

20 Year Australian Antarctic Strategic Plan

AJ Press, Head Inquirer
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Introduction

Antarctica is strategically important to Australia: we assert sovereignty over 42 per cent of the Antarctic continent, and 36 per cent of Australia's maritime jurisdiction lies south of Australia. Australia has been a leader in Antarctica for more than 100 years.

However, Australia's standing in Antarctic affairs is eroding because of historical under-investment at a time when new players are emerging in Antarctica. The leadership that Australia has naturally assumed by its proximity, history and experience, risks decline.

The Antarctic is strategically important to Australia. The non-militarisation of Antarctica and its unique governance provide a region of peace and security at Australia's southern borders, and the Antarctic Treaty helps protect Australia's sovereign position with respect to the Australian Antarctic Territory.

But Australia must match its Antarctic aspirations with clear demonstration of presence and leadership in the Australian Antarctic Territory. Australia should become the partner of choice in East Antarctic logistics and science.

Australia now has a narrow window of opportunity to underline its Antarctic strategic interests and demonstrate its leadership in Antarctic affairs.

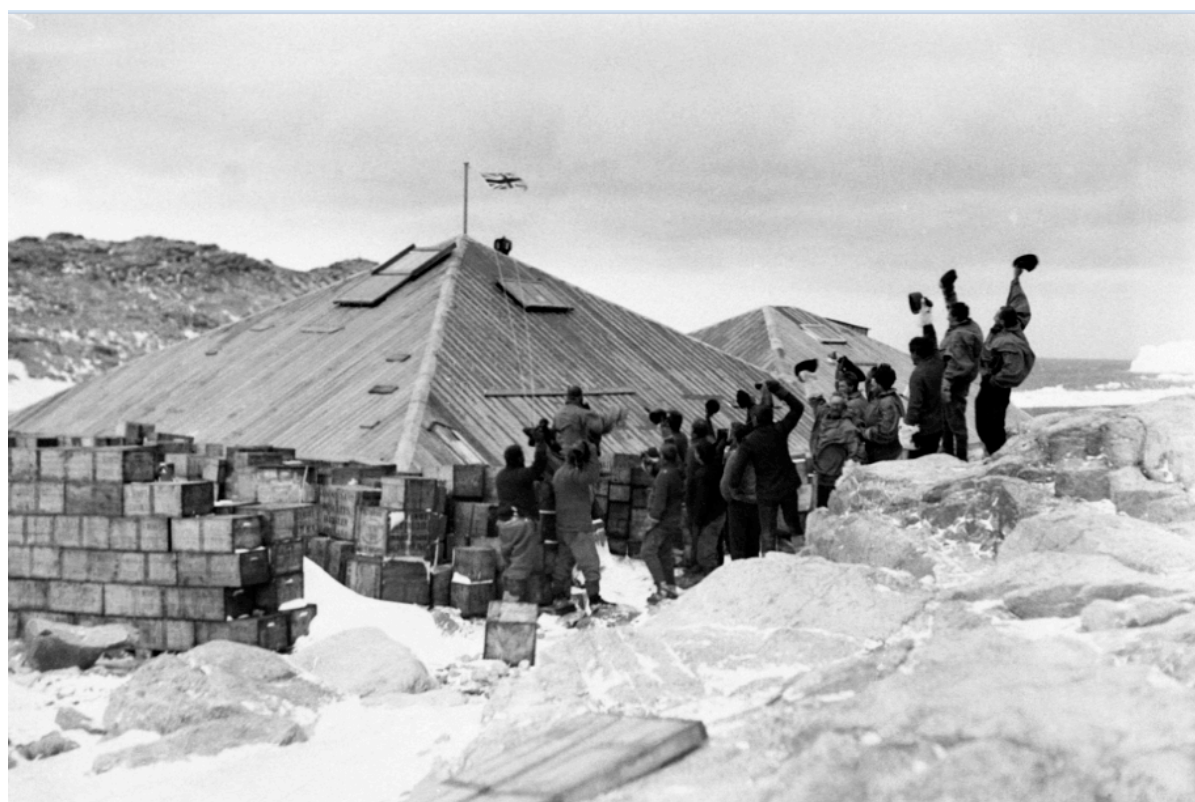


Figure 1 - Raising the flag at Cape Denison – 1912

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Australia as a Leader in Antarctica

Australian leadership in Antarctica protects Australia's interests and our international standing in this region of strategic importance.

What does leadership look like?

- Australia remains a key player in the Antarctic Treaty System and Antarctic diplomacy;
- Australia is looked to by emerging Antarctic nations for advice;
- Australia is able to conduct activities and support science in all parts of the Australian Antarctic Territory;
- Australia has the logistic capability to carry out world class science on the water, in the sea-ice, and on the continent;
- Australia has the means to efficiently move scientists and personnel to and from Australia, and within Antarctica;
- Australia has the ability to maintain and resupply its Antarctic stations effectively;
- Australia is a collaborator of choice in science in East Antarctica; and
- Australia is a partner of choice in East Antarctic logistics.

What will this require?

- Affirming Australia's Antarctic interests;
- Strengthening Australian Government administrative arrangements and regular reporting to Government on Australia's Antarctic interests;
- Commissioning the replacement for *Aurora Australis* and using it to full effect, including:
 - efficient resupply of Australia's Antarctic stations,
 - a comprehensive program of research in the Southern Ocean and sea-ice, and
 - a program of logistic cooperation with other countries;
- Investment in the options now available for inter- and intra-continental air transport to supplement the core functionality of the new ice-breaker;
- Re-acquisition of Australia's deep-field traverse capability to support activities throughout the Australian Antarctic Territory, high priority science, and other nations active in the region;
- Modernising Australia's Antarctic stations and their operations; and
- Communicating to the Australian public the importance of Australia's presence in Antarctica.

For Tasmania this will require:

- Coordinated Commonwealth and State priorities for infrastructure investment and development, especially in port facilities (including wharf and fuel infrastructure) and the completion of the extension of the Hobart Airport runway;
- Building training and education capabilities in Antarctic-related areas of Antarctic law, policy and governance; logistics; field training; trades training; science, technology and innovation; and Antarctic meteorology; and
- Developing stronger links with industry to encourage innovation and participation of businesses in the Antarctic sector.

Recommendations of the 20 Year Australian Antarctic Strategic Plan

The recommendations of this report are made to provide guidance on how Australia can ensure that its Antarctic interests are protected and advanced over the next 20 years and beyond. Many of the recommendations require whole-of-Government consideration in the near to short term in order to ensure that Australia's relative standing in Antarctica is protected.

Australia's Antarctic Interests

Recommendation 1 - The Australian Government should reaffirm Australia's Antarctic interests and put in place mechanisms to ensure whole-of-Government commitment to their implementation.

- Responsibility for Australia's Antarctic interests should be explicitly assigned to relevant agencies.

The Australian Government should also consider amending these interests and adding the additional interest of "Support a strong and effective Antarctic Treaty System".

HIGH PRIORITY-IMMEDIATE-ONGOING

Recommendation 2 - The replacement for *Aurora Australis* should be capable of meeting Australia's likely needs for at least the next 20 years and be used to Australia's maximum advantage:

- It should be more ice-capable than *Aurora Australis* enabling year-round access to the sea-ice zone;
- It should be Australian owned, controlled, and flagged;
- It must be used efficiently for resupply of Australia's Antarctic stations;
- It should be used as a platform for a program of logistic collaboration with other countries; and
- It should be engaged in conducting world class research in the Southern Ocean and Antarctica to lead Australia's Antarctic science efforts.

When not engaged directly in Australia's Antarctic program, the vessel should be available, where appropriate, for other uses by the Australian Government.

HIGH PRIORITY-ONGOING

Recommendation 3 - Australia should build on its development of ground-breaking inter-continental air transport by exploring capabilities including those that were previously unavailable, including:

- Options for intra-continental air transport to link with the direct flights from Hobart to Wilkins Aerodrome;
- The viability of flying ski-equipped aircraft directly from Australia to Antarctica, or other direct flight options;
- Assessing the long-term viability of the Wilkins Aerodrome; and
- The option of regular heavy-lift aircraft flights from the extended Hobart Airport runway to Wilkins Aerodrome or elsewhere in Antarctica.

HIGH PRIORITY-MEDIUM TERM-ONGOING

Recommendation 4 - Australia should re-acquire its deep field traverse capability to support high priority science.

HIGH PRIORITY-SHORT TERM-ONGOING

Recommendation 5 - Australia should develop a program for the modernisation of its Antarctic stations which includes:

- More efficient station operations;
- Increased flexibility in the configuration and use of assets and personnel;
- Increased capacity to support science and high priority activities throughout the Australian Antarctic Territory; and
- Increased collaboration with other nations active in East Antarctica.

HIGH PRIORITY-MEDIUM TERM-ONGOING

Australia's Administration of the Australian Antarctic Territory

Recommendation 6 - The Attorney-General's Department and the Australian Antarctic Division of the Department of the Environment should undertake a review of legislation and administrative practices applicable to the Australian Antarctic Territory to ensure that it is effectively administered.

HIGH PRIORITY-MEDIUM TERM-ONGOING

Recommendation 7 - Australia should consider administrative steps such as:

- Appointing ex-officio the Director of the Australian Antarctic Division as Administrator to the Australian Antarctic Territory and the Territory of Heard Island and McDonald Islands (this could be done through amendment to the *Australian Antarctic Territory Act* (1954) and the *Heard Island and McDonald Islands Act* (1953));
- Adopting flags for the Australian Antarctic Territory and the Territory of Heard Island and McDonald Islands (the adoption of these flags could be done as part of a broader Government program to adopt flags for all of Australia's external territories including the Coral Sea, and Ashmore Reef and Cartier Islands);
- Ensuring a continuing program of mapping of the Australian Antarctic Territory and its adjacent maritime zones; and
- Facilitating a program of visits by Senior Government figures to the Australian Antarctic Territory.

MEDIUM PRIORITY-MEDIUM TERM

Regional Security

Recommendation 8 - Australia should work to ensure that the Antarctic Treaty System remains strong and stable.

HIGH PRIORITY-ONGOING

Recommendation 9 - Australia should devote diplomatic resources to provide influence in the Antarctic Treaty System, and to work with Parties within it, in order to maintain Antarctic Treaty System norms and practices which keep the Antarctic free from discord, conflict and militarisation.

HIGH PRIORITY-ONGOING

Recommendation 10 - Australia should engage with other Antarctic Treaty Parties operating in the Australian Antarctic Territory.

HIGH PRIORITY-ONGOING

Recommendation 11 - Australia should specifically engage with countries now emerging as significant players in Antarctica, especially in the Australian Antarctic Territory.

HIGH PRIORITY-IMMEDIATE-ONGOING

Recommendation 12 - Australia should ensure that important existing bi-lateral arrangements it has with other countries (for example its Treaty with France, and bi-lateral agreements with France, China, Russia, and New Zealand) are adequately serviced and supported. Australia should give further consideration to its use of these kinds of arrangements.

MEDIUM PRIORITY-ONGOING

Recommendation 13 - Australia should engage with natural groupings in the Antarctic Treaty System to pursue common objectives in ensuring the stability and strength of the Antarctic Treaty System.

HIGH PRIORITY-ONGOING

Antarctic Science

Recommendation 14 - The Australian Antarctic Division Chief Scientist should meet annually with the Heads of the Integrated Marine Observing System; the Marine National Facility Steering Committee; and the Australian Research Council, and others as required, to ensure coordination of research effort in Antarctica and the Southern Ocean.

HIGH PRIORITY-IMMEDIATE

Recommendation 15 - Australia should retain the ‘hybrid’ system of supporting Antarctic science, with the Australian Antarctic Division of the Department of the Environment providing the core of researchers focussed on delivering priority scientific advice to government, and national and international research institutions and universities providing competitive-based research against Australia’s Antarctic Science Strategic Plan.

HIGH PRIORITY-SHORT TERM-ONGOING

Recommendation 16 - Funding for Australian Antarctic Science grants should be increased substantially to:

- Facilitate national and international collaboration in priority science in the Antarctic and Southern Ocean;
- Facilitate the planning and conduct of logistically complex priority research programs that may extend over a number of years;
- Encourage greater collaboration among nations in East Antarctica; and
- Demonstrate Australian leadership in Antarctic science.

Funding for collaborative research should not be allocated at the expense of other core functions of the Australian Antarctic Program.

HIGH PRIORITY-SHORT TERM

Recommendation 17 - In conjunction with an increase in Australian Antarctic Science grants, the Australian Antarctic Division of the Department of the Environment should budget sufficient appropriation to support the planning and conduct of major campaigns, particularly those that rely on complex logistics and which may extend over a number of years.

HIGH PRIORITY-SHORT TERM-ONGOING

Recommendation 18 - Australia should continue to engage in, promote and facilitate international collaboration in Antarctic science and governance.

HIGH PRIORITY-SHORT TERM-ONGOING

Recommendation 19 - Australia should prioritise large field-based research campaigns in areas of high priority scientific research, and promote, encourage and facilitate international collaborations in these campaigns.

HIGH PRIORITY-SHORT TERM-ONGOING

Recommendation 20 - Australia should engage with other Antarctic nations in their research programs to provide assistance and research collaborations consistent with the Australian Antarctic Science Strategic Plan.

HIGH PRIORITY-SHORT TERM-ONGOING

Recommendation 21 - The Australian Antarctic Science Strategic Plan should be renamed the 'Australian Antarctic Science Plan' and should be reviewed regularly (every 5 years).

The process for reviewing the Australian Antarctic Science Plan should be led by the Australian Antarctic Division of the Department of the Environment and include:

- External, independent review
- Broad consultation with the Australian science community and professional bodies
- Broad consultation across Government.

HIGH PRIORITY-SHORT TERM-ONGOING

Recommendation 22 - A whole-of-Government position should be reached on ongoing funding for national and international collaborations in Antarctic science to cover the cessation of the Antarctic Gateway Partnership funding in 2017 and the Antarctic Climate and Ecosystem Cooperative Research Centre funding in 2019.

HIGH PRIORITY-SHORT TERM

Economic Benefits for Tasmania as an Antarctic Gateway

Recommendation 23 - The Australian and Tasmanian Governments should work together to build Tasmania's capacity to be a leading global gateway to East Antarctica.

