

# Decadal Plan 2026-2035 – Research Funding (WG 3.4)

## 1. Executive Summary

The broad aims for astronomy research funding set out in the previous decadal plan have largely been met. The total funding for astronomy research has increased over the past decade, although the total funding per astronomer in real-terms may have declined slightly. The approximate ratio of funding international:national:university has shifted as required to support Australian participation in international-scale astronomy infrastructure, while maintaining the operation of national-scale facilities. The future funding outlook presents a range of challenges and it will be necessary to find ways to further broaden sources of astronomy research funding such that it can achieve modest growth in real terms for Australia to maintain its international position in astronomy research.

### Key Recommendations from WG 3.4:

1. The federal government adopt a coordinated and consistent approach to applied and industry-focused research. In particular to maximise consistency in the way in which priorities, eligibility criteria, assessment criteria are implemented and grants are administered.
2. The astronomy community (perhaps through AAL, or, in the case of optical/IR instrumentation, through Astralis) create a central portfolio of infrastructure and services which may be of interest to industry and also provide the support to bring different university/research institute providers and potential industry partners together.
3. The approximate ratio of research funding supporting university, national and international-scale activities be maintained at the current level (4:3:12).
4. Direct federal funding of Australia's astronomical instrumentation activities as a whole to provide better value for money and maximise the leverage of this investment in international partnerships
5. Appropriate funding mechanisms do not exist to (i) operate existing mid-scale (national)-facilities and for the renewal of infrastructure at this scale (ii) operate specialist research infrastructure within the university sector. These are not astronomy-specific issues and national peak bodies such as the Australian Academy of Science should play a role in raising the profile of these issues.

## 2. Introduction

The funding landscape for astronomy research has evolved considerably in the last decade and this is likely to continue due to a range of factors. Considered in the broader context of Australian research the discipline of astronomy continues to be well funded. Maintaining this position cannot be taken for granted and as a community we will need to be both creative and persuasive to achieve the level of research funding required to support the science objectives of the decadal plan.

The majority of funding for research in Australia continues to be sourced from the federal government. The Australian Research Council (ARC), which sits within the Department of Education is the most prominent funder of astronomy research for the higher education sector. Other federal government departments support a range of more targeted research programs, astronomy lies within the scope of some of these, but they are typically much more limited in the total funding available and data for these is incomplete. Below we list the major sources of financial support for Australian Astronomy in approximate order of size, noting that the first two are significantly larger than the last three.

1. Federal Government Funding
  - a. Competitive Grant Schemes (e.g., ARC)
  - b. Other Schemes (e.g., NCRIS, Department of Industry programs)
  - c. Appropriation to CSIRO (also Australian Space Agency etc)
  - d. Direct Funding (SKA contribution, ESO Strategic Partnership)
  - e. Research block grants to universities
  - f. Teaching funding to universities
2. Universities
  - a. Salaries of Academics and Research staff in Universities
  - b. Contributions to grant schemes
  - c. University Facilities (including consortia-funded facilities)
  - d. Higher Degree Research stipends
3. Industry
  - a. Contributions to grant schemes (e.g., ARC Linkage)
  - b. Direct investment
4. State
  - a. Direct state investment in local universities and research centres
  - b. State support of Federal funding bids
5. Philanthropy

### 3. The Last Decade

The 2016-2025 decadal plan for Australian astronomy *Australia in the era of global astronomy* set out a number of specific suggestions related directly to the quantum of research funding and its distribution (research funding is primarily addressed in sections 4.2, 7.3 and 10). In particular, Section 7.3 *Transition of astronomy to a global science* identified a need to change the funding mix (international:national:university) from a ratio of 1:6:12 to 4:3:12, i.e., maintain the fraction of funds in the university sector, but shift in the relative funding of national-scale facilities to enable investment in international-scale projects. Section 10 suggests a 20% increase in funding from competitive grant programs as an achievable target necessary to achieve the stated science goals.

#### 3.1 ARC Funding

The Australian Research Council (ARC) is the largest source of external (i.e. non-employer) funding for most astronomy researchers in the higher education sector. Figure 1 shows the Australian Research Council (ARC) funds awarded to astronomy projects over the last 20 years. The data presented here is extracted from the ARC's public dataset of National Competitive Grant Program (NCGP) projects and represents<sup>1</sup> all projects for which the primary four-digit Field of Research (FOR) code is recorded as 0201 (Astronomy). Appendix 1 gives details of the grants included for the years 2015-2022 and is equivalent to Appendix 1 in the Working Group 3.4 report for the previous decadal plan which covers the period 2002-2014 (inclusive). Please see the text at the start of Appendix 1 for a more in-depth discussion of the data and assumptions made. For each year we report the funding awarded to projects which commence that calendar year (i.e., for 2018 we total the funding award to 0201 coded-projects from the DE18, DP18, etc., rounds). The only exception is for the Centre of Excellence scheme, for which we split the total funding allocated equally over 7 years commencing with the first funded year.

