's Budget, funding through the ARC Discovery program will fall in 2016-17 as funding for past Future Fellowships comes to an end, and with fewer Fellowships expected to be funded each year in the future. Under the previous program 200 Fellowships per year were funded, but no provision had been made to fund any further Fellowships after 2014. Under the new continuing program 50 Fellowships were funded in 2015, and 100 Fellowships are expected to be awarded each year from 2016 onwards.

The effect of this change is that expenditure through the ARC Discovery Program appears to fall in 2016-17. However, the continuation of the Future Fellowship program and making it an ongoing program, rather than a one-off terminating program, should be seen as new additional support for the ARC Discovery Program.

The ARC's expenditure on research grants is expected to grow over the forward estimate period, albeit it at a slightly reduced rate than forecast in last year's Budget.

Funding for the ARC Linkage program is forecast to be as estimated in last year's Budget.

3.2 National Health and Medical Research Council (NHMRC)

Funding for the NHMRC (through the Medical Research Endowment Account) has mostly been maintained, with a total $8 million reduction over the four-year forward estimates when compared to forecasts in the previous Budget as a result of a small efficiency dividend.

4 Update on the Medical Research Future Fund

There are no specific measures relating to the Medical Research Future Fund, with the MRFF projected to reach $20 billion by 2020-21 (one year later than estimated in last year's Budget).

Forecast disbursements from the MRFF for medical research and innovation activities have not changed since the 2015-16 Mid-Year Economic and Financial Outlook, with the exception that the $10 million originally to be expended in 2015-16 has been rolled over into 2016-17.

- 2016-17 - $61 million
- 2017-18 - $122 million
- 2018-19 - $215 million
- 2019-20 - $386 million

5 Update on other government science portfolio agencies, organisations and programs

There were relatively minor changes to the projected funding for the remaining science agencies and organisations.

5.1 Commonwealth Scientific and Industrial Research Organisation (CSIRO)

There were no budget measures relating to CSIRO in the Budget papers. Funding from Government is expected to grow more quickly than outlined in last year's Budget; up $83 million over the next three previously forecast.

5.2 Cooperative Research Centres (CRC) Program

The Government will achieve savings of $20.2 million from the CRC program over two years from 2015-16 in order to extend funding for the Australian Astronomical Observatory and partially to fund a communications and compliance campaign for the new country of origin labelling framework. The majority of this funding saving appears to relate to unspent funds arising from the delay in the CRC program in 2015-16 rather than any cuts to the CRC program.

Funding for the CRC program over the next two years will be greater than forecast last year, $9 million higher in 2016-17, and $30 million higher in 2017-18. Of note, funding for the programme is expected to rise 20% between 2018-19 and 2019-20.

5.3 Defence Science Technology Group

Reductions in funding to DSTG (previously DSTO) were announced in last year's Budget and these will still go ahead, but not at the same level as previously forecast. Funding will be about $21 million lower in 2019-20 compared to 2016-17.

5.4 Australian Synchrotron

While there were no specific budget measures relating to the Australian Synchrotron the budget papers suggest additional funding of $145 million for the Australian Synchrotron will be provided in 2016-17 to 2019-20 when compared to last year's Budget. This is commensurate with the 10-year $520 million commitment to the synchrotron announced as part of the National Innovation and Science Agenda in December 2015.

5.5 Australian Institute of Marine Science

There are no measures in the Budget papers relating to AIMS. Funding will continue in line with last year's Budget.

5.6 Bureau of Meteorology

Additional investment will be made in a new supercomputer for the Bureau of Meteorology. The amount of investment is current commercial in confidence.

5.7 Industry R&D tax measures

There were no measures identified relating to the R&D tax incentive

5.8 Reef 2050 Plan and Reef Trust

The Government will provide $171.0 million to the Reef Trust and Reef 2050 Plan. The cost of this measure will be met from existing resources of the National Landcare Program

5.9 Square Kilometre Array Radio Telescope Project

Last year there was no provision in the forward estimates for the Square Kilometre Array Radio Telescope Project beyond 2015-16. However, during the year the government confirmed its continuing support for the Square Kilometre Array Radio Telescope Project, and provision for this has been made in the current Budget, with funding set to reach $39 million per annum in 2018-19.

5.10 Research infrastructure - NCRIS

In recent years there has been uncertainty surrounding the future of support for NCRIS and the major national research facilities this program supports. A series of ad-hoc one to two year funding extensions had been made to this program in recent years to keep these valuable facilities running.

As part of the National Innovation and Science Agenda announced in December 2015, the Government has committed to long-term funding for major research infrastructure and is currently developing an infrastructure roadmap. Provision has been made in the current Budget for $150 million funding in 2016-17, with small increments forecast over the forward estimate period.

5.11 Australia-India and Australia-China fund

There are no significant changes to the funding for the Australia-China or the Australia-India Fund. Funding for the Australia-India Fund is set to end in 2018-19.

Chapter two –Presentation of the forward estimates with comparisons to the previous federal Budget

Chapter two of this document presents the detailed spending plans for science, research and higher education over the forward estimate period, and compares these to those outlined in the previous federal Budget.