HIGH PRIORITY-IMMEDIATE-ONGOING

Recommendation 24 - A joint Tasmanian-Commonwealth Government agreement should prioritise infrastructure investment decisions to support the East Antarctic gateway, including:

- Investment in Hobart's rundown port facilities to ensure they are able to capitalise on growing marine research and resupply shipping in East Antarctica;
- Ensuring that Hobart has the ability to hold, and efficiently supply, ship and aircraft fuel; and
- Ensuring that efficient port access, quarantine, storage and resupply facilities are in place in order to service the potential growth in East Antarctic sea and air traffic.

HIGH PRIORITY-IMMEDIATE-ONGOING

Recommendation 25 - The Australian and Tasmanian Governments should jointly commission a report on the future shipping fuel facility requirements for the Port of Hobart, including:

- Options for delivery of fuel to vessels in the Port;
- Options for the supply of fuel to and from Selfs Point;
- The cost and opportunity cost of ship transit to and from the Port to Selfs Point; and
- The risks associated with the current ship refuelling arrangements, compared with viable alternatives.

HIGH PRIORITY-SHORT TERM

Recommendation 26 - The Commonwealth should actively engage with the Tasmanian business community to facilitate opportunities for businesses to participate in the Antarctic sector.

The Commonwealth should explore ways to engage business early in procurement processes in order to foster innovation, efficiency and provide better value for money.

HIGH PRIORITY-IMMEDIATE-ONGOING

Recommendation 27 - The Australian Antarctic Division of the Department of the Environment, in consultation with other agencies, should explore opportunities to establish partnerships with the State, other organisations, and industry in Antarctic related activities, including:

- The provision of training and services in medical and allied health services;
- Maritime skills training (including operations in sea-ice);
- Antarctic meteorological services, weather forecasting, and provision of sea-ice assessments for shipping;

- Scientific instrument and technology development;
- Antarctic field training and support;
- Training in Antarctic-related trades;
- The provision of goods and services; and
- Polar infrastructure research and development.

HIGH PRIORITY-ONGOING

Direct Support for Australia’s Antarctic Program

Recommendation 28 - The Department of the Environment and the Department of Finance, in consultation with other relevant Departments and agencies, should jointly undertake a review of the budget of the Australian Antarctic Division (Department of the Environment, Outcome 3).

This review should include:

- The fixed costs of running the Australian Antarctic Program, including:
 - The operation of Australia’s Antarctic stations;
 - The operation of logistics to support Australia’s sovereign and strategic interests in Antarctica and the Southern Ocean; and
 - The operation of the Australian Antarctic Division’s station on Macquarie Island.
- The core functions undertaken by the Australian Antarctic Division of the Department of the Environment in operational support, science, policy, and the administration of the Australian Antarctic Territory and the Territory of Heard Island and McDonald Islands;
- The funding required to meet Australia’s obligations in the Antarctic Treaty System including environmental management; sustainable management of marine living resources and conservation in the Antarctic, Southern Ocean and the Territory of Heard Island and McDonald Islands; and scientific, practical and diplomatic engagement;
- The funding required to advance Australia’s Antarctic interests through the initiation, conduct and support of priority science in Antarctica and the Southern Ocean;
- The provisions required to meet Australia’s obligation to remediate environmental damage and abandoned sites in Antarctica;
- The future requirements for capital investment and/or renewal in logistics and infrastructure;
- Opportunities to diversify the funding base to support some Antarctic activities including from business and philanthropic sources; and
- The future operational support required to sustain a credible Antarctic program that matches Australia’s national interests in the Antarctic.

The review should call on the expertise of external experts in polar operations and science.

HIGH PRIORITY-SHORT TERM

The Protocol on Environmental Protection to the Antarctic Treaty

Recommendation 29 - Australia should undertake diplomatic and practical activities to support the provisions of the Madrid Protocol, including the prohibition on Antarctic mineral activities. These activities should include capacity building efforts and education on Parties' obligations under the Madrid Protocol and its provisions with respect to mining.

HIGH PRIORITY-SHORT TERM

Antarctica and World Heritage Listing

Recommendation 30 - Australia should approach with extreme caution calls to have Antarctica listed on the World Heritage List and should not pursue World Heritage nomination for the Australian Antarctic Territory or Antarctica as a whole.

MEDIUM PRIORITY-ONGOING

Recommendation 31 - Australia should consider any assessment of proposals to place Antarctica on the World Heritage List against the comprehensive protections already provided within the Antarctic Treaty System, including the Protocol on Environmental Protection to the Antarctic Treaty, and the impacts that pursuing such a proposal may have on the Antarctic Treaty System itself.

MEDIUM PRIORITY-MEDIUM TERM

Recommendation 32 - Australia should identify opportunities to actively promote the natural, scientific, and cultural values of the Antarctic and the environmental protection outcomes achieved by the Madrid Protocol, especially in the lead up to its 25th anniversary in 2016.

HIGH PRIORITY-SHORT TERM

The Territory of Heard Island and the McDonald Islands

Recommendation 33 - Australia should support fisheries surveillance and enforcement operations in the French and Australian Exclusive Economic Zones in the Heard Island-Kerguelen Island region, and in the surrounding areas of the Convention on the Conservation of Antarctic Marine Living Resources in accordance with the Treaty with France.

HIGH PRIORITY-ONGOING

Recommendation 34 - The Australian Antarctic Division of the Department of the Environment should provide the Government with a carefully considered budget for conducting priority research at Heard Island and McDonald Islands and surrounding waters and supporting Australia's presence in the Territory.

Priority research in this region should be considered part of the core responsibilities of the Australian Antarctic Division as the region is strategically important for Australia, has important fisheries resources, and is important for wildlife conservation.

MEDIUM PRIORITY-SHORT TERM

Macquarie Island

Recommendation 35 - The operation of the research station on Macquarie Island should be reviewed as part of the Australian Antarctic Division's modernisation project.

MEDIUM PRIORITY-MEDIUM TERM

1 - Australia's Enduring Antarctic Presence

Australia's long, proud and enduring presence in Antarctica spans more than a century. Indeed, 2014 marks the centenary of the end Sir Douglas Mawson's epic Australasian Antarctic Expedition (see Attachment A – key dates in Australian Antarctic history).

Mawson's heroic efforts laid the foundation for Australia's Antarctic engagement in discovery, exploration and science. Mawson recognised the geographic importance of Antarctica to Australia as well as its scientific and resource potential. Mawson returned to East Antarctica in 1929-31, formalising a territorial claim for the Commonwealth and furthering Australia's scientific interests in the region. The acquisition of territory was completed by the *Australian Antarctic Territory Acceptance Act* (1933), which was formally proclaimed in 1936 (see Attachment B for a list of legislation relevant to Australia's Antarctic governance).

The Australian Antarctic Territory is part of Australia, and Australia asserts sovereignty to over 42 per cent of Antarctica.

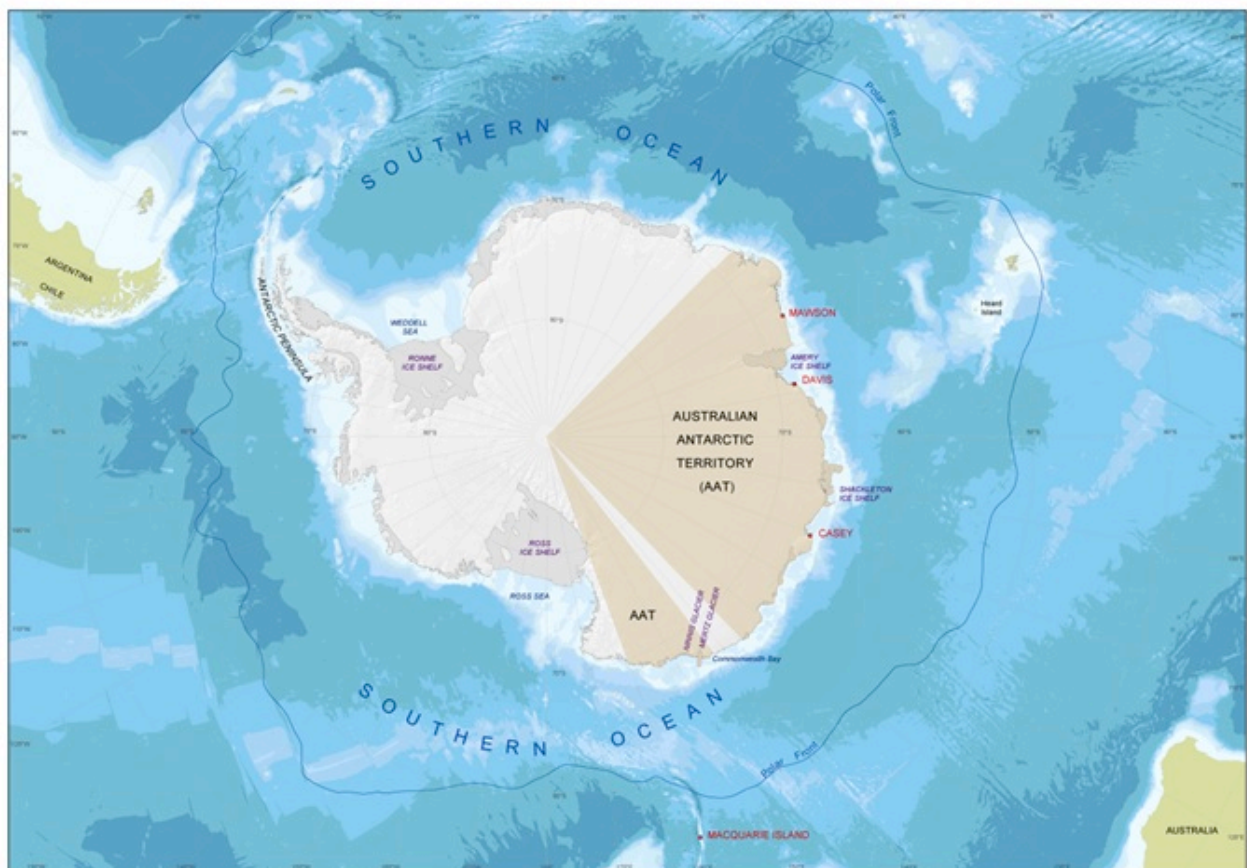


Figure 2 - Australian Antarctic Territory (map courtesy of the Australian Antarctic Division of the Department of the Environment)

Australia has maintained a permanent presence in Antarctica since the establishment of Mawson Station in 1954. Mawson Station was the first Antarctic station established south of 60° South and is the oldest continually occupied station south of the Antarctic circle.

Australia has been engaged continuously in Antarctic and Southern Ocean science since the establishment of the Australian Antarctic Division in 1948. Australia was one of twelve nations to participate in Antarctic research during the International Geophysical Year in 1957-58.

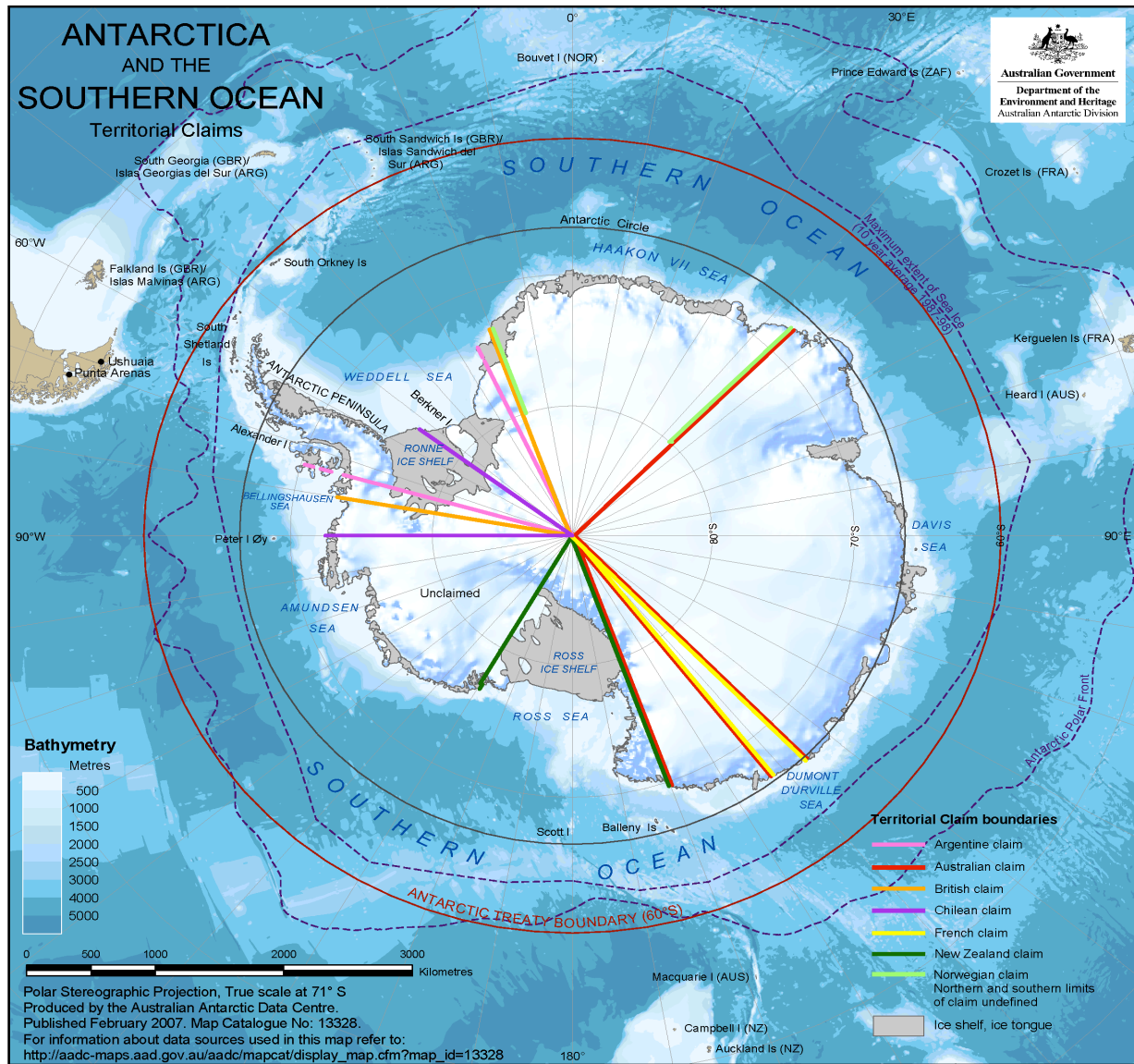
Australia is one of the twelve original signatories to the Antarctic Treaty (1961). Australia's Lord Casey played a significant role in the negotiation of the Treaty, and in the protection the Treaty provides to Australia's sovereignty over the Australian Antarctic Territory.