Figure 1 shows a steady increase in astronomy funding over the 20-year timespan. There is a step-change around 2010 which corresponds to the commencement of investment in the SKA pathfinder instruments and the start of the Centre of Excellence program. Although there is significant year-to-year stochasticity in the level of funding, the longer term trend is of a steady increase. If we take the average of 2021 and 2022 and compare that to 2014, there has been an approximately 30% increase in

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<sup>1</sup> Part of the reason for the significant drop between 2021 and 2022 is that due to a change in the timing of some grants, there was no FF22 (Future Fellowship) round. The average Future Fellowship funding to astronomy for the previous 11 years was \$3.9M, so to better reflect the astronomy funding level in 2022 for comparison with 2014 we have used the average of 2021 and 2022.

competitive grant funding. However, over the same period the Consumer Price Index has increased by 23%, so in real terms the increase in astronomy research funding from national competitive grants is modest (around 5%). Furthermore, over the same period of time the Australian astronomical community (as measured by the number of members of the Astronomical Society of Australia) has increased by 10% (note that we are using trends in ASA membership as a proxy for the change in relative size of the community, not as a measure representative of the true size). A comparison of the average amount of National Competitive Grants Program (NCGP) funding per ASA member over the same period shows an increase of approximately 19%. Hence, once CPI increases are accounted for, there has been a small decline in real-terms in the funding available for astronomers working in the higher education sector.

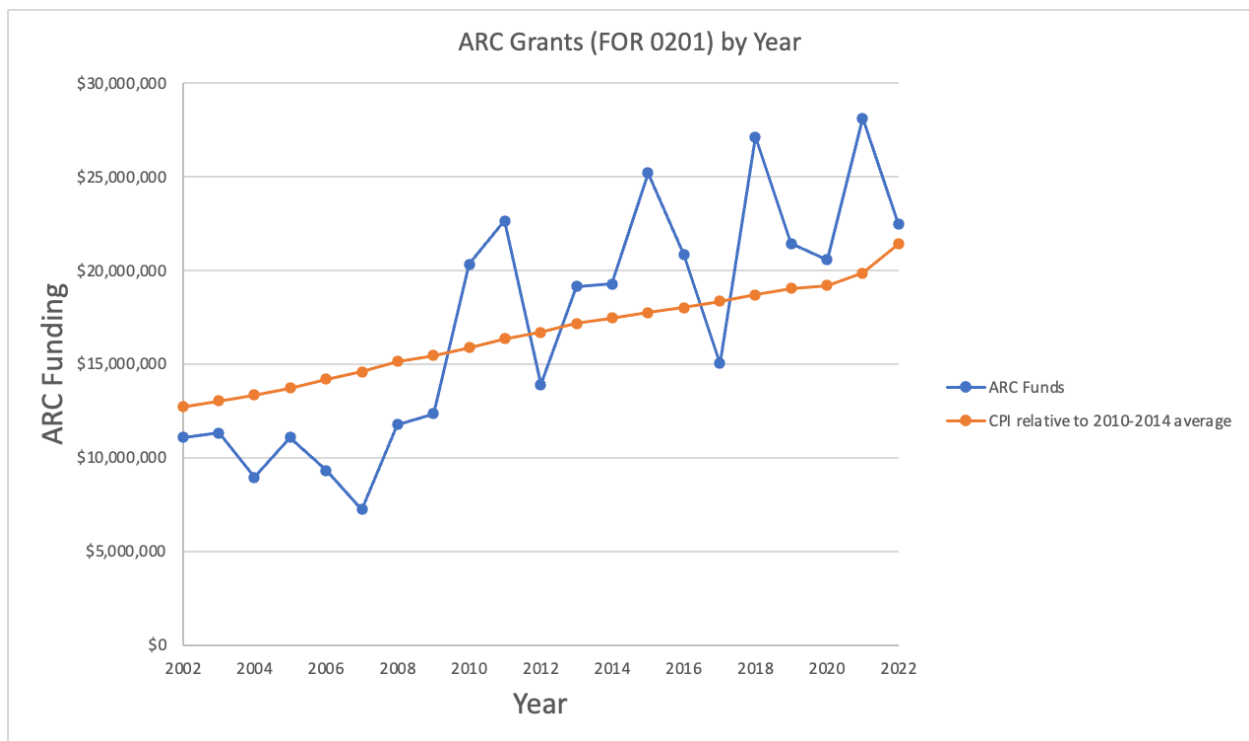


Figure 1: Australian Research Council Funding awarded to astronomy (grants for which the primary four-digit FOR code is 0201) for the period 2002-2022.

#### Comparing funding for astronomy and chemical sciences

Another aspect of the national competitive grant funding is the fraction of the funds allocated to astronomy research compared to other disciplines. The two-digit FOR codes 02 and 03 are for physics and chemistry respectively. We have compared the fraction of funds allocated to the 0201 FOR codes to all 02 FOR codes and find that on average for the eight year period 2015-2022, astronomy received 38% of the total ARC funding allocated to Physics (FOR code 02), a significant increase from the fraction over the eight years prior to that (2007-2014), when the average for the same measure was

26%. Undertaking an equivalent comparison of 0201 funding with the 03 FOR code (chemistry) for the same two eight-year periods shows that astronomy funding has increased from 32% of the funds allocated to chemical sciences in 2007-2014 to 52% for 2015-2022.