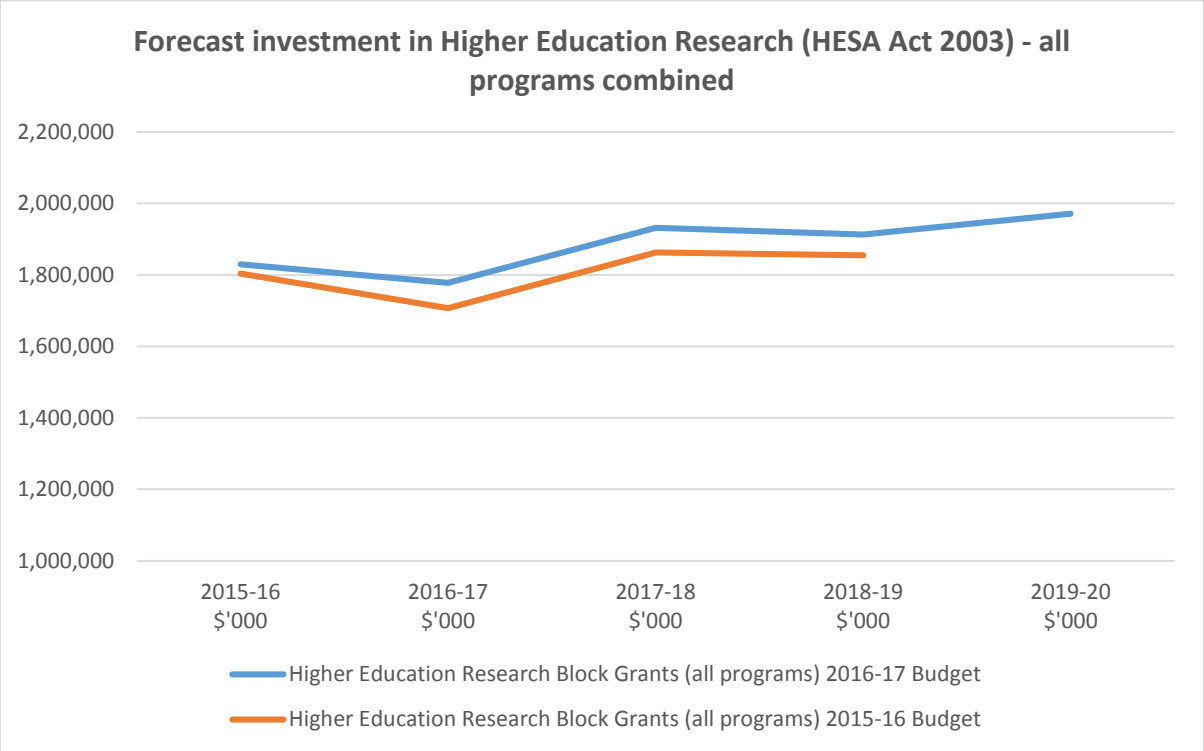
Where the term ‘forward estimate period’ or ‘forward estimates’ is used, this refers to the three years from 2017-18 to 2019-20

6 Investment in Higher Education (university block research grants)

Table 1 Comparison of funding allocations for higher education research block grants in the 2016-17 and 2017-18 federal Budgets

Allocation Budget	2015-16 $'000	2016-17 $'000	2017-18 $'000	2018-19 $'000	2019-20 $'000
2016-17 Budget	1 829 943 [a]	1 777 885 [b]	1 931 863 [c]	1 912 808 [c]	1 971 129 [c]
2015-16 Budget	1 803 439 [b]	1 707 057 [c]	1 862 821 [c]	1 854 582 [c]	
Difference between 15-16 Budget and 16-17 Budget	26 504	70 828	69 042	58 226	
Percentage change on previous year (16-17 Budget)		-3%	9%	-1%	3%
Percentage change in support between 15-16 and 16-17 federal Budget	1%	4%	4%	3%	

