



Senate Inquiry into the Current Management of the Funding of the Australian Antarctic Division (AAD)

University of Tasmania Submission

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1300 363 864 | Vice.Chancellor@utas.edu.au

Acknowledgment of Country

The University of Tasmania pays its respects to elders past, present and emerging to the many Aboriginal people that did not make elder status and to the Tasmanian Aboriginal community that continues to care for Country. We acknowledge the profound effect of climate change on this Country and seek to work alongside Tasmanian Aboriginal communities, with their deep wisdom and knowledge, to address climate change and its impacts.

The Palawa people belong to one of the world's oldest living cultures, continually resident on this Country for over 40,000 years. They have survived and adapted to significant changes in climate over this time, such as sea-level rise and extreme rainfall variability, and as such embody thousands of generations of intimate place-based knowledge. We acknowledge with deep respect that this knowledge represents a range of cultural practices, wisdom, traditions, and ways of knowing the world.

The University of Tasmania recognises a history based on truth that acknowledges the impacts of invasion and colonisation upon Aboriginal people, resulting in forcible removal from their lands.

Our island is deeply unique, with cities and towns surrounded by spectacular landscapes of bushland, waterways, mountain ranges, and coasts.

The University of Tasmania stands for a future that profoundly respects and acknowledges Aboriginal perspectives, culture, language, and history, and a continued effort to fight for Aboriginal justice and rights paving the way for a strong future.

Appropriate funding of Antarctic research is critical to ensuring Australia meets its international commitments and obligations

Science, along with peaceful use and environmental protection, are key norms and principles of the Antarctic Treaty System. Under this system, Antarctica is designated as “a natural reserve devoted to peace and science” (Madrid Protocol Article 2). Science is also acknowledged as the currency of national credibility (i.e. influence) in the Antarctic Treaty System. It is one of the foundations of the Antarctic Treaty. This Treaty’s Preamble states, *inter alia*,

“Recognising that it is in the interest of all mankind that Antarctica shall continue for ever to be used exclusively for peaceful purposes and shall not become the scene or object of international discord; Acknowledging the substantial contributions to scientific knowledge resulting from international cooperation in scientific investigation in Antarctica;”

Article II of the Antarctic Treaty notes “Freedom of scientific investigation in Antarctica and cooperation toward that end, as applied during the International Geophysical Year, shall continue, subject to the provisions of the present Treaty.”

Australia, as an original signatory to the Antarctic Treaty, the depositary state for the Convention on the Conservation of Antarctic Marine Living Resources and a prime country in influencing the development of the Environmental Protocol, has longstanding Antarctic policy interests. These interests include:

- maintaining Antarctica’s freedom from strategic and/or political confrontation;
- preserving our sovereignty over the Australian Antarctic Territory, including our sovereign rights over adjacent offshore areas;
- supporting a strong and effective Antarctic Treaty system;
- conducting world-class scientific research consistent with national priorities;
- protecting the Antarctic environment, having regard to its special qualities and effects on our region;
- remaining informed about and able to influence developments in a region geographically proximate to Australia; and
- fostering economic opportunities arising from Antarctica and the Southern Ocean, consistent with our Antarctic Treaty system obligations, including the ban on mining and oil drilling (Update Australia’s Antarctic Strategy 2022).

The Australian Government notes that Australia’s Antarctic interests will be advanced through:

- leadership and influence in Antarctica;
- leadership and excellence in Antarctic science;
- leadership in environmental stewardship in Antarctica; and
- development of economic, educational and collaborative opportunities (Update Australia’s Antarctic Strategy 2022).

Our geopolitical and strategic international interests will be impacted by diminished Antarctic funding

The Australian Government’s ability to maintain sovereignty over the last 40 years has been built on both our scientific leadership and capacity to use science to underpin the Antarctic treaty system. Our research has provided the basis for our broad presence in the Antarctic that remains critical for sovereignty in the long term. A reduction in this capability potentially diminishes our achievement of these objectives as other nations dramatically increase their scientific endeavours. Our strategic interests also include understanding (and showing we are taking seriously) future climate impacts on regional neighbours, such as the Pacific Island nations.