#### ARC Funding Schemes relative contributions

Figure 2 shows the contributions to the total astronomy funding allocation of the different ARC funding schemes. The Centre of Excellence (CoE) scheme is one of the major reasons for the significant relative increase in astronomy funding in the period since 2015. Outside the CoE scheme, the next largest grants are Laureate fellowships and because there are relatively few of these awarded each year there is significant variability in the total astronomy funding correlated with the Laureate success rate. Figure 2 shows a sustained increase in Linkage Infrastructure, Equipment and Facilities (LIEF) funding from 2020 onwards and reflects increasing use of this scheme to assist with national and international infrastructure projects and facility operation.

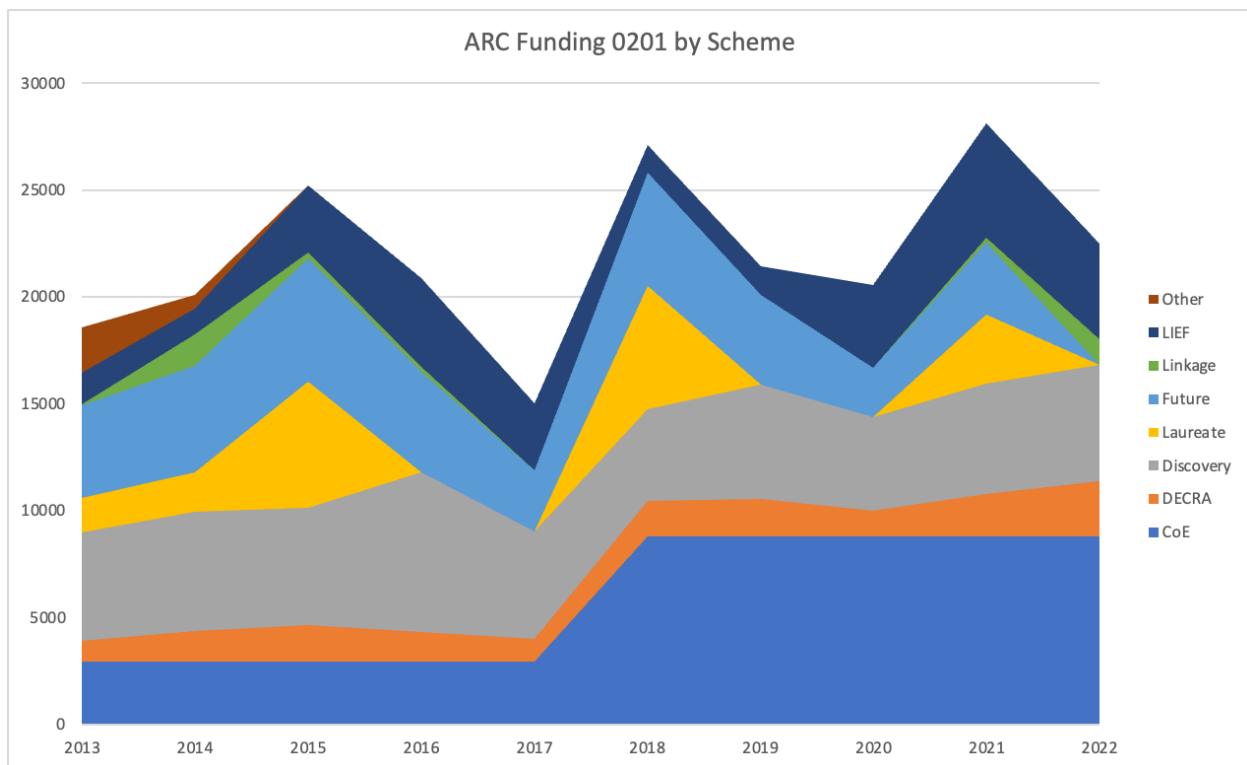


Figure 2: Australian Research Council Funding awarded to astronomy (grants for which the primary four-digit FOR code is 0201) by scheme over the period 2013-2022. Note for the CoE program the funding has been allocated equally over a 7-year period, while for all other schemes the funding is the sum of the grants awarded in that year for the duration of the project.

In summary, the total ARC funds awarded to astronomy has increased over the period of the current decadal plan at roughly the level which was set as a target. The combination of inflation and a growing community means that in real terms the funding per astronomer has slightly decreased over the period. Furthermore, this assessment includes the important contribution of Centres of Excellence, which secure funds only for a subset of researchers and institutions over their duration. However, comparison of funding to astronomy compared to total funding to the physical sciences and chemical sciences shows that relatively speaking astronomy has fared much better than many cognate research fields and disciplines.