[a]Estimated actual; [b]Budgeted amount; [c]Forward estimate

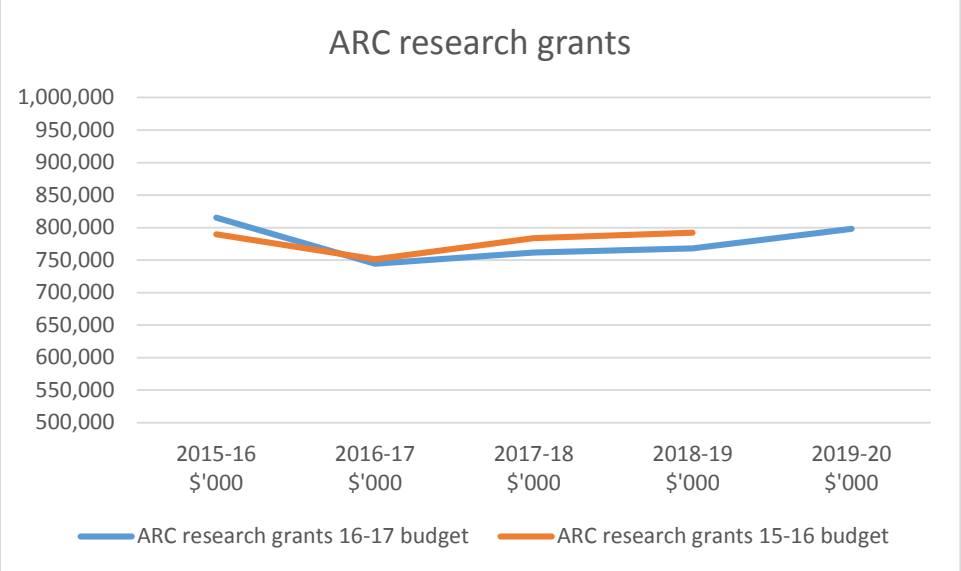


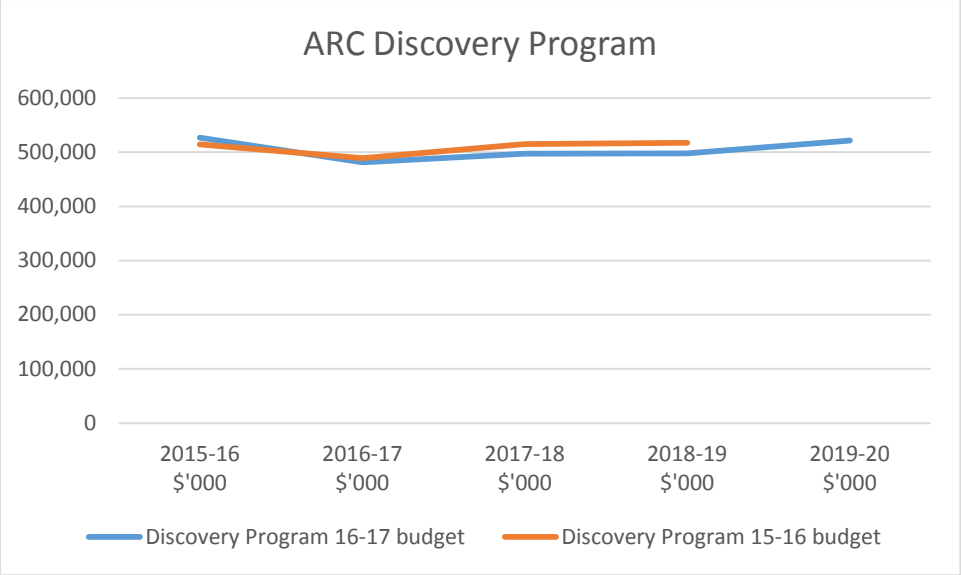
7 Australian Research Council

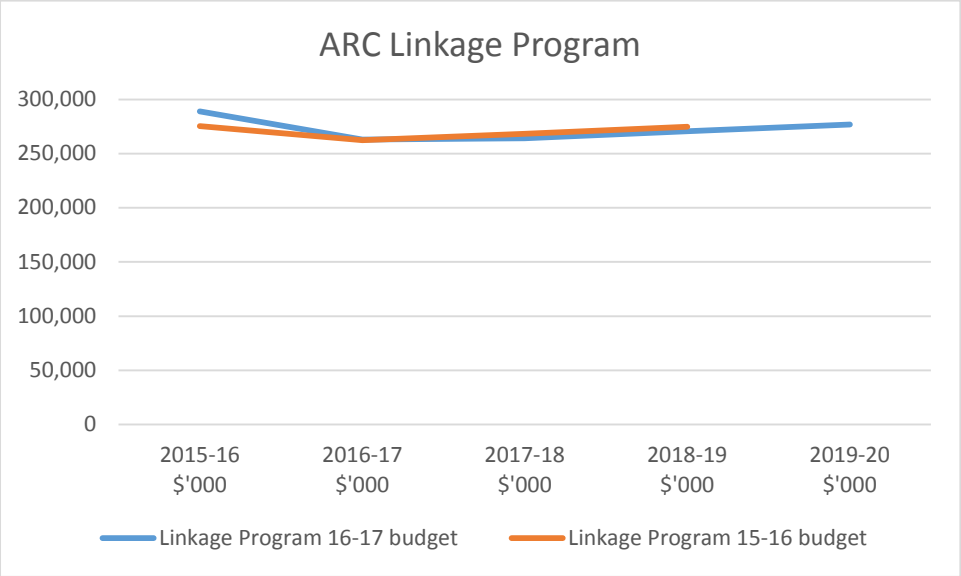
Table 2 Comparison of funding allocations for the ARC in the 2015-16 and 2016-17 federal Budgets

Allocation Budget	2015-16 $'000	2016-17 $'000	2017-18 $'000	2018-19 $'000	2019-20 $'000
Discovery Program 16-17 Budget	526 692 [a]	481 390 [b]	497 197 [c]	497 591 [c]	521 435 [c]
Discovery Program 15-16 Budget	514 269 [b]	488 792 [c]	515 239 [c]	517 498 [c]	
Linkage Program 16-17 Budget	288 829 [a]	262 973 [b]	264 218 [c]	270 581 [c]	276 822 [c]
Linkage Program 15-16 Budget	275 390 [b]	262 431 [c]	268 368 [c]	274 809 [c]	
ARC research grants 16-17 Budget	815 521 [a]	744 363 [b]	761 415 [c]	768 172 [c]	798 257
ARC research grants 15-16 Budget	789 659 [b]	751 223 [c]	783 607 [c]	792 307 [c]	
Difference in research support between 15-16 and 16-17 Budget forecasts	25 862	-6 860	-22 192	-24 135	
Percentage annual forecast growth in ARC research support 16-17 Budget		-10%	2%	1%	4%
Percentage change in research support between 15-16 and 16-17 Budget	3%	-1%	-3%	-3%	

[a]Estimated actual; [b]Budgeted amount; [c]Forward estimate




ARC Discovery Program
600,000
500,000
400,000
300,000
200,000
100,000
0
2015-16 $'000
2016-17 $'000
2017-18 $'000
2018-19 $'000
2019-20 $'000
Discovery Program 16-17 budget
Discovery Program 15-16 budget