The Australian Antarctic Science Program Governance Review (the Clarke review¹) noted in 2017 that continued uncertainty of funding on the science program risks institutionalised long-term collaboration at the international level (as well as discipline and agency level). Maintaining and

¹ Clarke, D. (2017) Australian Antarctic Science Program Governance Review, Commonwealth of Australia

growing the funding allocation for science and research is critically important for our ability to enter into international partnerships, which will be constrained when there is uncertainty in fieldwork over the planning horizon of 3-5-10 years. The ongoing funding uncertainty is significantly impacting the standing of AAD in the world's scientific community and has already resulted in a loss of reputation due to undelivered commitments. In the East Antarctic sector, India, Japan and China now regularly conduct scientific cruises without Australia's involvement, some including repeat transects that have led or contributed significantly to our ability to monitor the Southern Ocean. Already large-scale fieldwork that many would have expected Australia to lead given proximity to our stations is being undertaken by Japan or China and other nations. Other nations, including developing ones, are now moving ahead of us and, in some cases, will decide to go it alone or partner in new relationships at the expense of Australian researchers and our geopolitical and strategic interests. This group of "other" nations have historically looked to Australia to take our commitment to Antarctic research seriously especially within Australian Antarctic Territory, something which is becoming harder to guarantee.

The impact of the Antarctic funding challenges on both Southern Ocean infrastructure (through the Southern Ocean Observing System - SOOS) and observation activity provides a good example of the risk to geopolitical and international interests currently on the horizon. The SOOS International Project Office (SOOS IPO) has been hosted in Hobart since August 2011 and funded as a collaboration with the Tasmanian Government, CSIRO, AAD and the University of Tasmania. In the years since its establishment, the SOOS has grown from a locally focused concept into a globally acclaimed program, highlighting the importance placed on sustained observations from the Southern Ocean and international demand for access to data that supports solving key societal issues such as sea level rise, heat, freshwater and nutrient transport, and ecosystem responses to changes in the system. However, the 2023 SOOS Conference closing statement noted that:

"the chronic lack of observations for the Southern Ocean challenges our ability to detect and assess the consequences of change. As such, it is more pressing than ever to have a sustained and coordinated Southern Ocean observing system to provide an understanding of current conditions, inform predictions of future states, and support policies and regulations for the benefit of society. The Southern Ocean is a critical component of the global climate system." (<https://soosymposium2023.au/>).

It concluded *"it is more pressing than ever to have a sustained and coordinated Southern Ocean observing system to provide an understanding of current conditions, inform predictions of future states, and support policies and regulations for the benefit of society."* At the expiration of the recent hosting agreement in January this year, the University approached several agencies including AAD, CSIRO and DFAT for funding and while this was ultimately secured for 2024, Australia continues to be at risk of losing this key asset to other nations for want of a coherent funding approach over the long term. This risks both reputational loss, as a globally renowned leader in the region, and creates potentially significant challenges around data management and curation should we not secure long term funding.

Failing to maintain or improve the AAD and Antarctic Program funding allocation will have a direct and indirect impact on the conduct of research and the ability of researchers to build their careers

University of Tasmania researchers report that there are already significant problems undertaking Antarctic fieldwork both on the continent and at sea, and that any further budget challenges will not only exacerbate this but may make certain research areas untenable. They anticipate this latest AAD funding challenge will disproportionately fall on science expeditions and have significant, yet sometimes less visible impacts on researchers. When scientists (both at AAD and universities) are approved for field work, large amounts of time are committed to prepare for expeditions and as a result, they give up opportunities to apply for, or participate in, other research activities, including funding, other field trips and the production of other outputs. Regularly, expeditions have not been scheduled, or are delayed and/or cancelled at short notice. This represents significant losses in time and opportunities, and research outcomes which are largely not directly costed.