Australia has played a significant role in the development of the Antarctic Treaty System, especially the negotiation of the 1982 Convention on the Conservation of Antarctic Marine Living Resources and the 1991 Protocol on Environmental Protection to the Antarctic Treaty (the Madrid Protocol).

Today Australia's presence is focused on its three coastal Antarctic stations, Mawson, Davis and Casey. Australia has no permanent presence or reliable capability to access inland regions of the Australian Antarctic Territory. Each year some 550 expeditioners participate in the Australian Antarctic program in Antarctica and on Tasmania's Macquarie Island.

Australia's limited physical presence has led some to comment on the defensibility of Australia's sovereignty over the Australian Antarctic Territory. While argument over sovereignty is effectively set aside by the provisions of Article IV of the Antarctic Treaty, it does not diminish the validity of Australia's sovereignty over the Australian Antarctic Territory.

Figure 3 - Antarctic Territorial Claims (noting that the Southern limits of the Norwegian territory are undefined).
 (map courtesy of the Australian Antarctic Division of the Department of the Environment)



Antarctic Claimants

United Kingdom (1908), New Zealand (1923), France (1924), Australia (1933), Norway (1939), Chile (1940), Argentina (1943)

2 - Australia's Antarctic Interests

Antarctica, a region of international peace and cooperation, is of great strategic importance to Australia. The Antarctic Treaty sets aside all that part of the globe south of Australia below 60° South as a zone where military activity is prohibited and where cooperation in science is paramount.

Australia's Antarctic interests were first articulated by Government more than 30 years ago and have been reaffirmed by successive Governments since that time. They are based on the Antarctic region's strategic, scientific, environmental and potential economic importance for Australia.

Australia's Antarctic national interests are to:

- **Preserve our sovereignty over the Australian Antarctic Territory, including our sovereign rights over the adjacent offshore areas**
- **Take advantage of the special opportunities Antarctica offers for scientific research**
- **Protect the Antarctic environment, having regard to its special qualities and effects on our region**
- **Maintain Antarctica's freedom from strategic and/or political confrontation**
- **Be informed about and able to influence developments in a region geographically proximate to Australia, and**
- **Derive any reasonable economic benefits from living and non-living resources of the Antarctic (excluding deriving such benefits from mining and oil drilling).**

Australia's assertion of sovereignty to the Australian Antarctic Territory underpins the strategic importance of the Antarctic for Australia. Maintaining the Antarctic Treaty System and Australia's active engagement in it serves to protect its suite of national Antarctic interests.

While the Madrid Protocol prohibits mining in the Antarctic Treaty area, there is much speculation that some countries are engaged in Antarctic activities in order to position themselves for a time in the future when international attitudes to mining in the Antarctic might change.

To affirm its Antarctic interests, Australia must have both the intention and the capability to lead activities in the Australian Antarctic Territory - leadership in science, leadership in logistics, and leadership in diplomacy and law-making.

In accordance with the above recommendations, the following Australian Government agencies could be allocated responsibility for each of these strategic interests:

- **Preserve our sovereignty over the Australian Antarctic Territory, including our sovereign rights over the adjacent offshore areas** [*Lead: Attorney General's Department; significant responsibility: Australian Antarctic Division of the Department of the Environment; Department of Foreign Affairs and Trade*]
- **Take advantage of the special opportunities Antarctica offers for scientific research** [*Lead: Australian Antarctic Division of the Department of the Environment; significant responsibility: Department of Industry; Department of Education*]
- **Protect the Antarctic environment, having regard to its special qualities and effects on our region** [*Lead: Australian Antarctic Division of the Department of the Environment; significant responsibility: Bureau of Meteorology; other Divisions of the Department of the Environment*]

- **Maintain Antarctica’s freedom from strategic and/or political confrontation** [*Lead: Department of Foreign Affairs; significant responsibility: Australian Antarctic Division of the Department of the Environment; Department of Prime Minister and Cabinet; Department of Defence*]
- **Be informed about and able to influence developments in a region geographically proximate to Australia** [*Lead: Australian Antarctic Division of the Department of the Environment; significant responsibility Department of Prime Minister and Cabinet; Department of Foreign Affairs*], and
- **Derive any reasonable economic benefits from living and non-living resources of the Antarctic (excluding deriving such benefits from mining and oil drilling)** [*Lead: Australian Antarctic Division of the Department of the Environment; significant responsibility Department of Agriculture*].

This report recommends adding an additional Australian Antarctic interest to reflect the importance of the Antarctic Treaty System to Australia’s strategic Antarctic interests and amending one interest to better reflect Australia’s position on the potential economic benefits of the region:

- Preserve our sovereignty over the Australian Antarctic Territory, including our sovereign rights over the adjacent offshore areas
- Take advantage of the special opportunities Antarctica offers for scientific research
- Protect the Antarctic environment, having regard to its special qualities and effects on our region
- Maintain Antarctica’s freedom from strategic and/or political confrontation
- Be informed about and able to influence developments in a region geographically proximate to Australia ~~and~~
- ~~Derive any~~ **Foster** reasonable economic benefits from living and non-living resources of the Antarctic (excluding deriving such benefits from mining and oil drilling), and
- **Support a strong and effective Antarctic Treaty System.** [*Lead: Department of Foreign Affairs; significant responsibility: Australian Antarctic Division of the Department of the Environment; Department of Prime Minister and Cabinet*]

Recommendation 1 - The Australian Government should reaffirm Australia’s Antarctic interests and put in place mechanisms to ensure whole-of-Government commitment to their implementation.

- Responsibility for Australia’s Antarctic interests should be explicitly assigned to relevant agencies.

The Australian Government should also consider amending these interests and adding the additional interest of “Support a strong and effective Antarctic Treaty System”.

Australian Antarctic Leadership

Australian leadership in Antarctica and the Southern Ocean is eroding. As Australia's logistic and scientific capabilities stagnate through historical erosion of funding and the aging of its assets, other countries are ramping up their investments in Antarctic science, logistics and infrastructure.

In Australia's area of direct interest China, Republic of Korea and India have expanded their Antarctic investments in recent years. China in particular is expanding its efforts in East Antarctica and the Southern Ocean, including in the Australian Antarctic Territory. Since 1996 China has expanded its Zhongshan station near Australia's Davis station, and built Kunlun, an inland station at Dome A, the highest place in the Australian Antarctic Territory. China has built a new summer station between Zhongshan and Kunlun; a new icebreaker; and a fifth Antarctic station is going to be built in the Ross Sea to the East of the Australian Antarctic Territory.

As Australia's *Aurora Australis* rapidly approaches the end of its useful life, other countries operating in the East Antarctic are building icebreaking and marine research capabilities which far outstrip Australia's. Japan's *Shirase* was commissioned in 2009, and is one of the biggest icebreakers in Antarctica; Republic of Korea's icebreaking research vessel *Araon* was launched in 2009; and China is building a new icebreaker, due to be commissioned before 2016. China has also recently commissioned marine research vessels capable of undertaking research in the Southern Ocean and will keep the current *Xue Long* in service for polar research activities (Attachment C gives details of ships that have in recent years operated in the East Antarctic sector of the Southern Ocean, including research, resupply and tourist vessels).

Australia's scientific standing is under threat. In 2004 Australia was ranked third in terms of Antarctic scientific output². But Australia's leadership is being eroded by the diminishing capacity to undertake high-powered research in Antarctica and the Southern Ocean; by Australia's loss of deep field traverse capability; by limited intra- and inter-continental air transport capability; and by historical under-investment in Antarctic science and science support.

The single biggest point of failure in Australia's Antarctic efforts is its icebreaker. Resupply of Australia's Antarctic stations, support for Australian activities, and credible science requires Australia to have access to icebreaking capability for resupply, support and science. This requires an icebreaker with sufficient capability to access Australia's Antarctic stations regularly; the ability to carry sufficient cargo and fuel efficiently to support the stations and land and air logistics; and the ability to support marine and sea-ice research efforts.

The Australian Government recently announced that a replacement for the aging *Aurora Australis* will be constructed. The new icebreaker is planned to have greater ice-breaking, resupply, and research capability than *Aurora Australis*. The new vessel is due to come into service in 2019. This increased capability will help restore Australia's leadership in marine science and logistics in Antarctica and the Southern Ocean; it will also provide a platform from which to increase Australia's collaboration with other Antarctic nations.

It is appropriate for Australia to lead collaboration in East Antarctica. Being a 'collaborator of choice' underpins Australia's efforts in East Antarctica and its position as a leader in Antarctic affairs, and the replacement icebreaker should be a significant component of this leadership.

But the capabilities of the new icebreaker must be matched with the capacity to conduct both scientific and logistic operations. In recent years the ability to conduct significant marine science in Antarctica and the Southern Ocean has diminished due to budget constraints (see Figure 5 – Marine Science Days 1987 – 2014 and Section 7 - Direct Support for Australia's Antarctic Program).

² Dastidar, P.G, Ramchandran, S. 2008, Intellectual structure of Antarctic science: A 25-years analysis. *Scientometrics*, 77(3):389-414

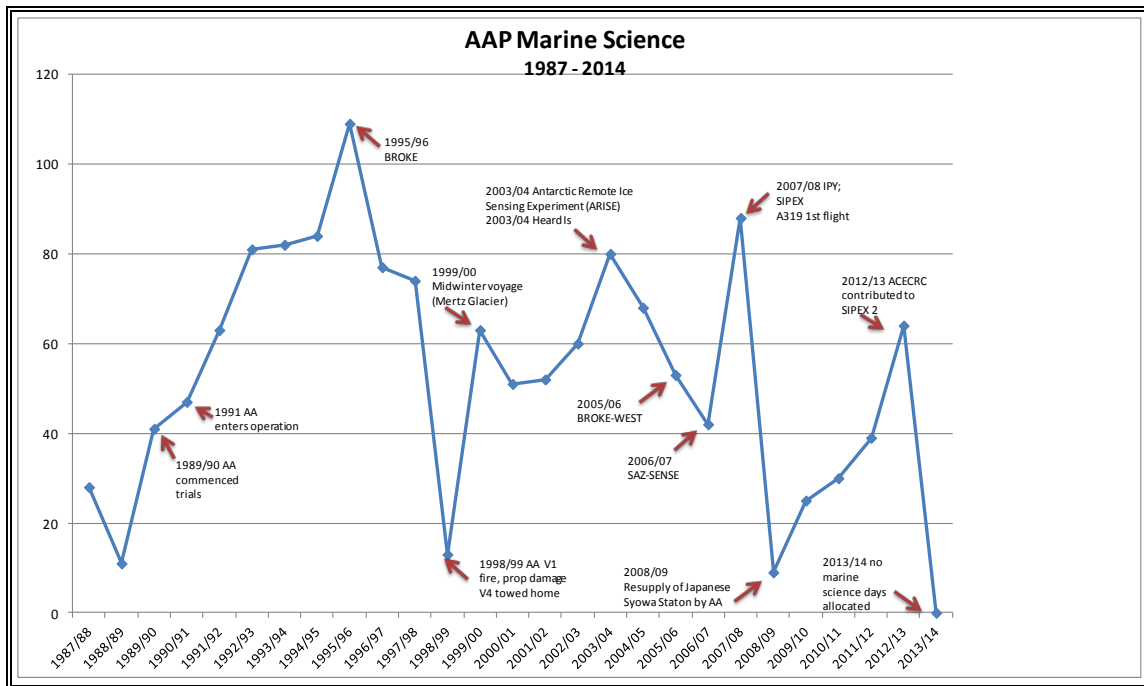


Figure 5 - Marine Science Days 1987-2014

The internationally significant Sea Ice Physics and Ecosystems Experiments (SIPEX) II voyage in 2013-14 (case study at Section 12) was only able to proceed with additional funding provided by the Antarctic Climate and Ecosystems Cooperative Research Centre, and future planned marine science voyages will only be possible with significant external contributions. Science, in this case ship-based science, is an integral component of Australia’s activities in Antarctica and the Southern Ocean. Australia requires the capacity to plan and support both resupply and marine science as part of its core activities in the Antarctic, and this should be reflected in the core operational budget of the Australian Antarctic Division.

Recommendation 2 - The replacement for *Aurora Australis* should be capable of meeting Australia’s likely needs for at least the next 20 years and be used to Australia’s maximum advantage:

- It should be more ice-capable than *Aurora Australis* enabling year-round access to the sea-ice zone;
- It should be Australian owned, controlled, and flagged;
- It must be used efficiently for resupply of Australia’s Antarctic stations.
- It should be used as a platform for a program of logistic collaboration with other countries; and
- It should be engaged in conducting world class research in the Southern Ocean and Antarctica to lead Australia’s Antarctic science efforts;

When not engaged directly in Australia’s Antarctic program, the vessel should be available, where appropriate, for other uses by the Australian government.

A Partner of Choice

Australia is the longest-established nation in East Antarctica for science and logistics. It has been seen as an innovator and a country that is 'easy to do business with'. This relative standing is seriously under threat due to the aging ice-breaker and chronic under-investment in logistic and science capability, as other nations invest heavily in these areas.

Being a partner of choice in Antarctic science and logistics underlines Australia's standing as a leading Antarctic nation. To do this we must be leaders on the water, on the ice and in the air. The announcement of a replacement to *Aurora Australis* with a 21st century research and resupply icebreaker is central to maintaining Australia as the partner of choice in East Antarctica.

But there must also be a vision for, and commitment to, long term investment in the range of logistics, infrastructure and science that underpin Australia's Antarctic interests. This requires integrated decisions to be made now about future capability, including future inter- and intra-continental air transport capability, deep-field traverse capability, station infrastructure and science.

Air transport capabilities should be developed to complement the new capabilities provided by the replacement for *Aurora Australis* as well as the extension of the Hobart Airport runway.

The air transport system must support Australia's logistic and scientific capability, and form an integral part of Australia's support for other nations in the Australian Antarctic Territory.

The Australian Antarctic Territory holds a unique record of past climate in its ice. Australia must be in a position to realistically lead growing international efforts to find and recover the world's oldest ice, deep within the Australian Antarctic Territory. Australia must also have the ability to reach all parts of the Australian Antarctic Territory and beyond.

Recommendation 3 - Australia should build on its development of ground-breaking inter-continental air transport by exploring capabilities including those that were previously unavailable, including:

- Options for intra-continental air transport to link with the direct flights from Hobart to Wilkins Aerodrome;
- The viability of flying ski-equipped aircraft directly from Australia to Antarctica, or other direct flight options;
- Assessing the long term viability of the Wilkins Aerodrome; and
- The option of regular heavy-lift aircraft flights from the extended Hobart Airport runway to Wilkins Aerodrome or elsewhere in Antarctica.