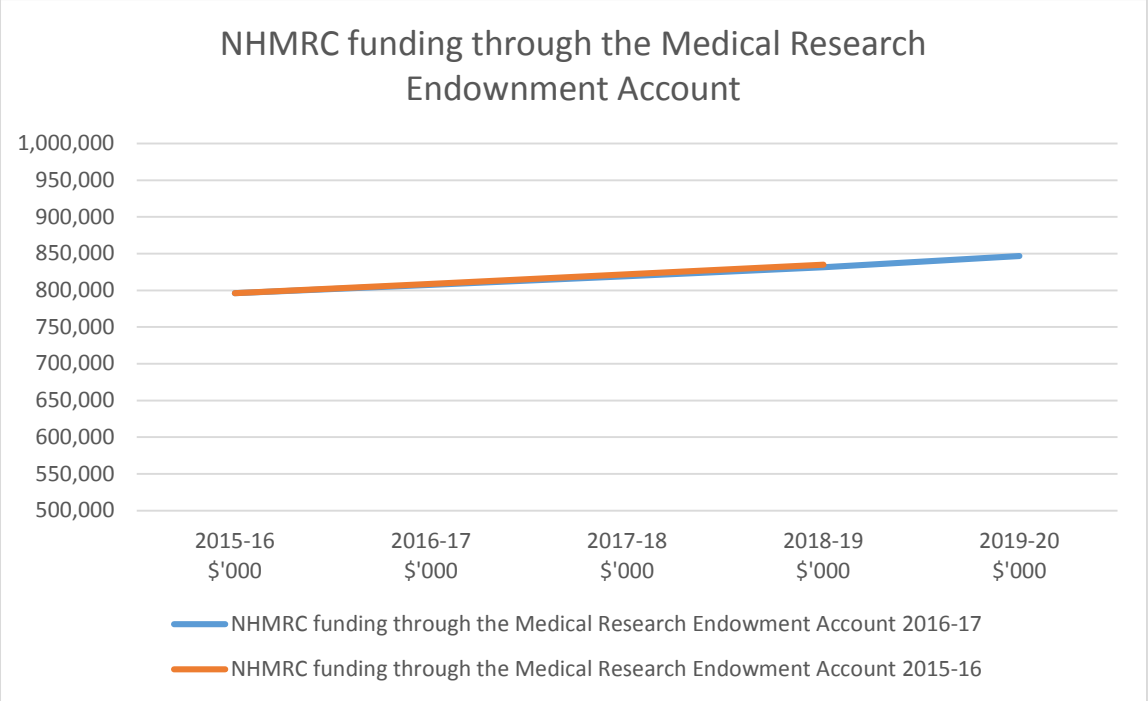

ARC Linkage Program
300,000
250,000
200,000
150,000
100,000
50,000
0
2015-16 $'000
2016-17 $'000
2017-18 $'000
2018-19 $'000
2019-20 $'000
Linkage Program 16-17 budget
Linkage Program 15-16 budget

8 National Health and Medical Research Council

Table 3 Comparison of NHMRC MREA grants in the 2015-16 and 2016-17 federal Budgets

Allocation Budget	2015-16 $'000	2016-17 $'000	2017-18 $'000	2018-19 $'000	2019-20 $'000
NHMRC funding through the Medical Research Endowment Account 2016-17	796 265[a]	807 383[b]	819 400[c]	831 613[c]	846 638[c]
NHMRC funding through the Medical Research Endowment Account 2015-16	796 265[b]	809 005	821 865[c]	834 935[c]	
Difference between 15-16 and 16-17 Budget forecasts (16-17 Budget)	0	-1 622	-2 465	-3 322	
Percentage growth on previous year (16-17 Budget)		1%	1%	1%	2%
Percentage change in support between 15-16 and 16-17 Federal Budget	0%	0%	0%	0%	

[a]Estimated actual; [b]Budgeted amount; [c]Forward estimate

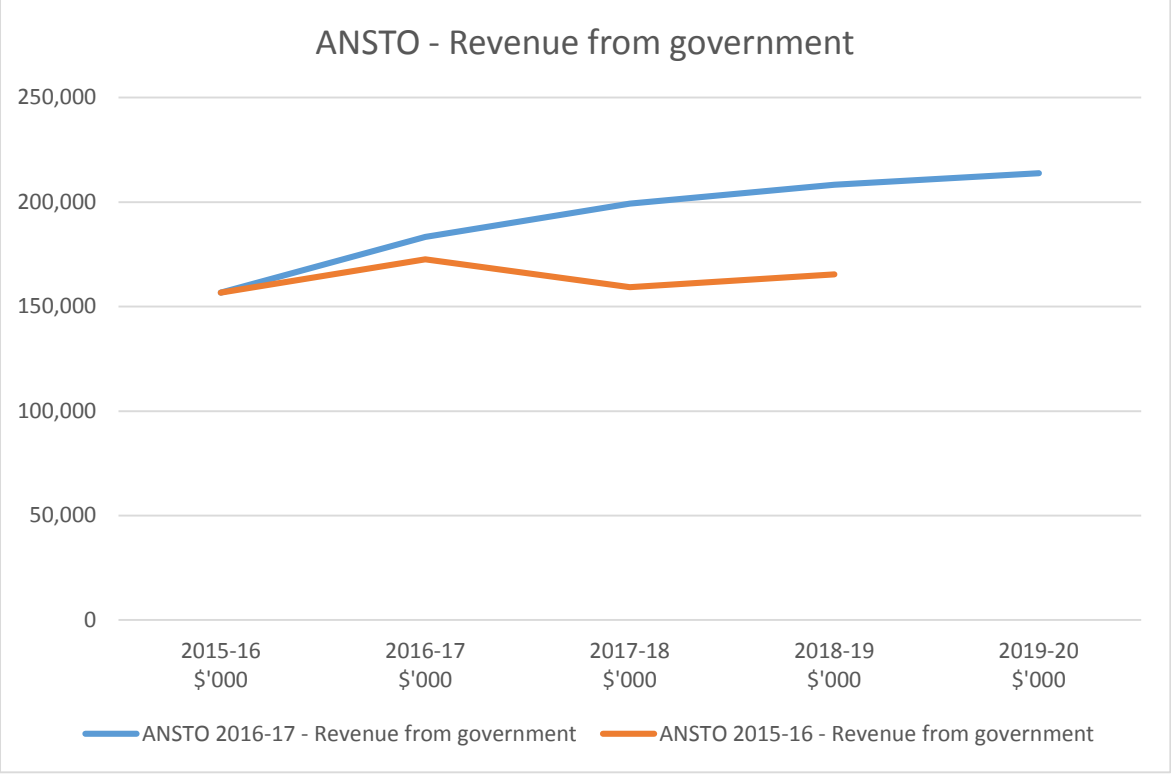


9 Australian Nuclear Science and Technology Organisation

Table 4 Comparison of funding allocations for the Australian Nuclear Science and Technology Organisation in the 2015-16 and 2016-17 federal Budgets