### 3.2 Other Government Funding

The last decadal plan outlined a reduction in funding to national-scale facilities in order to enable investment in international-scale facilities and infrastructure. In the 2017 Federal budget a 10-year strategic partnership with the European Southern Observatory (ESO) Maintaining Australia's Optical Astronomy Capability was announced. That package resulted in the Australian Astronomical Observatory (AAO) splitting into instrumentation and observatory sections and funding responsibility moving from the Department of Industry to the university sector. The instrumentation component has been in part supported by National Collaborative Research Infrastructure Scheme (NCRIS) funding through Astronomy Australia Limited (AAL), allocating \$5M per annum to the Astralis Instrumentation Consortium - a collaboration of three university instrument groups comprising Australian Astronomical Optics (AAO, Macquarie University), the Advanced Instrumentation and Technology Centre (AITC, ANU), and the Sydney Astrophotonic Instrumentation Laboratory (SAIL, USyd). The AAT Consortium to fund AAT operations was established in June 2018 with a membership of 13 Australian universities, as part of an arrangement with the Department of Industry, Science and Resources (DISR) to unlock \$120M in new funding for a 10-year Strategic Partnership with the European Southern Observatory (ESO). The responsibility of operating the AAT was transferred from the then Australian Astronomical Observatory (AAO) [now Australian Astronomical Optics at Macquarie University] to the ANU on 01 July 2018. The ANU now operates the Anglo-Australian Telescope (AAT) on behalf of the AAT Consortium through a Research Services Agreement with Astronomy Australia Limited (AAL), the manager of the consortium.

The current AAT Consortium comes to an end of June 2025. If the AAT is to continue for the decade starting in mid-2025, then it needs to find funding in addition to that provided by the AAT Consortium. Reducing operating costs to fit into the funding envelope would require operating the AAT with less than 40% of the budget that was available 10 years ago and is not feasible. Nine of the current 11 AAT Consortium

members have jointly submitted the LIEF proposal to secure funding to allow the AAT to operate the AAT until the end of 2028. The outcome of the proposal will be announced in November this year. The route to obtain funding through the ARC has disadvantages including being uncertain and short-term.

On the radio astronomy national facility side CSIRO Space and Astronomy continues to operate all instruments of the ATNF, supported by an increase in external revenue.

Some of the significant funding allocations to astronomy from Federal government-related programs beyond the ARC have been:

Astronomy Australia Limited has distributed approximately \$12M annually 2019-2023 (inclusive of the \$5M p.a. Astralis funding) as part of NCRIS/Infrastructure funding.

The ten-year ESO strategic partnership arrangement represents approximately \$13M annually from the Department of Industry.

Australian Government support for SKA construction (including the Australian SKA Regional Centre - AusSRC) represents \$387M in funding over a 10 year period.

#### 4. Astronomy Research Funding for the next Decade

Australia has a large and vibrant astronomical community which continues to have a reputation for international excellence and significant contributions across an impressive breadth of the discipline. Historically the majority of funding for the bulk of the professional astronomical community has come through the higher education sector and associated funding agencies such as the Australian Research Council, with other government funded entities such as CSIRO and, pre-2017, the AAO providing critical infrastructure and complementary capacity. The past and future community demand for astronomy research funding significantly exceeds that which has been allocated, however, as outlined in the previous section, astronomy's share of fundamental research funding has grown in the last decade and is relatively high compared to cognate disciplines. Australia maintaining its international status in astronomy and deriving maximum scientific and other benefits over many decades will require an increase in astronomy funding over the next decade. To maintain Australia's current international standing a modest growth in funding in real terms is required at a level of 10-20%, but at a minimum it will be necessary for funding over the next decade to continue at the current level in real terms.

The pool of funding for fundamental research is unlikely to increase significantly over the coming decade. The cost of providing services like health, aged-care and education continue to increase and compared to climate change mitigation and geopolitical challenges, fundamental research is a relatively low political priority. The natural conclusion from this line of reasoning is that any real growth in astronomy funding over

the upcoming decade will need to come from sources other than federal government funding for fundamental research. The need to diversify funding was identified in the previous decadal plan and there has been a range of efforts and initiatives to increase industry linkages. While these have yet to yield significant additional astronomy funding in astronomy research endeavors other than instrumentation, there have been a range of positive outcomes and learnings resulting from the work undertaken. One of the challenges of obtaining additional funding for astronomy from applied and industry-focused research programs is that the programs that support such activity are often highly focused, have relatively small funding pools, complex eligibility requirements and assessment criteria. This makes the “cost” of seeking funding from such schemes quite high in terms of the effort researchers need to invest to submit an application and is a disincentive to astronomy researchers engaging with industry-focused and applied research schemes. It should be said however that the previous statement would not be entirely true if “industry” is taken to include international observatories, which the Australian astronomical instrumentation community has been highly successful engaging with; it is also not entirely true where astronomy engagement with the space sector is concerned. The same comments apply in relation to Defence and national-security funding schemes, but there the barriers to entry are even higher because of the culture of Defence and its associated research entities. A second challenge is that often the skills and capabilities required to properly address industry-focused and applied research problems cannot be provided by a group based within a single institution. Due to the highly competitive and often secretive nature of industry and Defence call for tenders, the way in which universities engage with industry and other external stakeholders is often not conducive to cross-institutional collaboration.