Recommendation 4 - Australia should re-acquire its deep field traverse capability to support high priority science.

Recommendation 5 - Australia should develop a program for the modernisation of its Antarctic stations which includes:

- More efficient station operations;
- Increased flexibility in the configuration and use of assets and personnel;
- Increased capacity to support science and high priority activities throughout the Australian Antarctic Territory; and
- Increased collaboration with other nations active in East Antarctica.

Antarctic Sovereignty

“under the treaty we have agreed to set aside the argument about territorial claims. Nobody abandons his own. We have made territorial claims in the Antarctic – quite extensive ones. I dare say that there are nations represented here today who would not agree with some of our claims..... There are some nations who do not think that anybody has a territorial claim at all and, by a single stroke of wisdom, I think, when this treaty was being negotiated it was agreed not to abandon claims but to put on one side the argument about them”

– *Sir Robert Menzies addressing the first Antarctic Treaty Consultative Meeting in Canberra (1961).*

The matter of Antarctic sovereignty was at the forefront of deliberations during the negotiation of the Antarctic Treaty in the late 1950's, and Australia was extremely cautious to ensure that its sovereignty over the Australian Antarctic Territory was not ceded or diminished by the Treaty. In the end, Article IV of the Antarctic Treaty was agreed among the twelve original signatories, effectively putting aside any challenge or dispute concerning Antarctic sovereign claims. Article IV effectively protects Australia's position on its sovereignty over the Australian Antarctic Territory.

Since the negotiation of the Antarctic Treaty, which came into effect in 1961, Australia has conducted its Antarctic activities as both an Antarctic claimant State and a Party to the Antarctic Treaty. In 2004, for example, when Australia submitted data to the Commission on the Limits of the Continental Shelf, it included data from Antarctica but requested the Commission not to consider the Antarctic data for the time being. Australia's actions carefully protected our sovereign interests, but maintained the stability of the Antarctic Treaty System.

In an earlier period, Australia and the other Antarctic claimant States had negotiated implicit recognition of their unique position in the negotiations over potential mineral exploration in the Antarctic. The provisions of Article IV of the Antarctic Treaty are reflected in the Convention on the Conservation of Antarctic Marine Living Resources (1982) and the Protocol on Environmental Protection to the Antarctic Treaty (1991) (Madrid Protocol).

Antarctic Treaty Article IV

1. Nothing contained in the present Treaty shall be interpreted as:

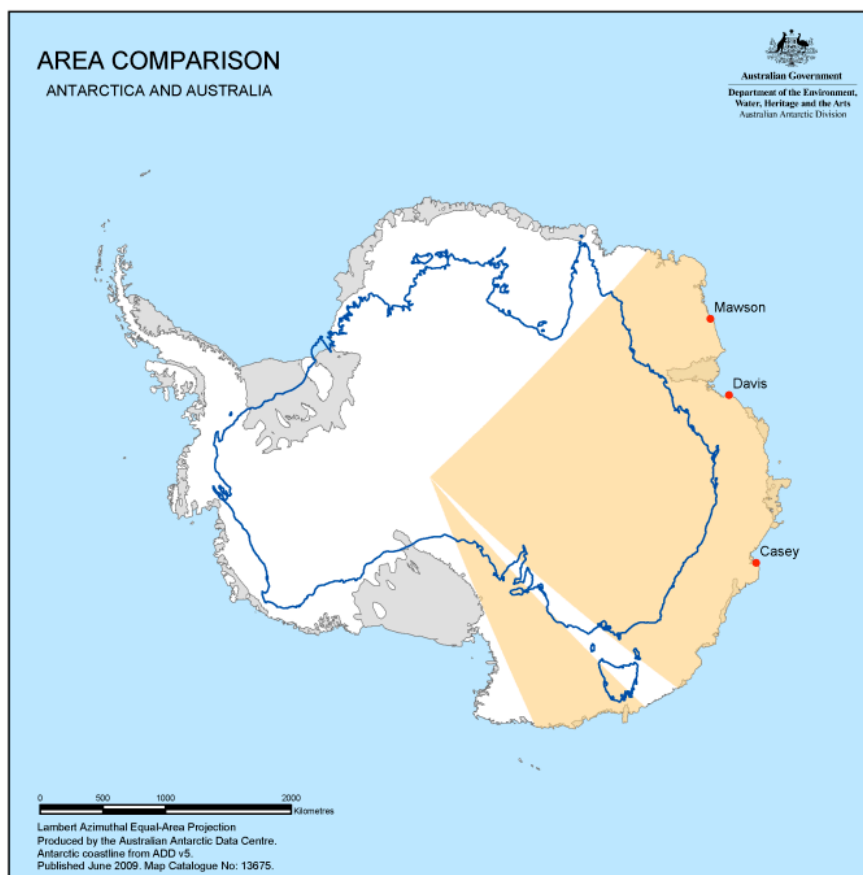
- (a) a renunciation by any Contracting Party of previously asserted rights of or claims to territorial sovereignty in Antarctica;
- (b) a renunciation or diminution by any Contracting Party of any basis of claim to territorial sovereignty in Antarctica which it may have whether as a result of its activities or those of its nationals in Antarctica, or otherwise;
- (c) prejudicing the position of any Contracting Party as regards its recognition or non-recognition of any other State's right of or claim or basis of claim to territorial sovereignty in Antarctica.

2. No acts or activities taking place while the present Treaty is in force shall constitute a basis for asserting, supporting or denying a claim to territorial sovereignty in Antarctica or create any rights of sovereignty in Antarctica. No new claim, or enlargement of an existing claim, to territorial sovereignty in Antarctica shall be asserted while the present Treaty is in force.

3 - Australia's Administration of the Australian Antarctic Territory

It is appropriate for Australia to undertake administration of the Australian Antarctic Territory in a manner consistent with its obligations in the Antarctic Treaty System.

It is in Australia's national interest to conduct effective administration of its Antarctic affairs and Australia should undertake a review of the provisions of legislation applicable to the Australian Antarctic Territory to ensure this effective administration.



Map courtesy Australian Antarctic Division

As administrator of the Australian Antarctic Territory and in accordance with its obligations in the Antarctic Treaty System, it is appropriate for Australia's operational and scientific presence to include:

- Permanent presence, including through maintaining its key Antarctic stations (Mawson, Casey and Davis), and continued association with Australia's key historic site at Commonwealth Bay.
- Access to all of the Australian Antarctic Territory by land and sea. To do so Australia must ensure the operational benefits of its new icebreaker are fully utilized in resupply, science, and the support of other nations in east Antarctica. Australia must ensure that the world-class inter-continental air link it has established is also used effectively to transport Australian personnel to and from Antarctica, support science and support other Antarctic nations in the Australian Antarctic Territory.

- Australia must explore future options for both inter and intra continental air transport – options that were not available when Australia’s Antarctic air link was introduced. This must be done in order to maximize the benefits of Australia’s inter-continental air transport capability, and to maximize Australia’s reach and presence in the Australian Antarctic Territory.
- Australia should ensure that it rebuilds its deep field traverse capability to support multi-national logistic and science efforts in the Antarctic, and demonstrate Australian leadership.
- Australia should also use its logistic infrastructure to facilitate its rights under the Antarctic Treaty System such as Treaty and environmental inspections and compliance inspections under the Commission for the Conservation of Antarctic Marine Living Resources.
- Australia should be a significant player or leader in large, multi-national research efforts in the Australian Antarctic Territory. Because of the important status that science is afforded in the Antarctic Treaty, Australia’s ability to participate in and lead key science programs in the Australian Antarctic Territory is not only a signal of Australia’s commitment to the Treaty, but is also a demonstration of Australia’s engagement in the region.

Australia should review its mapping coverage of the Australian Antarctic Territory and the adjacent marine zones, and embark on a program of survey and mapping for the entire Australian Antarctic Territory for scientific, navigational and safety reasons. Australia should also appoint an Administrator for the Australian Antarctic Territory and the Territory of Heard island and McDonald Islands.

Recommendation 6 - The Attorney-General’s Department and the Australian Antarctic Division of the Department of the Environment should undertake a review of legislation and administrative practices applicable to the Australian Antarctic Territory to ensure that it is effectively administered.

Recommendation 7 - Australia should consider administrative steps such as:

- Appointing ex-officio the Director of the Australian Antarctic Division as Administrator to the Australian Antarctic Territory and the Territory of Heard Island and McDonald Islands (this could be done through amendment to the *Australian Antarctic Territory Act (1954)* and the *Heard Island and McDonald Islands Act (1953)*);
- Adopting flags for the Australian Antarctic Territory and the Territory of Heard Island and McDonald Islands (the adoption of these flags could be done as part of a broader Government program to adopt flags for all of Australia’s external territories including the Coral Sea, and Ashmore Reef and Cartier Islands);
- Ensuring a continuing program of mapping of the Australian Antarctic Territory and its adjacent maritime zones; and
- Facilitating a program of visits by Senior Government figures to the Australian Antarctic Territory.

4 - Regional Security

The Antarctic Treaty sets aside the entire region of the globe south of 60° South as a region of peace and cooperation.

Antarctic Treaty Article 1

1. Antarctica shall be used for peaceful purposes only. There shall be prohibited, inter alia, any measures of a military nature, such as the establishment of military bases and fortifications, the carrying out of military manoeuvres, as well as the testing of any type of weapons.
2. The present Treaty shall not prevent the use of military personnel or equipment for scientific research or for any other peaceful purpose.

This has significant and positive ramifications for Australia. It ensures that while the Treaty is in force Australia does not need to be concerned about militarisation and conflict in the region directly south of Australia.

The Antarctic Treaty System also provides a forum in which Parties that are in conflict in other parts of the globe are able to collaborate and work to a common goal.

Maintaining the stability of the Antarctic Treaty System, and protecting and shaping its norms, is in Australia's national interest: it ensures the region's harmony and security as well as protects Australian interests through the adherence of Parties to Article IV of the Antarctic Treaty.

It is in Australia's national interest, along with like-minded Parties, to significantly influence the geopolitical environment of the Antarctic Treaty System. This requires both 'good standing' in Antarctic science and in Antarctic diplomacy. Australia should ensure that its Antarctic aspirations are matched by its ability to engage with and influence decisions in Antarctic Treaty Consultative Meetings, the Committee for Environmental Protection, and the Commission for the Conservation of Antarctic Marine Living Resources and its Scientific Committee.

Australia should ensure that it is able to engage strategically bi-laterally (and multi-laterally) with other Antarctic Treaty Parties. Australia has strong historic connections in Antarctica with France, Japan, the United States, the United Kingdom, China, New Zealand, Russia, and to a lesser extent Germany, India, Italy and Republic of Korea and with other Antarctic Treaty Parties. Australia also has strong political ties, and common interests with the other original signatories to the Antarctic Treaty. There are also other bi-lateral and multi-lateral interests in science, policy and governance that arise from time to time (for example the interests of Antarctic Gateway States³; Southern Hemisphere countries; the 'Valdivia' group, etc).

³ Antarctic Gateway States include: New Zealand, South Africa, Chile, Argentina and Australia

Australia should be prepared and have the ability to engage actively and constructively in these bi-lateral and multi-lateral discussions and activities in order to influence decisions in policy and science and to protect and shape Antarctic Treaty System norms. Constructive engagement through science and logistics, as well as capacity building, should be pursued by Australia.

Recommendation 8 - Australia should work to ensure that the Antarctic Treaty System remains strong and stable.

Recommendation 9 - Australia should devote diplomatic resources to provide influence in the Antarctic Treaty System, and to work with Parties within it, in order to maintain the Antarctic Treaty System norms and practices which keep the Antarctic free from discord, conflict and militarisation.

Recommendation 10 - Australia should engage with other Antarctic Treaty Parties operating in the Australian Antarctic Territory.

Recommendation 11 - Australia should specifically engage with countries now emerging as significant players in Antarctica, especially in the Australian Antarctic Territory.

Recommendation 12 - Australia should ensure that important existing bi-lateral arrangements it has with other countries (for example its Treaty with France, and bi-lateral agreements with France, China, Russia, and New Zealand) are adequately serviced and supported. Australia should give further consideration to its use of these kinds of arrangements.

Recommendation 13 - Australia should engage with natural groupings in the Antarctic Treaty System to pursue common objectives in ensuring the stability and strength of the Antarctic Treaty System.

Antarctic and Southern Ocean Search and Rescue

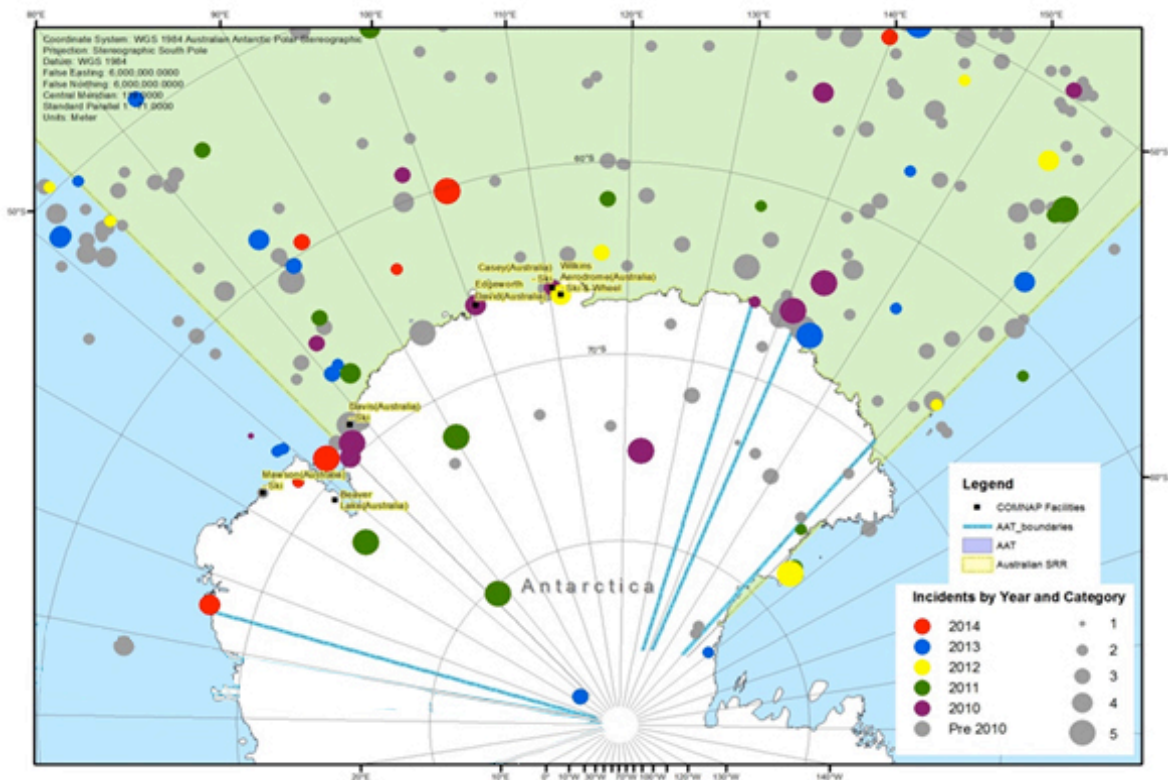
Australia's Search and Rescue Region looking south is vast. It extends east and west of Australia's land mass and south to the Australian Antarctic Territory. In the Antarctic region Australia's Search and Rescue region adjoins those of New Zealand and South Africa. Australian and other national Antarctic programs are active in the Australian Search and Rescue Region as are both legal and illegal fishers, and a growing number of tourists, independent visitors and sailors.