The challenges around Antarctic funding are also impacting existing critical research projects. The 30 year Continuous Plankton Recorder (CPR) dataset has been significantly compromised by multiple delays and voyage cancellations. This represents the longest biological time series for the Southern Ocean, is easy to deploy and collects extremely valuable data showing changes in the biology of the

Southern Ocean and Antarctica. The Krill and Krill Ecosystems (KAKE) program has been wound back before it began; this was designed to monitor the critical status of krill populations in those regions where serious discussions are underway about expanding the fishery. The East Antarctic Monitoring Program (EAMP) seeks to provide critical data on sea ice dynamics but will take longer to establish if the funding is not available, and with the sudden decrease in sea ice this year, this delay may mean it is too little, too late.

The cancellation of the Marginal Ice Zone (MIZ) voyage to study sea ice processes, the first scheduled science voyage on the RSV *Nuyina*, provides an example of the indirect impacts of these funding cuts. Staff from the AAD and many universities (including ours) invested significant amounts of time to plan the voyage, source appropriate scientific equipment, build collaborations, recruit junior staff and students who would participate amongst a range of activities required for research programs. Ten months prior to its scheduled departure, the voyage was cancelled with no plan to reschedule in the future. For such a large, important voyage, thousands of hours of staff time had already been invested, staff and student recruiting completed, and decisions around what other funding to apply for (or not) had been made. At the very minimum, the cancellation has impacted two PhD programs and other student projects, as well as milestones that feed into the Australian Antarctic Program Partnership (AAPP) for the next 3-4 years. We also understand the rescheduling of the voyage may not be earlier than 2026, which is beyond the 2025 end of funding for the Australian Centre for Excellence in Antarctic Science (ACEAS).

A major contributor to these challenges has been the one ship model, which brings research and supply logistics into tension with each other. Australia needs to resupply four stations within the summer period, the period for which most field science must occur. This effectively splinters the 60 days of potential science on *Nuyina* each year, noting that this period also includes up to 20 days transit time. The current model creates a dependency that is already compromising the science, as station resupplies and operational logistics needs take priority. This was very evident when the *Nuyina* voyage was cancelled, with replacement ships sourced to meet supply and logistics needs but no plan for how the science program could continue. Some essential data collection is almost impossible to schedule with a one-ship model, a gap that will be filled by other nations. Even if research funding were to be increased, the one ship model will continue to see science sacrificed to meet pressing logistics needs. Australia urgently needs to lease or build a dedicated, ice capable, supply vessel to overcome this.

The opportunity cost of this loss for the scientists involved has been significant, including career impacts, and will continue to be significant if funding levels cannot be assured. This scenario has repeatedly played out at a variety of scales of expeditions. A revised model which provides a more certain environment for workforce and researcher development is urgently needed. Researchers engaged in IMAS, ACEAS and AAPP report that there are a range of early career researchers with careers delayed or projects never even started or imagined due to ongoing funding uncertainty, and others that have never experience the opportunity that field research provides. This represents a severe threat to the capability build required for future Antarctic research.

Failing to maintain or improve Antarctic funding will impact on the full delivery of the Australian Antarctic Science Strategic Plan, the Australian Antarctic Strategy and the 20-year Action Plan and the Antarctic funding package

The Australian Antarctic Science Strategic Plan, the Australian Antarctic Strategy and the twenty-year action plan seek to deliver world class Antarctic and Southern Ocean science and research whilst ensuring Australia's leadership in the environmental stewardship of this area. These plans are critically relevant to ensuring that we conduct the science that helps understand the dynamics of Antarctica under a changing climate, using the region as an essential system for translating climate change with relevance for the rest of the world. Our nation's capacity to successfully deliver this world class Antarctic science and research and achieve the strategy and planning objectives remain at serious risk while it relies on disconnected and disjointed funding and governance models, and particularly short-term funding cycles.