Working group 3.3 is focused on industry engagement, its benefits and opportunities. Considering only the research funding aspects, working group 3.4 has two recommendations:

1. The federal government adopt a coordinated and consistent approach to applied and industry-focused research. In particular to maximise consistency in the way in which priorities, eligibility criteria, assessment criteria are implemented and grants are administered.
2. The astronomy community (perhaps through AAL, or, in the case of optical/IR instrumentation, through Astralis) create a central portfolio of infrastructure and services which may be of interest to industry and also provide the support to bring different university/research institute providers and potential industry partners together.

Achieving the science objectives of the decadal plan requires a healthy astronomical ecosystem to support it. The science working group reports have identified the range of infrastructure requirements across wavelengths, scales and other capabilities. The



previous decadal plan introduced the concept of a funding pyramid with universities at the base, national-scale facilities in the middle and international-scale facilities at the top.

The last decade has seen an increase in funding for international-scale facilities which will need to be maintained through their continued construction phase and into operations. Australian funding for international-scale facilities should include funding for instrumentation programs supporting those facilities in Australia (e.g. Astralis Instrumentation Consortium building instruments for ESO and GMT). This approach would provide a real opportunity for the Australian astronomy community to access Federal funding that can also be offered as an in-kind contribution towards, for instance, an Australian bid to join the European Southern Observatory, or a mechanism to increase Australia's contribution to GMT, or to gain access to 8-10m class telescopes such as the Subaru Telescope.

Similarly, the level of funding for national-scale and university facilities needs to be maintained at around current levels to provide access to a diverse range of capability. The foundations of key-projects on international facilities are usually built on a suite of early observations made on national-scale and university facilities which have provided the necessary background to justify the investment that observations made with international-scale facilities represent. We recommend that the approximate ratio of research funding supporting university, national and international-scale activities be maintained at the current level (4:3:12).

The previous decadal plan identified a need for funding for mid-scale facilities, which includes the operation of existing infrastructure. In the language we have used in this report, these are essentially national-scale facilities. While the community has managed to find ways to continue the operation of national-scale facilities, there is at present no clear pathway for the renewal of resources at this level. This will need to be addressed if Australia is to continue to play a role in the next generation of international-scale facilities, as these build on the science outputs and technology developments of current-generation mid-scale facilities.

A related problem is the operation of infrastructure within the university sector. Universities are the training ground for the technical experts needed to design, construct and operate our national and international-scale facilities. The staff who support university research infrastructure, however, typically experience precarious employment which makes attraction and retention very difficult. Over the next decade the implementation of the Universities Accord will change the way both teaching and research are funded in Australian universities. There is the opportunity for this long-standing problem to be addressed as part of that process, but at present research

funding and university research infrastructure is not part of the public discussion. We recommend that the Australian Academy of Science to play a role in raising the profile of these important aspects of the University Accord process.

The dissolution of the national optical observatory, AAO, as a consequence of the ESO Strategic Partnership has marked a significant change in the funding structure for optical/infrared instrumentation development. By moving to a distributed 'National Capability' university-based collaboration model (the Astralis Instrumentation Consortium), this has diversified the portfolio of instrumentation activities through enhanced industry collaborations, space sector engagement, and collaborative alignment of expertise. It has also leveraged institutional resources and facilities to support expert instrumentation teams. It has, however, also tied costly, long-term instrumentation development to the short-term fluctuations and uncertainties of university budgetary cycles, placing what has traditionally been a key strength of Australian astronomy at risk. Further details on astronomy instrumentation and funding are provided by WG2.4. Working Group 3.4 recommends funding Australia's astronomical instrumentation activities as a whole, directly from Federal funding (as opposed to the current scattered-gun approach through universities and a myriad of funding schemes). This would be an excellent, value-for-money approach for the Australian government to simultaneously:

- (a) Support the Australian astronomy community.
- (b) Negotiate with international bodies using Australian-built instruments for these international facilities as in-kind contributions. For example the ESO membership bid, Australia's increased share in GMT (ELT access), Australia's access to Subaru (8-10m class telescope access).
- (c) Achieve and enhance research/industry engagement and research translation (which the Australian astronomical instrumentation community is particularly good at).
- (d) Ensure sustainable, long-term viability of an Australia area of excellence which could provide even greater world-leadership in astronomical and, as a bonus, in space instrumentation as well (thus providing a pathway for Australia to participate, maybe even lead, international space programs and initiatives in the future).

High Performance Computing (HPC) is an increasingly important aspect of astronomy research. In particular, it is the basic infrastructure required by many theoretical astrophysicists to run simulations and it forms an integral part of the telescope for modern and future instruments such as ASKAP and the SKA. The growing importance of astronomical modeling makes internationally competitive access to HPC resources particularly urgent. Different astronomy users have quite different HPC needs and astronomy represents a subset of the broader research community. The need for a better suite of national digital research infrastructure is recognised and attempts are

being made to address it. One of the challenges seems to be that both the volume and diversity of available HPC services within Australia is not sufficient to meet current researcher requirements (including astronomy). There is a clear need for better coordination of observational astronomy and HPC resources. Whereas it makes sense for the allocation of limited resources and operation of these facilities to be undertaken by the astronomical and HPC experts respectively, data from a telescope which cannot be processed/analysed because the necessary HPC allocation has not been obtained, or, conversely, HPC resources dedicated to support observations with insufficient astronomical data, is not a good outcome. High level coordination such as this is probably best undertaken through the Australian Academy of Science and its associated disciplinary bodies.