At present the Australian Antarctic Division has the only air medivac capability for much of East Antarctica and Australia has been called on by a number of national Antarctic programs to evacuate injured personnel. Australia has a good track record for search and rescue response, but there is undoubtedly a direct impact on programmed season activities, asset utilisation and research in Australia's Antarctic program. In an operating environment already challenged by a relatively short summer operating season, limited asset availability, and physical constraints such as weather and ice conditions, the disruption to a season's program by a search and rescue response can be considerable.

Despite the ongoing development of technologies and techniques to enhance safe working and operating practices, the Antarctic and Southern Ocean remains a hostile and unpredictable environment in which to live, work and travel. The safety of life in Antarctica must always be paramount. While any Search and Rescue response will likely require the collaboration of multiple agencies, the sheer distance and logistic challenges posed by a response in the Southern Ocean or Antarctica requires a highly sophisticated and coordinated approach.

Not only is search and rescue an international obligation, but it also offers certain opportunities for 'soft' diplomacy that are inherently valuable in building relationships, collaborative capacity, and shared operational understandings.

Australia's search and rescue capability planning is inextricably associated with the delivery of Australia's strategic national Antarctic interests. In order to be an active and influential player in the East Antarctic and Southern Ocean, Australia must have the operational capability to demonstrate leadership, including in the coordination and conduct of search and rescue activities.



Search and Rescue Incidents to 2014 (map courtesy of AMSA)

5 - Antarctic Science

Science is an important Antarctic activity. Science is the currency of influence in the Antarctic Treaty System. The Antarctic Treaty acknowledges the “substantial contributions to scientific knowledge resulting from international cooperation in scientific investigation in Antarctica” and provides for “freedom of scientific investigation”. To become a Consultative Party to the Antarctic Treaty, a Party must demonstrate “its interest in Antarctica by conducting substantial scientific research activity there”.

The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) recognises that it is “essential to increase knowledge of the Antarctic marine ecosystem and its components so as to be able to base decisions on harvesting on sound scientific information” and, among other things, agrees to “facilitate research into and comprehensive studies of marine living resources”. The Convention specifically establishes a Scientific Committee which is required to “...encourage and promote cooperation in the field of scientific research in order to extend knowledge of the marine living resources of the Antarctic marine ecosystem”.

The central role of science in Antarctic affairs is further underlined in the Protocol on Environmental Protection to the Antarctic Treaty (Madrid Protocol), which designates Antarctica “as a natural reserve, devoted to peace and science”.

Science is an essential component of the Antarctic Treaty System.

Australia has been active in Antarctic science for over one hundred years, and in the post Second World War period, one of the leading countries in Antarctic scientific research. Australia’s pre-eminence in Antarctic research capability and output is now declining due to historical underfunding and the emergence of other countries as big players in Antarctic and Southern Ocean research.

Sir Douglas Mawson foreshadowed that Antarctic research would be important for understanding weather in Australia. Contemporary research carried out in Australia’s Antarctic program shows the profound influence of Antarctic weather and climate on rainfall in some of Australia’s most productive agricultural regions – south-west Western Australia and eastern Australia [see box ‘Antarctic Ice Core Records and Australian Climate’].

Recent research has also shown that the Southern Ocean is changing quite dramatically with significant implications for regional and global climate. Being able to undertake scientific research in Antarctica is important for Australia regardless of our sovereignty over the Australian Antarctic Territory: it provides Australia with essential knowledge about our own climate and weather, the sustainability of our adjacent oceans and the impacts that changes in the Antarctic may have on Australia’s prosperity.

The Australian Antarctic Program has a well developed science planning process, with a 'rolling' science plan, reviewed periodically, that establishes the research framework for the out years (Australian Antarctic Science Strategic Plan 2011-12 to 2020-21). The mid-cycle review of the plan is expected to take place in 2014/15. Development of the plan involves extensive stakeholder consultation, the oversight of an advisory committee⁴ and approval by the Minister for the Environment. The current plan establishes five research themes: Climate Processes and Change; Terrestrial and Nearshore Ecosystems; Environmental Change and Conservation; Southern Ocean Ecosystems; and Frontier Science.

The Australian Antarctic Division initiates, conducts and supports research in Antarctica against this framework for Antarctic science and runs a modest Australian Antarctic Science Grant scheme. Applications from scientists and institutions to conduct research are assessed against the science plan and support is provided based on the plan and logistic feasibility.

The Australian Antarctic Science Grant scheme is small in cash terms. In 2014-15 \$1.2 million will be available in grants to researchers and institutions. The 2005 report, *Antarctica: Australia's Pristine Frontier* (Joint Standing Committee on the National Capital and External Territories), recommended that the appropriation for the Australian Antarctic Science grants scheme "... be doubled from its current level of \$700,000 for the remainder of the science strategy 2004/05 – 2008/09 and be reassessed after that period."

Antarctic Ice Core Records and Australian Weather and Climate

The shortness of the Australian instrumental climate record limits ability to understand long-term variability and poses challenges for policy makers. Two recent findings from Australian ice core research shed light on the long-term variability in Australian rainfall and promise to improve understanding of Australian weather and climate more generally. The work uses ice cores drilled at Law Dome, near Casey Station, in Antarctica.

The first result comes from studying snowfall changes seen in the ice core. Researchers identified a significant increase in snowfall since around 1970 that coincided with drought in southwest Western Australia. This pattern of increased Law Dome snowfall coinciding with reduced southwest Western Australia rainfall was seen throughout the century or so of southwest Western Australia meteorological records.

The study found that atmospheric circulation associated with high snowfall at Law Dome coincided with cold, relatively dry airflow to southwest Western Australia in winter, instead of the more usual rain-bearing westerly or north-westerly weather. The long ice core record shows that the recent multi-decadal period of high snowfall is the most extreme such event in 750 years, suggesting that the drought may be similarly unusual.

The reasons for the recent dominance of the drought/high-snowfall regime remain uncertain, although impacts of ozone depletion in recent decades have been implicated. Further study will help explore this issue and probe the mechanisms underlying the southwest Western Australia link.

A second study connects the Law Dome ice core with eastern Australian rainfall. It relies on a record of wind-blown sea-salts in the ice. Summer-season sea salt at Law Dome is significantly correlated with rainfall in eastern Australia. The immediate driver of the sea salts is large-scale changes in winds over the Southern Ocean. These winds are influenced by larger scale influences in the Pacific, including El Niño and also likely influences in the Indian Ocean. The connection itself is modulated by multi-decadal changes in the Pacific Ocean and the mechanisms are the subject of ongoing research. Work to date suggests that eastern Australian rainfall through the last century has been below the long-term, multi-centennial average.

References –

van Ommen, T.D., Morgan, V. Snowfall increase in coastal East Antarctica linked with southwest Western Australian drought. (2010) *Nature Geoscience*, 3 (4), pp. 267-272

Vance, T.R., van Ommen, T.D., Curran, M.A.J., Plummer, C.T., Moy, A.D. A millennial proxy record of ENSO and eastern Australian rainfall from the law dome ice core, east Antarctica. (2013) *Journal of Climate*, 26 (3), pp. 710-725

⁴ The Antarctic Science Advisory Committee.

The current level of funding available through the Australian Antarctic Science Grant scheme is inadequate to either service the current demand for research in the Antarctic, or to facilitate and support large, collaborative research programs in high priority science. Coupled with the financial pressures on the operational and logistic support activities of the Australian Antarctic Division (see Section 7 - Direct Support for Australia's Antarctic Program), the outlook for support for high profile, priority, collaborative science in the Antarctic is very limited.

While Australian researchers are able to access Australian Research Council grants for Antarctic research, coordination with the Australian Antarctic Program is required in order for Australian Research Council-funded research in the Antarctic to be supported. This is also the case for researchers funded through other countries wishing to access Australian Antarctic Program support. The expensive and complex nature of Antarctic logistics and science support necessitates centralised coordination through the Australian Antarctic Division of the Department of the Environment in order that research programs are carried out efficiently and safely, and have sufficient resources for successful completion. Therefore access to support for science in Antarctica in the Australian Antarctic Program requires assessment against the Australian Antarctic Science Strategic Plan and approval.

While this process appears cumbersome to researchers who have received research grants elsewhere (for example through the Australian Research Council) it is necessary to ensure that resources are planned and available to support the research activity.

Assets used for Antarctic research are in high demand and are expensive to operate. It is therefore important that there is coordination between the Australian Antarctic Division as the lead agency for the Australian Antarctic Program, and other funding bodies and facilities such as the Australian Research Council, the Integrated Marine Observing System, and the Marine National Facility. Processes and systems need to be developed which ensure that investment in Antarctic and Southern Ocean science is coordinated; that there is efficient use of resources; that resources such as ships and moorings are used to best advantage; and that limited resources are focussed in priority areas.

Other Australian agencies have an ongoing and important presence in Antarctica, including the Bureau of Meteorology, Geosciences Australia, the Australian Radiation Protection and Nuclear Safety Authority, and CSIRO. Some of the work of these agencies relates to Australia's international obligations such as the Comprehensive Nuclear Test Ban Treaty, or, as in the case of the Bureau of Meteorology, the provision of weather services in Antarctica and the collection of observations for weather forecasting for all of Australia. The Australian Hydrographic Service of the Department of Defence conducts bathymetric mapping surveys in Antarctica.

These agencies all provide essential services for the conduct of Australia's Antarctic Program, and carry out activities important to Australia's Antarctic or other national interests. Support from the Australian Antarctic Division of the Department of the Environment is central to these organisations' ability to meet their obligations in the Antarctic.

Australia's hybrid system of delivering priority Antarctic science

The 'hybrid' system of delivery of science in Australia's Antarctic Program allows for the effective delivery of priority science to government while also providing a competitive environment for innovative research.

The 'hybrid system'* of science is both effective and efficient in delivering Antarctic science against Government priorities and in providing high quality science outputs. A purely 'bottom up' competitive funding environment would not provide effective input for priority research required by Government to support its Antarctic interests. But the combination of Government sponsored research and competitive research grants delivered against the research priorities in an Australian Antarctic science plan provides a robust research framework which produces high quality science in Australia's interests.

At present around two thirds of Australian science carried out in Antarctica and the Southern Ocean is undertaken by non-government scientists.

* The 'hybrid system' refers to the delivery of science in the Australian Antarctic Program through a combination of science directly supported by government agencies (for example the Australian Antarctic Division, CSIRO) and research competitive grants such as the Australian Antarctic Science Grants, the Australian Research Council, the Cooperative Research Centres Program, the Marine National Facility, and the Integrated Marine Observing System or through Universities and other research bodies.

In 1998 the Australian Government endorsed the delivery of Antarctic science through the 'hybrid system', "...while recognising that this is dependent on universities continuing to give support to such research". (Our Antarctic Future: Australia's Antarctic Program Beyond 2000. The Howard Government Response to Australia's Antarctic Program Beyond 2000: A Framework for the Future (A report to the Federal Government by the Antarctic Science Advisory Committee) May 1998).

Recommendation 14 - The Australian Antarctic Division Chief Scientist should meet annually with the Heads of the Integrated Marine Observing System; the Marine National Facility Steering Committee; and the Australian Research Council, and others as required, to ensure coordination of research effort in Antarctica and the Southern Ocean.

Recommendation 15 - Australia should retain the 'hybrid' system of supporting Antarctic science, with the Australian Antarctic Division of the Department of the Environment providing the core of researchers focussed on delivering priority scientific advice to government, and national and international research institutions and universities providing competitive-based research against Australia's Antarctic Science Strategic Plan.

Recommendation 16 - Funding for Australian Antarctic Science grants should be increased substantially to:

- Facilitate national and international collaboration in priority science in the Antarctic and Southern Ocean;
- Facilitate the planning and conduct of logistically complex priority research programs that may extend over a number of years;
- Encourage greater collaboration among nations in East Antarctica; and
- Demonstrate Australian leadership in Antarctic science.

Funding for collaborative research should not be allocated at the expense of other core functions of the Australian Antarctic Program.

Recommendation 17 - In conjunction with an increase in Australian Antarctic Science grants, the Australian Antarctic Division of the Department of the Environment should budget sufficient appropriation to support the planning and conduct of major campaigns, particularly those that rely on complex logistics and which may extend over a number of years.

Recommendation 18 - Australia should continue to engage in, promote and facilitate international collaboration in Antarctic science and governance.

Recommendation 19 - Australia should prioritise large field-based research campaigns in areas of high priority scientific research, and promote, encourage and facilitate international collaborations in these campaigns.

Recommendation 20 - Australia should engage with other Antarctic nations in their research programs to provide assistance and research collaborations consistent with the Australian Antarctic Science Strategic Plan.

Recommendation 21 - The Australian Antarctic Science Strategic Plan should be renamed the 'Australian Antarctic Science Plan' and should be reviewed regularly (every 5 years).

The process for reviewing the Australian Antarctic Science Plan should be led by the Australian Antarctic Division of the Department of the Environment and include:

- External, independent review
- Broad consultation with the Australian science community and professional bodies
- Broad consultation across Government.

Antarctic and Southern Ocean Research Capability in Tasmania

Hobart is one of the world's leading centres for Antarctic and Southern Ocean science and research. The presence of the Australian Antarctic Division, the CSIRO Wealth from Oceans flagship, and the University of Tasmania⁵, as well as the presence of the Secretariats for the Commission for the Conservation of Antarctic Marine Living Resources and the Agreement on the Conservation of Albatrosses and Petrels, makes Hobart unique: nowhere else in the world has this combination of world-class researchers, policy makers, logisticians, and Antarctic service providers in one place.