ACEAS provides an excellent example of the risks associated with current short term funding allocation. Funded as one of two programs under the Special Research Initiative in Excellence (SRI) in Antarctic Science, it received \$6.67m per year for three years, and whilst supposed to end in 2022, smoothing out its funding over a longer timeframe will enable its work to continue until 2025. ACEAS is now facing a funding cliff, meaning staff can only play a limited role in field planning beyond 2025,

with planning underway to end of the decade. This will inhibit good planning in priority areas of science such as sea ice and sea level. With alignment to the top three provisional decadal plan priority areas, failure to address the funding challenge will substantially reduce our nation's capability to address these priorities.

The ACEAS situation highlights the deficiencies of the current funding environment and the urgent need for funding that can drive climate research that delivers a real time national and global warning system when changes occur in the Antarctic like we are seeing this winter. Recent sea ice changes in Antarctica have been well reported. During the last two summers, the sea ice around Antarctica has retreated farther than ever before and climate scientists are sounding the alarm. There is a need to understand whether we are crossing the threshold into a period of rapid change that could result in the sort of sea level rises or climate extremes that will require major adaption. This is entirely dependent on new, detailed understanding of the complex and little-observed interactions between ice, ocean, and atmosphere, and their inclusion in complex climate models. Without a significant increase in our knowledge and predictive capability we will continue to be caught by surprises from the Antarctic. We need the science to enable sufficient warning time to make any adaption, and yet funding for some of this key work is not guaranteed.

In 2017, the Clarke review noted that while the current state *"has strengths in the support of collaborative science from multiple government agencies and universities and in the education of future Antarctic scientists"* (Clarke, 2017: 3), it also demonstrated administrative inefficiencies and suffered from uncertainty over future funding arrangements. Clarke proposed a National Antarctic Research Institute be created to overcome these deficiencies, integrating governance, funding and research, but this recommendation remains to be implemented. The more recent Independent Expert Review of Australian Antarctic Division Science Branch (the 2021 O'Kane review²) proposed revisiting unimplemented recommendations of the Clarke review related to strengthening the funding for Antarctic science collaboration and its institutional model.

The current implementation framework for our Antarctic plans constrains mitigation of the strategic risks over the longer term. Existing settings, particularly funding uncertainty, a multi-actor governance framework and a dual-purpose science and logistics scope for the AAD, all work against a cohesive response to the level of geopolitical and scientific risk now in front of us. Our strategic framework for the Antarctic needs a longer-term view, one that draws together all the complexities of the region and mitigates the risks, including the geopolitical and strategic competition challenges and the economic and environmental needs and opportunities. It needs certainty of funding and the ability to plan ahead over far longer time scales. While understanding this is a complex task, it is a necessary input into ensuring our strategic science capabilities are effectively executed and remain geopolitically influential. A national institute of the type recommended by Clarke could be charged with this role, with an early task to lead the change and transformation of the Antarctic funding, planning horizons and governance, and a refocusing to longer-term strategic delivery, whilst ensuring our strategic leadership is retained.

Aligning Antarctic funding to what Australia needs to maintain our strategic leadership and protect our capability in Antarctic research should be a priority. Once the strategic framework has been considered, the funding picture should be restructured over three timescales as follows:

1. Develop a fifty-year view of the region and state of the Antarctic and Southern Ocean, whilst simultaneously reporting on changes in the region that have global consequences. Underpinned by the rolling decadal planning, and based on foundational science that establishes long term data sets, this outlook model would provide the enduring and longer-term approach necessary to ensure Australia's needs are protected and served. Wrapping around the decadal plan, it would ensure ongoing foresight of risk and change in the region across environmental, economic and geopolitical dimensions and build national capability to respond;
2. Continue the decadal planning to articulate the strategic research priorities and fund agency and university partnerships that deliver national capabilities in some cases with international partners; and

² O'Kane, M., Clarke, D., Exel, M., Johannes, G., Kennicutt II, M., Marsh, H., Pitman, A., Poiner, I., Stauber, J. (2021) Leading Australian Antarctic Science, Review of Australian Antarctic Division Science Branch, Commonwealth of Australia

3. Maintain a discovery funding stream, via the Australian Research Council and other funding programs, to fund innovative and discovery research over a 2-5 year time horizon, serving the shorter term needs and opportunities that arise.