A less direct, but similar coordination of resources which could provide broader benefits for Australian researchers is in the use of astronomy infrastructure for space-craft tracking, space situational awareness and similar activities - in particular for testing methodologies and prototyping. The Australian Space Agency has deliberately excluded astronomy from its priority activities, but the way in which this has been done has resulted in a range of missed opportunities for astronomical instrumentation to support activity in priority areas such as international engagement and space situational awareness. The topic of space-domain astronomy is discussed in more detail by WG 2.1.

## Appendix 1 ARC Funding awarded in Astronomy 2015-2022

The table below contains all funded ARC projects from 2015 to 2022 (inclusive) extracted from the ARC public dataset of National Competitive Grant Program projects available here. The subset in the table below is all projects for which the primary four-digit FOR code is 0201.

The table below is similar to that which appears in the previous decadal plan working group report for the research funding working group which covered the period 2002-2014. The equivalent table for the previous decadal plan working group has the names of the investigators (which is no longer included in this public dataset), but doesn't list the funding received.

The data from 2023 onwards has not been included as it was incomplete at the time of writing and is also complicated by the change in the FOR codes which occurred at the end of 2022. Examination of the data in Appendix 1 from the Working Group 3.4 report for the previous decadal plan show some minor differences between the data we have extracted and used for 2002-2014 and that presented there. It appears that there are a small number of 0201 coded grants which were removed (they appear to be more space science or upper atmospheric science than astronomy topics) and a number of non-0201 coded grants which were included. Here we are interested primarily in the longer term trends and so have applied a consistent approach for the entire 20 year dataset, but note that does produce minor differences between the data presented here and that from the equivalent report prepared for the previous decadal plan.

Project ID	First Year Funded	Administering Org	Funding Received
DE150100618	2015	The University of Western Australia	\$354,000
DE150101145	2015	Monash University	\$338,895
DE150101323	2015	Monash University	\$328,000
DE150101510	2015	The University of Sydney	\$329,292
DE150101816	2015	The Australian National University	\$333,000
DP150100250	2015	The Australian National University	\$385,100
DP150100862	2015	The Australian National University	\$399,500
DP150101622	2015	The University of Adelaide	\$694,300
DP150101727	2015	The University of Melbourne	\$357,000
DP150101734	2015	Swinburne University of Technology	\$325,500

DP150102987	2015	Swinburne University of Technology	\$350,482
DP150102988	2015	The University of Western Australia	\$384,700
DP150103208	2015	The University of Melbourne	\$590,100
DP150103294	2015	The Australian National University	\$384,700
DP150103359	2015	The University of Adelaide	\$470,800
DP150104129	2015	The Australian National University	\$411,000
DP150104329	2015	The Australian National University	\$310,700
DP150104667	2015	The University of Sydney	\$443,900
FL150100113	2015	The Australian National University	\$3,039,610
FL150100148	2015	Swinburne University of Technology	\$2,840,752
FT150100024	2015	The Australian National University	\$916,520
FT150100074	2015	The University of Melbourne	\$702,352
FT150100079	2015	The Australian National University	\$682,352
FT150100099	2015	The University of Sydney	\$824,960
FT150100269	2015	Swinburne University of Technology	\$682,352
FT150100281	2015	Monash University	\$618,352
FT150100333	2015	Macquarie University	\$665,352
FT150100415	2015	Swinburne University of Technology	\$682,352
LE150100024	2015	Swinburne University of Technology	\$760,000
LE150100055	2015	The University of Western Australia	\$560,000
LE150100070	2015	The University of Adelaide	\$270,000
LE150100087	2015	The University of New South Wales	\$760,000
LE150100144	2015	The University of Sydney	\$430,000
LE150100155	2015	Swinburne University of Technology	\$370,000
LP150100620	2015	The Australian National University	\$264,619
DE160100736	2016	The University of Melbourne	\$314,436
DE160100849	2016	The University of Melbourne	\$326,637
DE160100851	2016	The Australian National University	\$323,000