Hobart is an attractive place for international researchers and Australia has developed an admirable reputation for facilitating international collaboration through Hobart-based organisations.

In the 2014-15 Budget the Australian Government confirmed commitments to fund the Antarctic Climate and Ecosystems Cooperative Research Centre from July 2014 to June 2019, and apply \$24 million of funds from the Australian Research Council program for the "Antarctic Gateway Partnership" between the Australian Antarctic Division, CSIRO, and the University of Tasmania.

The Antarctic Climate and Ecosystems Cooperative Research Centre is a collaboration between key Australian and international Antarctic research organisations: the Australian Antarctic Division, CSIRO, the Department of the Environment, the Bureau of Meteorology, the University of Tasmania, the Institute for Water and Atmospheric Research (New Zealand), and the Alfred Wegener Institute (Germany) as well as 17 other national or international bodies. The Antarctic Climate and Ecosystems Cooperative Research Centre has been funded (in various forms) since 1991 through the Australian Government's Cooperative Research Centres Program.

The Antarctic Climate and Ecosystems Cooperative Research Centre is the mechanism through which Australia achieves one of its key goals for the Australian Antarctic Program: "Understanding the role of Antarctica in the global climate system".⁶ The Antarctic Climate and Ecosystems Cooperative Research Centre has a high national and international profile and is a key organisation for facilitating international collaboration in research in the Southern Ocean and Antarctica (see Section 12 - Case Studies – Sea Ice Physics and Ecosystem Experiment (SIPEX) I and II).

After almost a quarter of a century of funding it is now appropriate to consider whether the Antarctic Climate and Ecosystems Cooperative Research Centre should be established as an ongoing (reviewable) partnership in its own right, as a component of Australia's strategic involvement in Antarctic science.

The Antarctic Gateway Partnership has been established to support increased collaboration in Antarctic science. At the time of writing this report the guidelines on the use of these funds are not available. As the Gateway Partnership funds are only available for three years (to June 2017), it is important to consider now the future of this initiative.

⁵ The University of Tasmania includes its Hobart-based Institute for Marine and Antarctic Studies and its Launceston-based Australian Maritime College.

⁶ 'Our Antarctic Future – Australia's Antarctic Program Beyond 2000. The Howard Government response to Australia's Antarctic Program Beyond 2000 (A report to the Federal Government by the Antarctic Science Advisory Committee). May 1998.

It will be critical for Australia's ability to promote and facilitate long term international and national collaboration in Antarctic and Southern Ocean science, that future funding for science is rationalised and coordinated. This requires ensuring now that planning for the cessation of the Antarctic Gateway Partnership in 2017 and the current funding period for the Antarctic Climate and Ecosystems Cooperative Research Centre in 2019 are adequately planned on a whole-of-Government basis.

These considerations are imperative in order to maximise the opportunities provided to Australia by the replacement of *Aurora Australis*, and to maintain Australia's strategic position as a leader in science, especially in East Antarctica.

Recommendation 22 - A whole-of-Government position should be reached on ongoing funding for national and international collaborations in Antarctic science to cover the cessation of the Antarctic Gateway Partnership funding in 2017 and the Antarctic Climate and Ecosystem Cooperative research Centre funding in 2019.

6 - Economic Benefits for Tasmania as an Antarctic Gateway

According to the Tasmanian Department of Economic Development, Tourism and the Arts, in 2011/12 the Antarctic and Southern Ocean sector:

- Directly employed 1185 Tasmanians and indirectly another 1606
- Directly contributed \$187.4 million (or 0.8%) to Tasmanian Gross State Product and indirectly another \$256.9 million;
- Including flow-on effects, generated 4663 jobs and contributed \$687.4 million to Australian Gross Domestic Product.
- Every dollar invested in the sector generates multipliers to extend the total economic benefit to Tasmania.
- Hobart port visits by Antarctic vessels are on average estimated to average yield between \$1 million and 1.5 million per visit.

The Antarctic and Southern Ocean sector in Tasmania is made up of 17 state-based, public good and private institutions including government agencies (Australian Antarctic Division, CSIRO), the University of Tasmania (including the Institute for Marine and Antarctic Studies, and the Australian Maritime College), and the Commonwealth funded Antarctic Climate and Ecosystem Cooperative Research Centre. Hobart hosts the international Secretariats of the Commission for the Conservation of Antarctic Marine Living Resources and the Agreement for the Conservation of Albatrosses and Petrels. There are also approximately 50 businesses (many which are classified as ‘small-to-medium enterprises’) directly associated with the sector.

The Antarctic and Southern Ocean sector’s direct, indirect and induced contribution to the Tasmanian Gross State Product in 2011/12, as reported by the Tasmanian Government (the then Department of Economic Development, Tourism and the Arts) was \$444 million with nearly \$45 million of this a direct contribution to the Tasmanian Gross State Product by locally based businesses.



Aurora Australis passing beneath the Tasman Bridge, Hobart
Photo © Hannah Taylor/Australian Antarctic Division

The Antarctic and Southern Ocean sector is an important economic contributor to southern Tasmania with opportunity for further growth. Hobart is one of five internationally recognised Antarctic gateway ports that have both maritime and air transport facilities⁷. It has locally available expertise in Antarctic, sub Antarctic and marine research, Antarctic administration and environmental protection, logistics facilities and know-how, support services, and educational and research institutions. Tasmania also has an active private sector interest in Antarctic business with established commercial operators with expertise in design, manufacture, supply and maintenance of a range of Antarctic-related equipment and services.

The importance of this sector to economic development in Tasmania was recognised in the Tasmanian Government's 2011 *Tasmanian Economic Development Plan* through the development of the Antarctic and Southern Ocean Sector Strategy. The development of this sector is also consistent with the objectives of the *Joint Commonwealth and Tasmanian Economic Council* that was established by the Abbott government to drive competitive reforms in Tasmania to achieve long-term economic growth.

However, the ability to sustain this sector and capitalise on opportunities for growth (particularly by attracting other national Antarctic programs to access this sector in Hobart) depends on reliable and sustainable investment in infrastructure; in developing effective and productive business partnerships; and in aligning State and Commonwealth priorities and funding commitments.

Logistics infrastructure in Hobart is of critical importance to Tasmania in this regard. The effective modernisation of Australia's Antarctic program and Tasmania's ability to attract new Antarctic business is contingent upon the development and maintenance of efficient, adaptable aviation and shipping facilities. The existing port facilities in Hobart require maintenance, upgrading and extension in order to adequately service the existing and potentially expanding market in Antarctic shipping. Fuel delivery and storage capabilities require enhancement. At present there is a sole operator in Hobart for regular marine fuel handling resulting in limited supply and facilities for refuelling. This significantly affects both the efficiency and attractiveness of Hobart for bunkering.

The Australian Government's announcement of the extension of the Hobart Airport runway opens up new possibilities to enhance Australia's inter-continental air transport system. It will also make the prospect of Hobart as an air transport hub a more attractive proposition to other national Antarctic programs operating aircraft that, at present, are unable to access the Hobart Airport (for example, direct flights from Asia). It is likely that new interest in the Hobart Airport runway will bring with it flow-on business to other parts of the Tasmanian Antarctic and Southern Ocean sector including shipping.

The 2013 *Memorandum of Understanding on Antarctic Gateway Cooperation between the Government of Tasmania and the State Oceanic Administration of China* offers an example of a gateway cooperative agreement developed collaboratively between the Australian Antarctic Division of the Department of the Environment and Antarctic Tasmania and Science Research Development (Tasmanian government) to foster future cooperation between Tasmania and other Antarctic nations. However the capacity to develop and to deliver on such agreements is contingent on the availability of reliable and cost effective goods and services that can only be achieved with dedicated sector planning and development.

⁷ Other gateway ports include: Christchurch, Cape Town, Ushuaia and Punta Arenas

Tasmania already has well developed academic, research and industry links that support innovation and investment. However, the potential of expanding this sector through international engagement is substantial. The emergence of other countries in the Antarctic sector, particularly in East Antarctica, brings opportunities to offer education and high level training to international students and Antarctic operators across a broad range of subjects and specialities. These could include: Antarctic and Southern Ocean operations and logistics; meteorology; Antarctic law, policy and governance; maritime education, research and training (for example, through the Australian Maritime College); marine and terrestrial science (including post doctoral opportunities); field training; and Antarctic-related trades training.

Tasmania has the capacity to become a market leader in Antarctic support and logistics services, and the market leader in this sector in East Antarctica. Promotion of Tasmanian services and suppliers will bring direct benefits to the Tasmanian economy but will also inextricably link Australian supplied products and services to the operations of other national programs across East Antarctica. This will also invite opportunities for collaboration and knowledge sharing on product innovation and development.

The capacity to expand this sector without investment in critical infrastructure is extremely limited. The growth of some national programs in East Antarctica suggests that if Tasmania is unprepared to deliver goods and services to these large-scale and well financed programs, this potential will be lost to other gateway cities.

The main impediments to growth in marine research and logistics in Tasmania are centred on the Port of Hobart. The key potential constraints are available 'quay line' (i.e. the space available for ships to dock and resupply); fuel availability, access, and security; and adjacent and/or competing land use affecting the Port of Hobart.

Decisions on land use adjacent to the Port of Hobart have the potential to impact the Antarctic and Southern Ocean shipping sector. The Port of Hobart is a 'working port'. In order to be able to service expanded shipping activity, access to, and industrial activity in, the Port is required for 24 hours a day. The Port will also require the possibility of refuelling facilities alongside the Port rather than at Selfs Point (see section "Fuel Availability").



Figure 6 - Macquarie Point with boundary of working Port as indicated

The single biggest change in land use in the Port district will be the development of Macquarie Point, which is directly adjacent to the Port. It is imperative that, if the Port of Hobart is to expand its Antarctic (and other) shipping activities, decisions made in relation to Macquarie Point do not impinge on the future of the Port of Hobart as a working port.

Therefore decisions regarding land use; access to Macquarie Point; access to the Port; remediation; existing infrastructure; future development; potential “land swaps”; and public facilities and access, all need to be coordinated between the Port and Macquarie Point authorities.

“Since 2007, the port of Hobart has received 170 visits from Antarctic vessels of which 128 were related to research operations and 42 visits relating to tourism. The sector is truly international with vessels sourced from China, Russia, France, Italy, the USA, the Netherlands, Japan and Korea” – TasPorts

In this regard, the soon to be released 30 year Port Plan for the Port of Hobart (TasPorts) and the Macquarie Point Shared Vision produced by the Macquarie Point Development Corporation should be compatible and based on keeping the Port of Hobart operating as a working port, in order to ensure that Tasmania is able to capitalise on its potential as an Antarctic gateway.

In recent years TasPorts has invested in the development of the Macquarie Wharf 2 facility for the Antarctic and cruise industry sectors, and the rehabilitation of wharf infrastructure. Continued improvement of Port facilities to accommodate both Antarctic shipping and the cruise industry requires a coordinated approach to development in and around the Port of Hobart.

Fuel Availability

The availability in Hobart of appropriate shipping, aircraft and Antarctic fuel is central to Tasmania’s aspirations as a leading gateway to East Antarctica. Two companies currently have fuel facilities at Selfs Point - approximately five kilometres upstream on the Derwent River from the Hobart Port facilities at Macquarie Point (on the upstream of the Tasman Bridge).

Currently ships which require bulk fuel, either for their own use or for transport to other facilities (such as Antarctic stations) are required to travel to Selfs Point for bunkering. Transit under the Tasman Bridge requires a qualified pilot and the use of tugs. Because bunkering facilities are not available in the Port of Hobart, transit to and from Selfs Point incurs additional costs as well as the opportunity cost of the vessel being unavailable for portside activities.

If Tasmania is to grow the Antarctic shipping sector, now is the appropriate time to consider future options for fuel availability and supply. Consideration of future fuel facilities will be central to decision-making for both Macquarie Point and the Port of Hobart.



Figure 7 - Aerial image of the Derwent River, Hobart, showing proximity of Selfs Point to the Port of Hobart

Various options for future ship refuelling facilities have been suggested in consultations on the 20 Year Australian Antarctic Strategic Plan. These include a pipeline from Selfs Point to the Port of Hobart, either along the existing (now unused) rail corridor, or on the river floor (thereby allowing fuel to be pumped both to and from Selfs Point); or the transfer of fuel from Selfs Point to the Port by barge. It is beyond the scope of this report to advise on the practical and economic aspects of these (or other) options. But it is important that the future availability of fuelling services are considered now so that long term investments can be planned, and competing and incompatible land use decisions avoided. The current bunkering arrangements incur additional costs to Antarctic operators that are not present in other ports such as Christchurch or Fremantle (in terms of real costs associated with tugs and pilotage fees as well as additional time and administrative requirements to navigate the Port for ship movement and refuelling).

Another obstacle to the development of Hobart as an Antarctic Gateway is the absence of a suitable waste management facility in Tasmania. Remediation of Macquarie Point and the return to Australia (through the Port of Hobart) of Antarctic legacy waste requires a facility that can accommodate waste material to a high standard. At present certain categories of waste cannot be treated in Tasmania and require transport by sea or road elsewhere in Australia for treatment. This state of affairs is a major impediment to Australia meeting its international obligations to clean up past sites in Antarctica, as well as being an impediment to the future development of Macquarie Point.

There are opportunities for business and governments to better work together in delivering Australia's Antarctic program. Changes to Commonwealth procurement procedures should allow for more pragmatic approaches to contracting and the delivery of goods and services. In consultations for this report, some Tasmanian business said that they found Australian government tendering procedures cumbersome and, in some cases, prohibitively costly. Some companies supplying goods and services to other national Antarctic programs reported that they found dealing with them much easier than dealing with the Australian government on procurement matters.

While it is imperative that the Commonwealth's interests are protected in purchasing decisions, and that the Commonwealth gets "value for money", some work should be undertaken to provide easier access to Commonwealth and State procurement to help grow the Antarctic sector in the Tasmanian economy.

The Australian Antarctic Division of the Department of the Environment should regularly review its service provision and actively seek out opportunities to involve the private sector in the provision of goods and services where there is an existing, cost-effective market, and where there is no risk to Australia's Antarctic program.

The Tasmanian Antarctic and Southern Ocean research community is involved in the development of specialised equipment and instrumentation custom-built for Antarctic and Southern Ocean conditions. Opportunities should be sought to facilitate collaboration in these specialist fields among existing bodies (for example the Australian Antarctic Division of the Department of the Environment, CSIRO and the University of Tasmania) and with private industry.