Allocation Budget	2015-16 $'000	2016-17 $'000	2017-18 $'000	2018-19 $'000	2019-20 $'000
ANSTO 2016-17 - Revenue from government	156 700 [a]	183 334 [b]	199 297 [c]	208 302 [c]	213 840 [c]
ANSTO 2015-16 - Revenue from government	156 700 [b]	172 627	159 264 [c]	165 403 [c]	
Difference between 15-16 and 16-17 Budget forecasts	0	10 707	40 033	42 899	
Percentage change on previous year (16-17 Budget)		17%	9%	5%	3%
Percentage change in research support between 15-16 and 16-17 Federal Budget	0%	6%	25%	26%	

[a]Estimated actual; [b]Budgeted amount; [c]Forward estimate



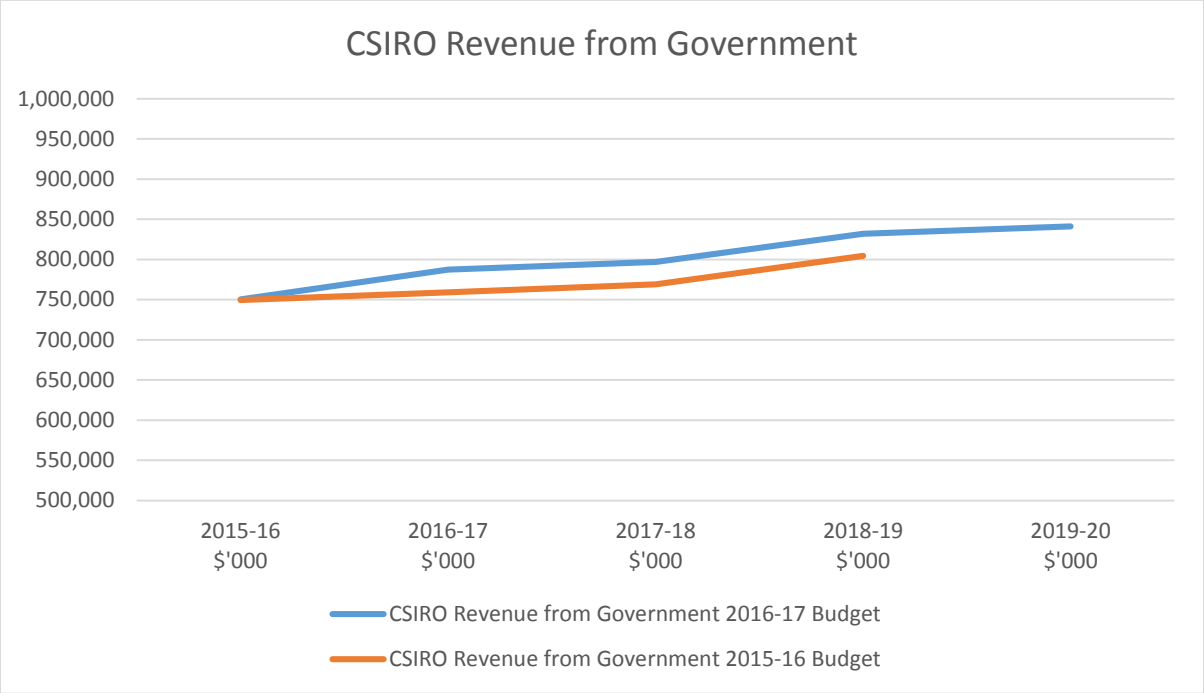
10 Commonwealth Scientific and Industrial Research Organisation

Approximately 60% of CSIRO's revenue comes from government contributions and about 40% from the sale of goods and services. The following table and chart represent the government's contribution.

Table 5 Comparison of CSIRO revenue from the Australian Government in the 2015-16 and 2016-17 federal Budgets

Allocation Budget	2015-16 $'000	2016-17 $'000	2017-18 $'000	2018-19 $'000	2019-20 $'000
CSIRO Revenue from Government 2016-17 Budget	750 281[a]	787 267[b]	796 796[c]	831 886[c]	841 232[c]
CSIRO Revenue from Government 2015-16 Budget	749 681[b]	759 147[c]	768 847[c]	804 633[c]	
Difference between 15-16 and 16-17 Budget forecasts (16-17 Budget)	600	28 120	27 949	27 253	841 232
Percentage growth on previous year (16-17 Budget)		5%	1%	4%	1%
Percentage change in research support between 15-16 and 16-17 Budget	0%	4%	4%	3%	