DE160101585	2016	Macquarie University	\$388,463
DP160100253	2016	The University of Western Australia	\$593,400
DP160100637	2016	Monash University	\$344,100
DP160100695	2016	The Australian National University	\$389,800
DP160100723	2016	The Australian National University	\$450,200
DP160100760	2016	The Australian National University	\$755,400
DP160100930	2016	The University of Queensland	\$360,900
DP160101608	2016	Swinburne University of Technology	\$312,485
DP160102075	2016	The Australian National University	\$710,800
DP160102235	2016	Swinburne University of Technology	\$560,800
DP160102447	2016	The University of Western Australia	\$595,400
DP160102932	2016	The University of Sydney	\$440,500
DP160103231	2016	The University of New South Wales	\$346,470
DP160103456	2016	The University of Western Australia	\$735,700
DP160103631	2016	The Australian National University	\$422,200
DP160103747	2016	The Australian National University	\$458,200
FT160100028	2016	The University of New South Wales	\$652,000
FT160100035	2016	Monash University	\$652,000
FT160100046	2016	Monash University	\$651,000
FT160100112	2016	Monash University	\$652,000
FT160100206	2016	The Australian National University	\$805,054
FT160100250	2016	The University of Western Australia	\$652,000
FT160100402	2016	The Australian National University	\$681,054
LE160100001	2016	The University of New South Wales	\$800,000
LE160100014	2016	The University of New South Wales	\$550,000
LE160100031	2016	Curtin University	\$1,000,000
LE160100045	2016	The University of Western Australia	\$360,000
LE160100094	2016	The University of New South Wales	\$150,000

LE160100144	2016	The University of Western Australia	\$650,000
LE160100145	2016	The University of Western Australia	\$430,000
LE160100191	2016	The University of Sydney	\$175,000
LP160100561	2016	RMIT University	\$230,877
CE170100004	2017	Swinburne University of Technology	\$31,300,000
CE170100013	2017	The Australian National University	\$30,300,000
DE170100356	2017	The University of Melbourne	\$360,000
DE170100891	2017	The University of Western Australia	\$338,324
DE170101086	2017	Macquarie University	\$360,000
DP170100521	2017	Monash University	\$339,500
DP170100603	2017	The Australian National University	\$365,000
DP170100721	2017	The Australian National University	\$325,500
DP170102233	2017	The Australian National University	\$427,000
DP170102344	2017	The University of Western Australia	\$389,500
DP170102923	2017	Swinburne University of Technology	\$364,500
DP170103470	2017	Swinburne University of Technology	\$321,000
DP170103491	2017	The University of New South Wales	\$286,000
DP170103625	2017	The University of Melbourne	\$360,000
DP170104160	2017	The University of Sydney	\$270,000
DP170104424	2017	The University of Western Australia	\$1,097,000
DP170104778	2017	Macquarie University	\$475,000
FT170100040	2017	Monash University	\$785,000
FT170100243	2017	The University of New South Wales	\$715,004
FT170100273	2017	Swinburne University of Technology	\$679,334
FT170100376	2017	Swinburne University of Technology	\$680,000
LE170100004	2017	The Australian National University	\$502,453
LE170100104	2017	The University of Adelaide	\$1,390,000
LE170100217	2017	The Australian National University	\$850,000

LE170100242	2017	The University of Sydney	\$400,000
DE180100346	2018	Curtin University	\$328,075
DE180100448	2018	The University of Sydney	\$336,288
DE180100584	2018	Curtin University	\$342,949
DE180101104	2018	The University of Sydney	\$322,713
DE180101240	2018	The University of Melbourne	\$343,450
DP180100661	2018	Curtin University	\$148,259
DP180100857	2018	Curtin University	\$367,072
DP180100972	2018	University of Southern Queensland	\$282,491
DP180101061	2018	University of Tasmania	\$416,584
DP180101791	2018	The University of New South Wales	\$380,844
DP180102408	2018	The University of Sydney	\$357,031
DP180103155	2018	Monash University	\$238,048
DP180103408	2018	The University of Sydney	\$417,961
DP180103413	2018	The University of Sydney	\$468,671
DP180103509	2018	The University of Sydney	\$446,340
DP180103740	2018	The University of Western Australia	\$390,877
DP180104235	2018	Monash University	\$369,365
FL180100060	2018	Swinburne University of Technology	\$2,838,950
FL180100168	2018	The University of Queensland	\$2,899,722
FT180100066	2018	The University of Western Australia	\$853,125
FT180100194	2018	Swinburne University of Technology	\$993,125
FT180100231	2018	The University of Sydney	\$866,125
FT180100321	2018	Curtin University	\$855,000
FT180100375	2018	The Australian National University	\$978,125
FT180100495	2018	The Australian National University	\$788,125
LE180100009	2018	The Australian National University	\$340,160
LE180100165	2018	The University of New South Wales	\$792,859



LE180100170	2018	The University of Adelaide	\$159,450
DE190100004	2019	Monash University	\$350,000
DE190100375	2019	The University of Sydney	\$315,000
DE190100437	2019	The University of Western Australia	\$338,774
DE190100656	2019	Monash University	\$364,259
DE190100813	2019	Macquarie University	\$366,425
DP190100252	2019	The Australian National University	\$375,000
DP190100561	2019	The University of Sydney	\$381,000
DP190100666	2019	The University of New South Wales	\$416,000
DP190101258	2019	The Australian National University	\$430,000
DP190101259	2019	The Australian National University	\$390,000
DP190101477	2019	The Australian National University	\$435,000
DP190101571	2019	The Australian National University	\$380,000
DP190101943	2019	The University of New South Wales	\$345,000
DP190102431	2019	Monash University	\$386,660
DP190102448	2019	Macquarie University	\$330,000
DP190102714	2019	The University of Sydney	\$360,000
DP190103100	2019	Macquarie University	\$345,000
DP190103143	2019	The University of Queensland	\$390,000
DP190103688	2019	The University of New South Wales	\$400,000
FT190100083	2019	The University of Western Australia	\$885,923
FT190100155	2019	Swinburne University of Technology	\$784,832
FT190100231	2019	Curtin University	\$857,533
FT190100449	2019	Macquarie University	\$748,282
FT190100574	2019	Monash University	\$935,735
LE190100018	2019	The University of Sydney	\$656,639
LE190100036	2019	University of Southern Queensland	\$159,000
LE190100050	2019	Macquarie University	\$500,000