The Australian Antarctic Division is currently exploring opportunities to build on the specialised knowledge that its Polar Medicine Unit has in extreme and remote medicine. One initiative, in conjunction with the Tasmanian Government and the University of Tasmania, is to establish a not-for-profit body, the Centre for Antarctic, Rural, Remote, and Maritime Medicine to provide

professional training for health practitioners and specialist health services. Such an initiative will provide enhanced services not only in the Antarctic sector, but also to the Tasmanian community by providing training to medical practitioners, and services to Tasmanian regional and remote communities.

Recommendation 23 - The Australian and Tasmanian Governments should work together to build Tasmania's capacity to be a leading global gateway to East Antarctica.

Recommendation 24 - A joint Tasmanian-Commonwealth Government agreement should prioritise infrastructure investment decisions to support the East Antarctic gateway, including:

- Investment in Hobart's rundown port facilities to ensure they are able to capitalise on growing marine research and resupply shipping in East Antarctica;
- Ensuring that Hobart has the ability to hold, and efficiently supply, ship and aircraft fuel; and
- Ensuring that efficient port access, quarantine, storage and resupply facilities are in place in order to service the potential growth in East Antarctic sea and air traffic.

Recommendation 25 - The Australian and Tasmanian Governments should jointly commission a report on the future shipping fuel facility requirements for the Port of Hobart, including:

- Options for delivery of fuel to vessels in the Port;
- Options for the supply of fuel to and from Selfs Point;
- The cost and opportunity cost of ship transit to and from the Port to Selfs Point; and
- The risks associated with the current ship refuelling arrangements compared with viable alternatives.

Recommendation 26 - The Commonwealth should actively engage with the Tasmanian business community to facilitate opportunities for businesses to participate in the Antarctic sector.

The Commonwealth should explore ways to engage business early in procurement processes in order to foster innovation, efficiency and provide better value for money.

Recommendation 27 - The Australian Antarctic Division of the Department of the Environment, in consultation with other agencies, should explore opportunities to establish partnerships with the State, other organisations, and industry in Antarctic related activities, including:

- The provision of training and services in medical and allied health services;
- Maritime skills training (including operations in sea-ice);
- Antarctic meteorological services, weather forecasting, and provision of sea-ice assessments for shipping;
- Scientific instrument and technology development;
- Antarctic field training and support;
- Training in Antarctic-related trades;
- The provision of goods and services; and
- Polar infrastructure research and development.

7 - Direct Support for Australia's Antarctic Program

The Australian Antarctic Division of the Department of the Environment is the agency, which has responsibility for the Australian Antarctic Program. In 1998 the Australian Government agreed that the goals of the Australian Antarctic Program should be:

- **To maintain the Antarctic Treaty System and enhance Australia's influence within it**
- **Protect the Antarctic environment**
- **Understand the role of Antarctica in the global climate system, and**
- **Undertake work of practical, economic, and national significance.**

These goals for the Antarctic program reflect Australia's Antarctic interests (see Section 2 – Australia's Antarctic Interests). **This report does not recommend changing the goals of the Australian Antarctic Program.**

Core funding for the Australian Antarctic Program is appropriated to Outcome 3 of the Department of the Environment, "Antarctica: Science, Policy and Presence".

In its submission to the 20 Year Australian Antarctic Strategic Plan, the Department of the Environment pointed to the "ageing of key Australian operational assets and competing demands for funding [which has led to] a gradual decline in the efficacy of our Antarctic logistics and operations with consequent impact on our scientific and strategic interests".

The recent decision of the Australian Government to fund the replacement of Australia's icebreaker *Aurora Australis* is an important step in rectifying historic deficiencies in Australia's Antarctic infrastructure.

But, there are also other strategically important assets and activities in Australia's Antarctic program that are under pressure from a combination of historical underinvestment, rising costs, and structural imbalances in the budget provisions for the Australian Antarctic Division of the Department of the Environment. The most significant impact of these factors on Australia's strategic Antarctic interests is diminishing capability in logistics and priority science.

The proportion of the Australian Antarctic Division's budget, which is constrained by fixed costs, is at least 70 per cent of the total appropriation (excluding capital) in 2013-14 (see Appendix 1 – Budget Figures).

As outlined previously (Section 5 - Antarctic Science) the current budget position is having an immediate effect on Australia's ability to undertake priority and strategic science projects in Antarctica. A continuing adverse budget position will also severely limit Australia's ability to engage with emerging Antarctic Treaty Parties in the Australian Antarctic Territory.

The Department of the Environment's submission points to the high proportion of fixed costs "necessary to sustain our operations in Antarctica", rising prices, the long term impact of efficiency dividends and the costs associated with the Australian Antarctic Division's substantial asset base, as all contributing to the very constrained financial position for Australia's Antarctic program. In 2001 the Australian Antarctic Division undertook, in collaboration with the Department of Finance, an 'Output Pricing Review'. The outcome of the Output Pricing Review was "The primary conclusion of the review is that the price of output for the Antarctic outcome was reasonable."⁸ Since that time,

⁸ Antarctica: Australia's Pristine Frontier. Report on the adequacy of funding for Australia's Antarctic Program. Joint Standing Committee on the National Capital and External Territories. June 2005. Page 17

rising costs, eroding budgets, and increased compliance costs have weakened the ability of the Australian Antarctic Division to deliver the Australian Antarctic Program.

The Department of the Environment's submission suggests "earmarking a dedicated budget for the delivery of the Australian Antarctic program" and seeks exemption "...from future efficiency dividends, as is the case with Defence and other strategic operations". The Department's submission also points to the significant asset base required for the Australian Antarctic Program and suggest that these "...could be regarded as strategic assets and capital and maintenance funding for them could be part of a national strategic capital management plan".

The Department of the Environment also raised in its submission the potential to "broaden and diversify the funding base of Australia's Antarctic activities beyond on-budget funding to own sources of revenue such as research, commercial, philanthropic and crowd-sourced funding" noting also that "official funding remains essential for the program...". The Australian Antarctic Division of the Department of the Environment should explore these options.

This report acknowledges the impact that the current budget position of the Australian Antarctic Division is having on Australia's Antarctic program and the significant impact that continuation of this position will have on Australia's strategic Antarctic interests.

Recommendation 28 - The Department of the Environment and the Department of Finance, in consultation with other relevant Departments and agencies, should jointly undertake a review of the budget of the Australian Antarctic Division (Department of the Environment, Outcome 3).

This review should include:

- The fixed costs of running the Australian Antarctic Program, including:
 - The operation of Australia's Antarctic stations;
 - The operation of logistics to support Australia's sovereign and strategic interests in Antarctica and the Southern Ocean; and
 - The operation of the Australian Antarctic Division's station on Macquarie Island.
- The core functions undertaken by the Australian Antarctic Division of the Department of the Environment in operational support, science, policy, and the administration of the Australian Antarctic Territory and the Territory of Heard Island and McDonald Islands;
- The funding required to meet Australia's obligations in the Antarctic Treaty System including environmental management; sustainable management of marine living resources and conservation in the Antarctic, Southern Ocean and the Territory of Heard Island and McDonald Islands; and scientific, practical and diplomatic engagement;
- The funding required to advance Australia's Antarctic strategic interests through the initiation, conduct and support of priority science in Antarctica and the Southern Ocean;
- The provisions required to meet Australia's obligation to remediate environmental damage and abandoned sites in Antarctica;
- The future requirements for capital investment and/or renewal in logistics and infrastructure;
- Opportunities to diversify the funding base to support some Antarctic activities including from business and philanthropic sources; and
- The future operational support required to sustain a credible Antarctic program that matches Australia's national interests in the Antarctic.

The review should call on the expertise of external experts in polar operations and science.

8 - The Protocol on Environmental Protection to the Antarctic Treaty

Successive Australian governments have supported the ban on Antarctic mining contained in the 1991 Protocol on Environmental Protection to the Antarctic Treaty (Madrid Protocol). Indeed, during deliberations over ratification of the Convention on the Regulation of Antarctic Mineral Resource Activities, the then leader of the opposition, John Howard MP, spoke in Parliament against the signing of the minerals convention. Even though negotiators had agreed the text of the minerals convention a year earlier in 1989, the Australian Government decided that it would not sign the convention and instead it would support the negotiation of a comprehensive environmental regime which would prohibit mining in the Antarctic – thus ensuring (along with France) that the minerals convention would never enter into force.

Subsequently Australia and France spearheaded negotiations for an Antarctic environmental regime, which culminated in the 1991 Madrid Protocol.

The Myth of the Expiration of the Ban on Antarctic Mining

It is a commonly held belief that the ban on mining contained in the Madrid Protocol expires in 2048⁹. This is not the case. Article 7 of the Madrid Protocol simply states that:

“Any activity relating to mineral resources, other than scientific research, shall be prohibited”.

Thus, the prohibition on mineral resource activities (other than scientific research) is indefinite. The confusion regarding it arises from Article 25 of the Madrid Protocol.

Article 25 (“Modification or Amendment”) gives the provisions for amending the Madrid Protocol, including:

- How a Party can call for a conference to review the operation of the Protocol after 50 years from its entry into force (i.e. 2048) (Article 25 (2)),
- The formula to be used to modify or amend the Protocol (Article 25 (3),(4)); and, with respect to the prohibition on Antarctic Mineral Resource activities,
- The provisions for the continuation of the prohibition in the absence of a binding legal regime on mineral activities (Article 25, 5 (a)).

⁹ Alternatively, that the Antarctic Treaty is ‘up for negotiation’ in 2048.

PROTOCOL ON ENVIRONMENTAL PROTECTION TO THE ANTARCTIC TREATY • ARTICLE 25 • MODIFICATION OR AMENDMENT

1. Without prejudice to the provisions of Article 9, this Protocol may be modified or amended at any time in accordance with the procedures set forth in Article XII (1) (a) and (b) of the Antarctic Treaty*.

2. If, after the expiration of 50 years from the date of entry into force of this Protocol, any of the Antarctic Treaty Consultative Parties so requests by a communication addressed to the Depository, a conference shall be held as soon as practicable to review the operation of this Protocol.

3. A modification or amendment proposed at any Review Conference called pursuant to paragraph 2 above shall be adopted by a majority of the Parties, including ¾ of the States which are Antarctic Treaty Consultative Parties at the time of adoption of this Protocol.

4. A modification or amendment adopted pursuant to paragraph 3 above shall enter into force upon ratification, acceptance, approval or accession by ¾ of the Antarctic Treaty Consultative Parties, including ratification, acceptance, approval or accession by all States which are Antarctic Treaty Consultative Parties at the time of adoption of this Protocol.

5. (a) With respect to Article 7, the prohibition on Antarctic mineral resource activities contained therein shall continue unless there is in force a binding legal regime on Antarctic mineral resource activities that includes an agreed means for determining whether, and, if so, under which conditions, any such activities would be acceptable. This regime shall fully safeguard the interests of all States referred to in Article IV of the Antarctic Treaty and apply the principles thereof. Therefore, if a modification or amendment to Article 7 is proposed at a Review Conference referred to in paragraph 2 above, it shall include such a binding legal regime.

(b) If any such modification or amendment has not entered into force within 3 years of the date of its adoption, any Party may at any time thereafter notify to the Depository of its withdrawal from this Protocol, and such withdrawal shall take effect 2 years after receipt of the notification by the Depository.

* Article XII (1) (a) and (b) of the Antarctic Treaty:

1. (a) The present Treaty may be modified or amended at any time by unanimous agreement of the Contracting Parties whose representatives are entitled to participate in the meetings provided for under Article IX. Any such modification or amendment shall enter into force when the depository Government has received notice from all such Contracting Parties that they have ratified it.

(b) Such modification or amendment shall thereafter enter into force as to any other Contracting Party when notice of ratification by it has been received by the depository Government. Any such Contracting Party from which not notice of ratification is received within a period of two years from the date of entry into force of the modification or amendment in accordance with the provisions of subparagraph 1(a) of this article shall be deemed to have withdrawn from the present Treaty on the date of the expiration of such period.

In practical terms, it is difficult to envisage the ban on mining in the Antarctic being lifted in, or after, 2048 in the absence of a significant change of policy or perspective from key Antarctic Treaty Parties. The numbers required to overturn the prohibition on mineral resource activities rule against an individual Party, or small group of Parties, calling for a conference under Article 25 (2) and having the prohibition overturned (see box).

There are currently 29 Antarctic Treaty Consultative Parties (see Attachment D).

Article 25 (1) - Under Article XII of the Antarctic Treaty, the Treaty (or in this case the Madrid Protocol) can be amended by the unanimous agreement of all 29 Parties, and enter into force when all 29 Parties have ratified the amended Protocol.

Article 25 (2) - In or after 2048 any Antarctic Treaty Consultative Party can call a conference to review the operation of the Protocol.

Article 25 (3) - Proposals to modify or amend the Madrid Protocol at a review conference require a majority (i.e. 15 out of 29) of the Antarctic Treaty Consultative Parties, which must include three quarters of the Parties which were Antarctic Treaty Parties at the time of the adoption of the Madrid Protocol (i.e. 20 out of the 26 Parties so indicated in Attachment D).

Article 25 (4) - The proposed modification or amendment will not enter into force until ratified (or equivalent) by three quarters of the Antarctic Treaty Consultative Parties (i.e. 22 of the current 29 Parties) including by all of the Antarctic Treaty Parties at the time of the adoption of the Madrid Protocol (all 26 Parties as shown in Attachment D).

Article 25, 5 (a) of the Madrid Protocol provides that the prohibition on mineral activities continues unless a legally binding regime for mineral resource activities is in force. The Madrid Protocol states specifically that such a regime “shall fully safeguard the interests of all States referred to in Article IV of the Antarctic Treaty...”.

The practical effect of Article 25 is that, even in the unlikely event of a modification or amendment to lift the prohibition on mineral resource activity being agreed by three quarters of those Parties at the time of Protocol adoption, agreement to such a regime would also be subject to the aforementioned Articles and the decision rules they establish. One or more of the Antarctic Treaty Consultative Parties that were Consultative Parties at the time of the adoption of Madrid Protocol, could effectively prevent the entry into force of such an amendment or modification.

Such a step should not be taken lightly, although, as Article 25 (5) (b) provides the mechanism for a Party to withdraw from the Protocol should a proposed amendment not enter into force.