The tight coupling of government goals to the Australian Antarctic Division has resulted in challenges of structural misalignment and dual-purpose scope

A key challenge posed by the current state is the interconnection of science and logistics within the AAD, and with the capriciousness of current funding cycles and their inherent funding, uncertainty will continue. Along with the delivery of secure funding and a more coherent governance model, a separation of these two functions is required. The delivery of both the logistics and science research through the AAD has impacted strongly on its capability mix and now risks an imbalance between the two, exacerbated by having to balance the requirements and resource needs of researcher driven science against the larger strategic (or policy driven) science programs. This has significantly challenged the AAD's ability to successfully deliver both functions in a way that meets program needs.

Research must be delivered by the organisation best placed to deliver excellence and impact. Reconfiguring the delivery model under a new Antarctic institute would ensure this can occur. Research requirements and funding should be separated out from the AAD's operational and logistics capability and funding needs. The current capability of the AAD should be embedded into the institute but focused on providing supply or source logistics for all Antarctic research ventures. While responsibility for commissioned research and its funding would sit with the institute, it would purchase the larger strategic and nationally important research required, and work back into the organisation for the necessary logistics capability. This commissioned research would be aligned to a broader strategic framework and would fund agency-led partnerships with universities on both matters of national capability and collaborations with international partners. In other cases, research would be university-led, engaging agencies, national and international researchers. Within this framework, the institute would oversight and commission research delivery whilst providing or commissioning logistics, deciding how, when and where activities occur.

However, in the absence of such an institute, an appropriate solution requires a shift in policy and the split of funding for these dual purposes into discrete streams. Under this second model, the AAD would become the service (logistics) provider to the research (recognising and optimising its immense capabilities in this area) and remain responsible for climate and environmental monitoring and modelling activities that support Antarctic and Southern Ocean 'outlook' research programs. This would reconceptualise the AAD role to one of research purchaser, where research needed to deliver on strategic science and policy agendas would be commissioned from and delivered by relevant external research organisations.

While this model will not resolve the governance challenges, the funding structure could be improved by splitting it into streams as follows:

1. funding to deliver the logistics capability required for the delivery of an Antarctic and Southern Ocean program which protects Australia's interests in the region;
2. long term stable funding, programmatically planned, for climate and other environmental modelling, necessary for compliance and policy adherence in terms of our impacts on the area and aligned to the outlook strategy; and
3. funding driven by a rolling decadal plan that supports national objectives and the larger strategic research activity, and is enabled to draw in new ideas and responses at scale to the problems that the outlook and planning identify for focus.

This would see logistics needs and the science relating to modelling coordinated against the horizons of the longer-term outlook, the Decadal Plan and the Action Plan aligned to the Australian Antarctic Strategy and ensure a transparent funding split between logistics and research. This would mitigate the current mismatch of logistics support and research, enabling the alignment of the logistics to research needs and approvals, and introducing far greater forward planning capacity than currently exists.

Conclusion

The fundamental constraints that Antarctic science and research now face means there is an urgent need to move towards a set of arrangements that can secure longer-term research funding based on a structural foundation that plays to the strengths and capabilities of the different organisations and ensures a more streamlined governance model. Serious consideration should be given to a new national institute that manages research leadership and strategy in a coordinated way, with leadership in this space realigned towards an area of government more closely engaged with the strategic risks, challenges and opportunities that the region presents.

Australia has a longstanding history of both excellence in Antarctic research and public engagement with Antarctica and the AAD has made a long and significant contribution to this. However, without a clear public narrative, the perception of reduced funding for Antarctic science may be interpreted as a reduction in Australia's commitment to Antarctic affairs. This could have significant negative effects, including on Australia's international commitments and obligations and consequences for our country's geopolitical and strategic international interests. Support and facilitation of Antarctic research will allow Australia to continue showing leadership in the Antarctic arena.