DE200100461	2020	The University of Sydney	\$353,379
DE200100803	2020	The Australian National University	\$405,763
DE200101840	2020	University of Southern Queensland	\$426,696
DP200100451	2020	The University of Adelaide	\$570,000
DP200100784	2020	The University of Adelaide	\$350,000
DP200101068	2020	The University of Melbourne	\$420,000
DP200101909	2020	University of Tasmania	\$465,000
DP200102102	2020	Swinburne University of Technology	\$460,000
DP200102243	2020	Swinburne University of Technology	\$395,000
DP200102383	2020	The Australian National University	\$436,000
DP200102471	2020	Curtin University	\$390,000
DP200102574	2020	The University of Western Australia	\$510,000
DP200102643	2020	Curtin University	\$378,000
FT200100055	2020	The University of Western Australia	\$741,242
FT200100375	2020	The University of Western Australia	\$866,404
FT200100871	2020	The University of Sydney	\$730,452
LE200100008	2020	The University of Western Australia	\$700,000
LE200100012	2020	The Australian National University	\$632,000
LE200100035	2020	Curtin University	\$610,000
LE200100078	2020	Curtin University	\$250,000
LE200100096	2020	The University of Western Australia	\$1,150,000
LE200100201	2020	Western Sydney University	\$530,000
DE210100953	2021	The University of Sydney	\$405,000
DE210101050	2021	Swinburne University of Technology	\$350,898
DE210101639	2021	The University of Queensland	\$444,075
DE210101738	2021	Western Sydney University	\$345,000
DE210101893	2021	University of Southern Queensland	\$425,489
DP210100018	2021	Monash University	\$405,000

DP210100337	2021	The University of Western Australia	\$395,000
DP210100709	2021	The University of Newcastle	\$375,000
DP210101094	2021	Macquarie University	\$390,000
DP210101279	2021	Macquarie University	\$357,500
DP210101299	2021	Monash University	\$470,000
DP210101945	2021	The University of Western Australia	\$645,000
DP210102103	2021	Curtin University	\$355,000
DP210102133	2021	The University of New South Wales	\$390,000
DP210102386	2021	The University of Melbourne	\$540,000
DP210103119	2021	The University of Sydney	\$390,000
DP210104031	2021	The University of Adelaide	\$475,000
FL210100039	2021	The Australian National University	\$3,221,778
FT210100063	2021	Curtin University	\$898,160
FT210100168	2021	The University of New South Wales	\$727,138
FT210100485	2021	The University of Sydney	\$661,020
FT210100873	2021	Curtin University	\$1,073,480
LE210100002	2021	The Australian National University	\$3,000,000
LE210100015	2021	The University of Adelaide	\$1,680,000
LE210100107	2021	Swinburne University of Technology	\$672,000
LP210100092	2021	The Australian National University	\$238,000
DE220100003	2022	The University of Queensland	\$450,675
DE220100241	2022	Swinburne University of Technology	\$421,540
DE220100766	2022	The Australian National University	\$447,000
DE220100819	2022	Swinburne University of Technology	\$435,000
DE220101325	2022	Monash University	\$364,092
DE220101520	2022	The Australian National University	\$439,700
DP220100365	2022	University of Southern Queensland	\$273,000
DP220101395	2022	The University of Queensland	\$400,000

DP220101558	2022	The Australian National University	\$460,000
DP220101609	2022	Swinburne University of Technology	\$360,000
DP220101610	2022	Swinburne University of Technology	\$450,000
DP220101863	2022	Swinburne University of Technology	\$420,000
DP220102201	2022	The University of Sydney	\$360,000
DP220102254	2022	Macquarie University	\$700,000
DP220102305	2022	Swinburne University of Technology	\$900,000
DP220103384	2022	The University of Sydney	\$420,000
DP220103767	2022	Monash University	\$300,000
DP220103782	2022	The University of Sydney	\$420,000
LE220100007	2022	The University of New South Wales	\$1,275,295
LE220100037	2022	Macquarie University	\$1,749,940
LE220100084	2022	Macquarie University	\$296,339
LE220100126	2022	The Australian National University	\$770,000
LE220100153	2022	The University of Western Australia	\$385,000
LP210200594	2022	The University of Sydney	\$885,000
LP210300698	2022	The University of Western Australia	\$303,161