[a]Estimated actual; [b]Budgeted amount; [c]Forward estimate

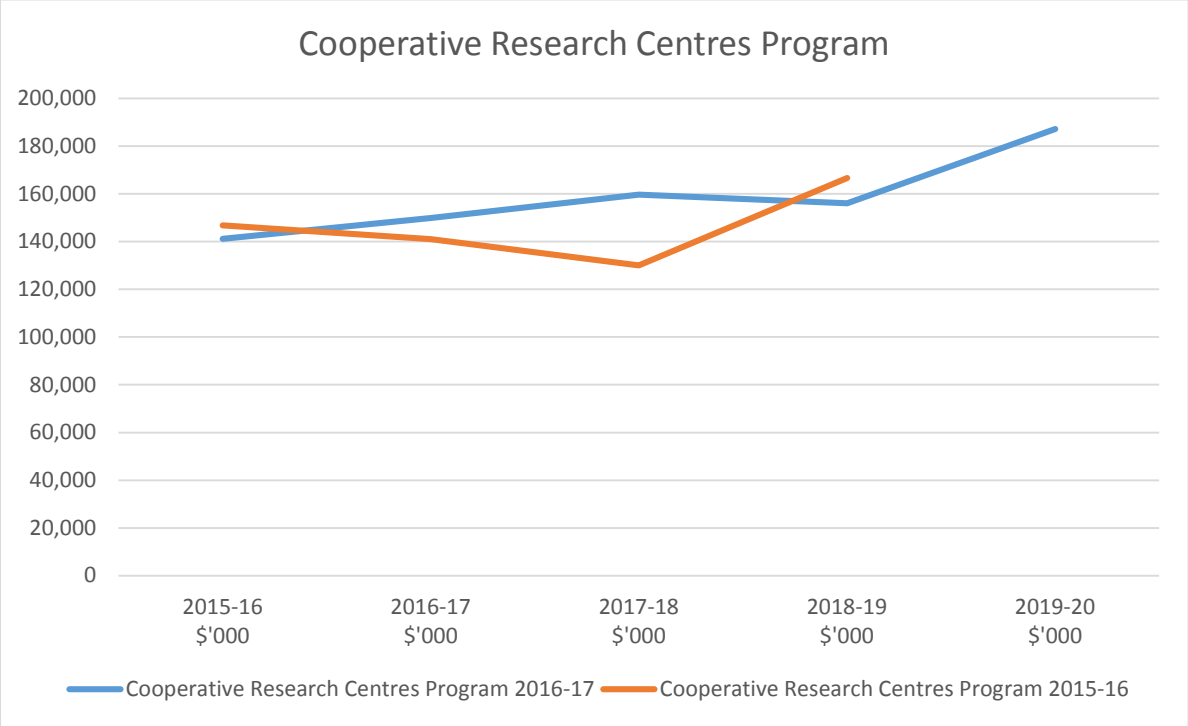


11 Cooperative Research Centres Program

Table 6 Comparison of funding allocations for the Cooperative Research Centres Program in the 2015-16 and 2016-17 federal Budgets

Allocation Budget	2015-16 $'000	2016-17 $'000	2017-18 $'000	2018-19 $'000	2019-20 $'000
2016-17 Budget	141 148 [a]	149 839 [b]	159 651 [c]	156 095 [c]	187 217 [c]
2015-16 Budget	146 848 [b]	141 059 [c]	130 005 [c]	166 719 [c]	
Difference between 15-16 and 16-17 Budget forecasts (16-17 Budget)		8 780	29 646	-10 624	
Percentage growth on previous year (16-17 Budget)		6%	7%	-2%	20%
Percentage change in research support between 15-16 and 16-17 Federal Budget	0%	0%	0%	0%	

[a]Estimated actual; [b]Budgeted amount; [c]Forward estimate

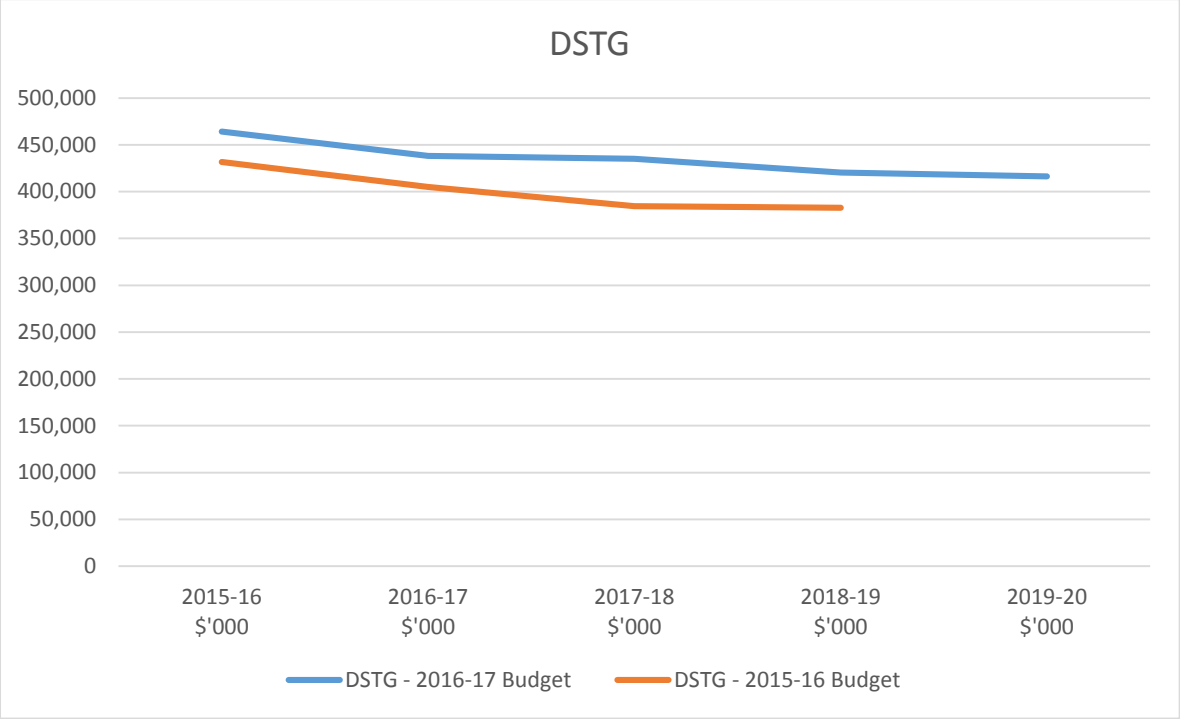


12 Defence Science Technology Group

Table 7 Comparison of Government support for DSTO in the 2015-16 and 2016-17 federal Budgets

	2015-16 $'000	2016-17 $'000	2017-18 $'000	2018-19 $'000	2019-20 $'000
2016-17 Budget	464 340 [a]	438 140 [b]	434 988 [c]	420 243 [c]	416 273 [c]
2015-16 Budget	431 649 [b]	405 141 [c]	384 414 [c]	382 913 [c]	
Difference between 15-16 and 16-17 Budget forecasts (16-17 Budget)	32 691	32 999	50 574	37 330	
Percentage growth on previous year (16-17 Budget)		-6%	-1%	-3%	-1%
Percentage change DSTO expenditure between 15-16 and 16-17 Federal Budget	8%	8%	13%	10%	

[a]Estimated actual; [b]Budgeted amount; [c]Forward estimate

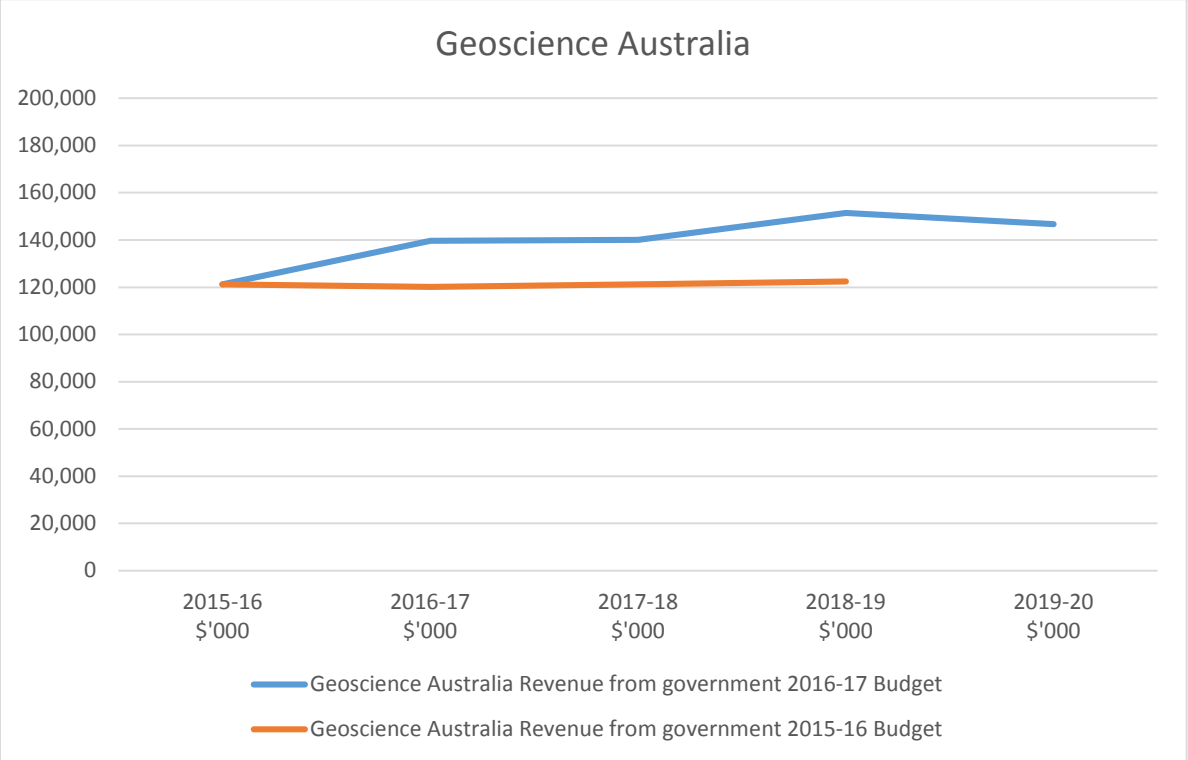


13 Geoscience Australia

Table 8 Comparison of government revenue for Geoscience Australia in the 2015-16 and 2016-17 federal Budgets

	2015-16 $'000	2016-17 $'000	2017-18 $'000	2018-19 $'000	2019-20 $'000
Geoscience Australia Revenue from government 2016-17 Budget	121 258[a]	139 668[b]	140 048[c]	151 473[c]	146 644[c]
Geoscience Australia Revenue from government 2015-16 Budget	121 258[b]	120 076[c]	121 252[c]	122 440[c]	
Difference between 15-16 and 16-17 Budget forecasts (16-17 Budget)	0	19 592	18 796	29 033	
Percentage growth on previous year (16-17 Budget)		15%	0%	8%	-3%
Percentage change Geoscience Australia expenditure between 15-16 and 16-17 Federal Budget	0%	16%	16%	24%	

[a]Estimated actual; [b]Budgeted amount; [c]Forward estimate



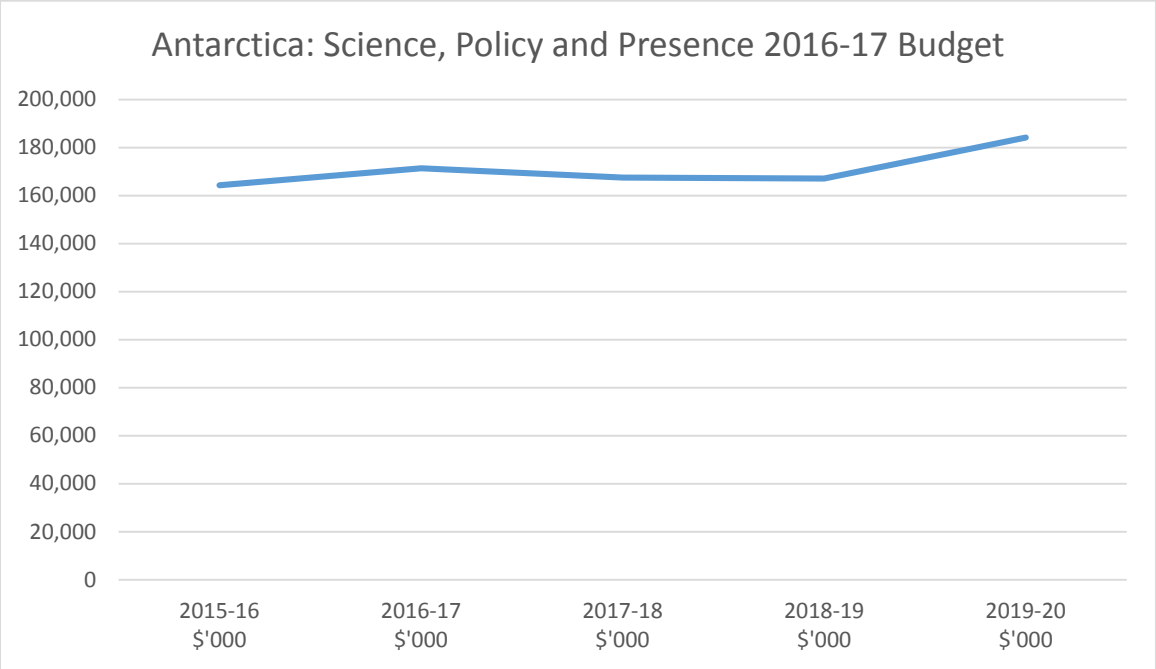
14 Antarctica: Science, Policy and Presence

Changes to the way support for the Antarctic program are reported in the Budget papers has meant that it is not possible to provide direct comparisons with previous Budget forecasts. There will be 4% growth this year, followed by a 2% decline in 2017-18, and no change in 2018-19. An increase in funding of 10% for 2019-20 has been forecast.

Table 9 Antarctica: science, policy and presence program support in the 2016-17 federal Budgets

Allocation Budget	2015-16 $'000	2016-17 $'000	2017-18 $'000	2018-19 $'000	2019-20 $'000
Antarctica: Science, Policy and Presence 2016-17 Budget	164 245[a]	171 370[b]	167 534[c]	167 023[c]	184 118[c]
Percentage growth on previous year (2016-17 Budget)		4.34	-2.24	-0.31	10.24

[a]Estimated actual; [b]Budgeted amount; [c]Forward estimate

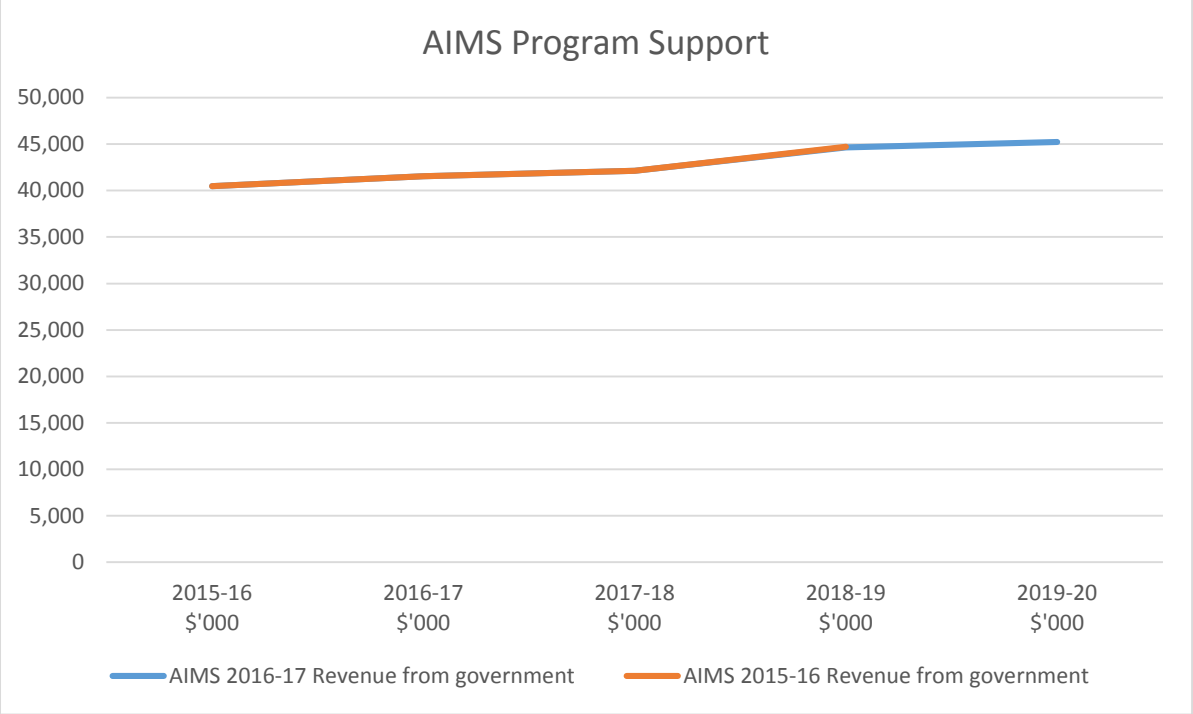


15 Australian Institute of Marine Science

Table 101 Australian Institute of Marine Science revenue from government in the 2015-16 and 2016-17 federal Budgets

Allocation Budget	2015-16 $'000	2016-17 $'000	2017-18 $'000	2018-19 $'000	2019-20 $'000
AIMS 2016-17 Revenue from government	40 483[a]	41 552[b]	42 128[c]	44 655[c]	45 218[c]
AIMS 2015-16 Revenue from government	40 483[b]	41 529[c]	42 127[c]	44 701[c]	
Difference between 15-16 and 16-17 Budget forecasts (16-17 Budget)	0	23	1	-46	
Percentage growth on previous year (16-17 Budget)		0%	0%	0%	0%
Percentage change in research support between 15-16 and 16-17 Federal Budget	0%	0%	0%	0%	

[a]Estimated actual; [b]Budgeted amount; [c]Forward estimate



16 Medical Research Future Fund

Table 11 Anticipated project payments from the Medical Research Future Fund set out in the 2015-16 and 2016-17 federal Budget

	2015-16 $'000	2016-17 $'000	2017-18 $'000	2018-19 $'000	2019-20 $'000
Medical research Future Fund - anticipated project payments - 2016-17 Budget	0[a]	60 876[b]	121 565[c]	214 913[c]	386 373[c]
Medical research Future Fund - anticipated project payments - 2015-16 Budget	10 000[b]	53 232[c]	130 340[c]	224 258[c]	
Difference between Budget forecasts (16-17 Budget)	-11 999	-28 617	-56 885