It is in Australia’s national interest to ensure that all Parties (and prospective Parties) to the Antarctic Treaty understand the nature and significance of the prohibition on mineral resource activities contained in the Madrid Protocol and the fact that the prohibition does not automatically expire in 2048. This is especially important as new Parties join the Antarctic Treaty System and new groupings form within it.

There is speculation that some Parties may be interested in their relative standing in the Antarctic Treaty System as 2048 approaches; and that others may have more than an academic eye on scientific knowledge regarding Antarctic minerals and resources.

Recommendation 29 - Australia should undertake diplomatic and practical activities to support the provisions of the Madrid Protocol, including the prohibition on Antarctic mineral activities. These activities should include capacity building efforts and education on Parties’ obligations under the Madrid Protocol and its provisions with respect to mining.

Remediation of Abandoned Sites in Antarctica

Australia has obligations under the Protocol on Environmental Protection to the Antarctic Treaty (Madrid Protocol) to clean-up “past and present waste disposal sites...and abandoned work sites” except where “...the removal by any practical option would result in greater adverse environmental impact than leaving the structure or waste material in its existing location”.*

Australia has demonstrated leadership in Antarctic waste site clean up, and in the science and technology of cold climate remediation. Australia has been at the forefront of providing advice and guidance to other Antarctic Treaty Parties in remediating their legacy sites.

Australia has an unfunded liability of at least \$136 million** for the remediation of its abandoned Antarctic sites. Some of this unfunded liability may be jointly held with others (for example Wilkes Station which the United States allowed Australia to occupy in 1959).

Significant resources would be required, over and above existing resources, to begin to remediate those sites.

There may be opportunities for Australia to work with other nations in East Antarctica to remediate abandoned sites.

*Annex II of the Protocol on Environmental Protection to the Antarctic Treaty

** Base Restitution Liability – Antarctic Solid Waste Clean Up. Report by Range Consulting Engineers

9 - Antarctica and World Heritage Listing

From time to time the issue of whether Antarctica should be ‘put on the World Heritage List’ arises in public discussion. This section looks at the legal, practical and diplomatic aspects of Antarctica and the World Heritage List.

Successive Australian Governments have elected to not pursue the listing of Antarctica or the Australian Antarctic Territory on the UNESCO World Heritage List. This position has been based on careful analysis of the political, diplomatic, legal, and environmental protection issues associated with either initiating or participating in an application for World Heritage listing of Antarctica as a whole or in part. Reconsideration of these issues reveals no compelling argument to revisit this policy position.

Background

The Antarctic Treaty covers all that region of the globe below 60° South, including all of the continent of Antarctica. The Antarctica Treaty and its associated agreements and instruments are known collectively as the Antarctic Treaty System¹⁰. The Protocol on Environmental Protection to the Antarctic Treaty (Madrid Protocol) sets Antarctica aside as a “natural reserve devoted to peace and science”.

The Antarctic Treaty System is not part of the United Nations system, although the Antarctic Treaty and its associated instruments are open to accession by all members of the United Nations.

The World Heritage Convention is a United Nations instrument. Its purpose is to identify, protect and preserve areas of “...cultural and natural heritage around the world considered to be of outstanding value to humanity”¹¹. A Party to the World Heritage Convention is able nominate a property “...situated in its territory” for entry on the World Heritage List¹². Such a nomination is then considered by the Convention’s World Heritage Committee.

The aspiration to provide World Heritage status to Antarctica is, in some ways, understandable but the legal, practical and diplomatic impediments of doing so are great – and most likely insurmountable. There appears little to no additional practical benefit of doing so given the protections already provided by the Antarctic Treaty System and its Madrid Protocol. There is also the real possibility that a nomination of Antarctica for World Heritage listing would challenge or even undermine the existing effective governance of Antarctica.

Application of the World Heritage Convention

The World Heritage Convention describes candidate “natural heritage” areas for inclusion on the World Heritage List as those with “Outstanding Universal Value”¹³. Undoubtedly the natural, scientific and cultural significance of Antarctica would constitute outstanding universal value. The question of including Antarctica on UNESCO’s World Heritage list is not, therefore, whether the Antarctic environment is one worthy of protection, but rather a question of whether such an action would deliver enhanced environmental protection outcomes for the Antarctic.

¹⁰ In this case, the Antarctic Treaty, the Protocol on Environmental Protection to the Antarctic Treaty, and the Convention on the Conservation of Antarctic Marine Living Resources

¹¹ <http://whc.unesco.org/en/about/>

¹² Article 11 of the Convention Concerning the protection of the world cultural and natural heritage

¹³ Outstanding Universal Value is defined as “cultural and/or natural significance, which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity. As such, the permanent protection of this heritage is of the highest importance to the international community as a whole” (Operational Guidelines for the Implementation of the World Heritage Convention, paragraph 49, 2013).

For Australia, this question extends to whether the status of World Heritage listing is of sufficient value and importance to risk the status quo in the Antarctic Treaty System that so effectively protects the Antarctic environment.

The arguments in favour of seeking World Heritage listing for Antarctica appear to rest on an assumption that such a listing would afford not only a 'higher level of environmental protection' but also a level of global commitment to protecting the Antarctic environment that is not obtainable in the Antarctic Treaty System. This is an unfounded assumption.

Parties to the Antarctic Treaty represent the majority of the world's population and all countries with an active interest in Antarctica and Antarctic affairs. To suggest that World Heritage listing would serve to engage disenfranchised nations in Antarctic affairs is misleading, as is the notion that having a greater number of nations without substantial Antarctic interests directly engaged in the future and management of the region will necessarily strengthen the protection and environmental management of Antarctica.

Any country with an interest in Antarctica, including those that are Parties to the World Heritage Convention, is free to join the Antarctic Treaty System. That the Antarctic Treaty System is not an exclusive regime is highlighted by the recent accessions to the Antarctic Treaty of Malaysia and Pakistan, both of whom were, in the latter decades of the 20th century, openly critical in the United Nations General Assembly of the Antarctic Treaty System on the grounds of its 'exclusivity'.

An Antarctic Environmental Protection Regime

The 1991 Madrid Protocol not only establishes Antarctica as 'a natural reserve, devoted to peace and science', it provides a comprehensive environmental protection regime that is binding on all Parties to the Protocol. The World Heritage Convention does not, in itself, contain any environmental protection measures, such as a ban on mining - as is the case in the Madrid Protocol. Instead it provides recognition of natural (and cultural) heritage values and relies on the nominating Party's domestic implementation of protection measures.

Despite the symbolic value that may be offered by World Heritage listing, any environmental benefits to Antarctica that could arise from World Heritage status have already been achieved, and arguably surpassed, by the instruments of the Antarctic Treaty System including the Antarctic Treaty, the Madrid Protocol and the Convention on the Conservation of Antarctic Marine Living Resources. The framework delivered by the World Heritage Convention therefore offers no real additional benefits for Antarctic protection. Undoubtedly the environmental protection measures provided for in the Madrid Protocol, purpose-built for the Antarctic region and cognisant of the principles of international collaboration and cooperation embedded in the Antarctic Treaty, and Antarctica's status as "a natural reserve, devoted to peace and science", provide a superior regime for environmental protection outcomes in Antarctica.

The practical, diplomatic and geo-political implications of attempting to place Antarctica on the World Heritage List

An application to list all or part of Antarctica would require substantial investment in international negotiations within the Antarctic Treaty System and among Parties to the World Heritage Convention. Any process to effectively place Antarctica on the World Heritage List would also most likely require amendment to the World Heritage Convention or at least significant political accommodation among the Convention Parties. Agreement from the Antarctic Treaty Parties to nominate Antarctica to the World Heritage List would also require mechanisms to allow a nomination to proceed, and then be put into effect. Parties to the Antarctic Treaty would likely see the negotiation of such mechanisms as effectively amending the Antarctic Treaty and/or the Madrid Protocol, or requiring amendment of either or both.

To go down the path of attempting to list any or all of Antarctica would be a protracted exercise likely to reignite debate on highly sensitive and politically charged issues such as sovereignty, governance, the exercise of jurisdiction and has the potential to significantly undermine the Antarctic governance framework.

Australia's strategic Antarctic interests are best served within the Antarctic Treaty System. Australia is an influential player in the Antarctic Treaty System and is highly regarded. Any action by Australia that substantially destabilises the Antarctic Treaty System will have consequential effects on Australia's standing and its capacity to protect and pursue its national interests.

Serious and overt pursuit of World Heritage listing will likely see Australia isolated internationally and our well regarded position on Antarctic affairs significantly diminished.

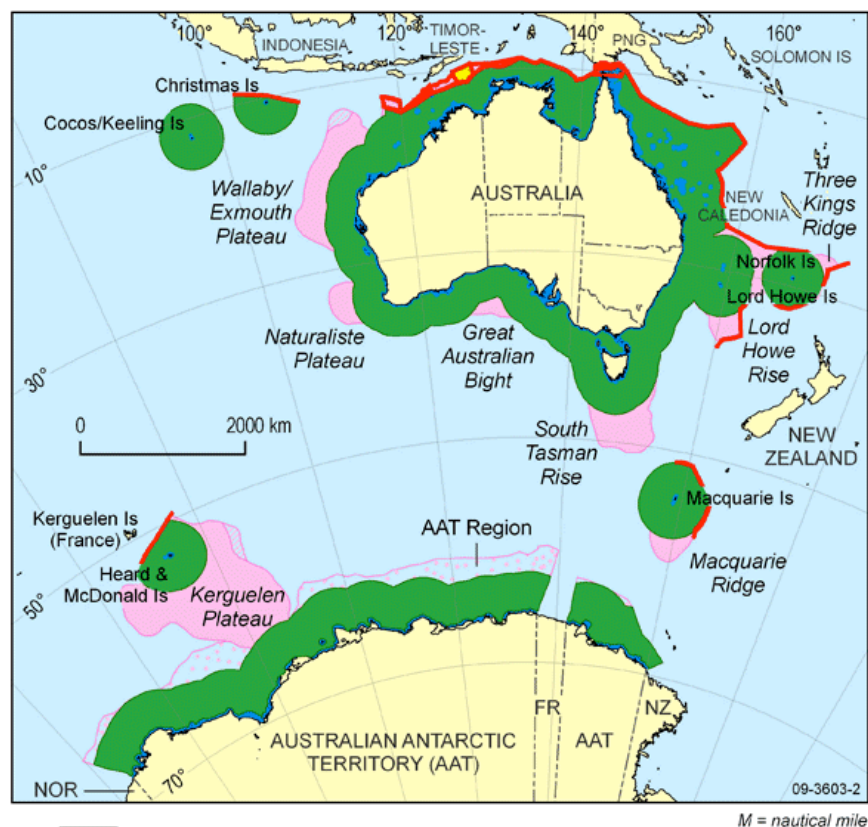
Recommendation 30 - Australia should approach with extreme caution calls to have Antarctica listed on the World Heritage List and should not pursue World Heritage nomination for the Australian Antarctic Territory or Antarctica as a whole.

Recommendation 31 - Australia should consider any assessment of proposals to place Antarctica on the World Heritage List against the comprehensive protections already provided within the Antarctic Treaty System, including the Protocol on Environmental Protection to the Antarctic Treaty, and the impacts that pursuing such a proposal may have on the Antarctic Treaty System itself.

Recommendation 32 - Australia should identify opportunities to actively promote the natural, scientific, and cultural values of the Antarctic and the environmental protection outcomes achieved by the Madrid Protocol, especially in the lead up to its 25th anniversary in 2016.

10 - Heard Island and McDonald Islands

The Australian Antarctic Division of the Department of the Environment is responsible for the administration of the Territory of Heard Island and McDonald Islands¹⁴. Heard Island and McDonald Islands are situated in the Indian Ocean and within the boundaries of the Convention on the Conservation of Antarctic Marine Living Resources. The islands generate an extended continental shelf, which extends into the Antarctic Treaty area below 60° South.



- Territorial sea and internal waters
- Australia's exclusive economic zone as defined by UNCLOS and certain treaties (not all in force).
- Australia's extended continental shelf (ECS) beyond 200M as confirmed by the Commission on the Limits of the Continental Shelf and as defined by certain treaties (not all in force).
- Australia's ECS considered by the Commission and yet to be resolved.
- Australia's ECS off Antarctica as submitted on 15 Nov 2004 to the Commission that Australia requested not be considered for the time being.
- Joint Petroleum Development Area as defined in the Timor Sea Treaty between Australia and Timor-Leste.
- Treaty boundary with opposite or adjacent State.

¹⁴ Heard Island and McDonald Islands Act 1953

The first Australian National Antarctic Research Expedition landed on Heard Island on 11 December 1947. This marked the beginning of Australia's post-World War Two activities in the Antarctic region.

Heard Island and McDonald Islands were transferred to Australia by the United Kingdom on 26 December 1947. At that time it was considered strategically important that the islands came under Australian administration and control. In the mid 1990's and into the 2000's, Australia's Exclusive Economic Zone was subject to incursions and depredation from illegal toothfish operators operating in the region.

Australia has a profitable domestic toothfish fishery in the Heard Island and McDonald Islands Exclusive Economic Zone. In 2005 Australia and France signed the 'Treaty Between the Government of Australia and the Government of the French Republic on Cooperation in the Maritime Areas Adjacent to the French Southern and Antarctic Territories (TAAF), Heard Island and McDonald Islands', which facilitates collaboration in fisheries surveillance and enforcement, and scientific cooperation in the adjoining French and Australian Exclusive Economic Zones. There has been no Australian contribution of a fisheries surveillance platform under the Australia-France Treaty since January 2012.

While Australia's Exclusive Economic Zone is no longer the target of sustained incursions by illegal fishers, the region adjacent to it is regularly fished by illegal, unreported and unregulated operators. The lack of regular patrols in the region means that those fishers are able to continue to deplete fish stocks in the Convention Area of the Commission for the Conservation of Antarctic Marine Living Resources without sanction. This illegal, unreported and unregulated fishing has had a direct impact on the sustainability of Australia's toothfish fishery.

Heard Island is an important place for scientific research, being a glaciated island in the sub-Antarctic, an important region for Antarctic and sub-Antarctic wildlife, and a significant commercial fishery. Budget constraints have meant that Heard Island has not had a research program since 2003/04. Fisheries research data, necessary for fisheries management purposes and for Australia's engagement in the Commission for the Conservation of Antarctic Marine Living Resources, has been provided by the two Australia fishing operators participating in the Heard Island and McDonald Island fishery, Austral Fisheries and Australian Longlining Pty Ltd.

The Australian Antarctic Division of the Department of the Environment is responsible for the management of the Heard Island and McDonald Islands World Heritage Area and the adjacent Marine Reserve.

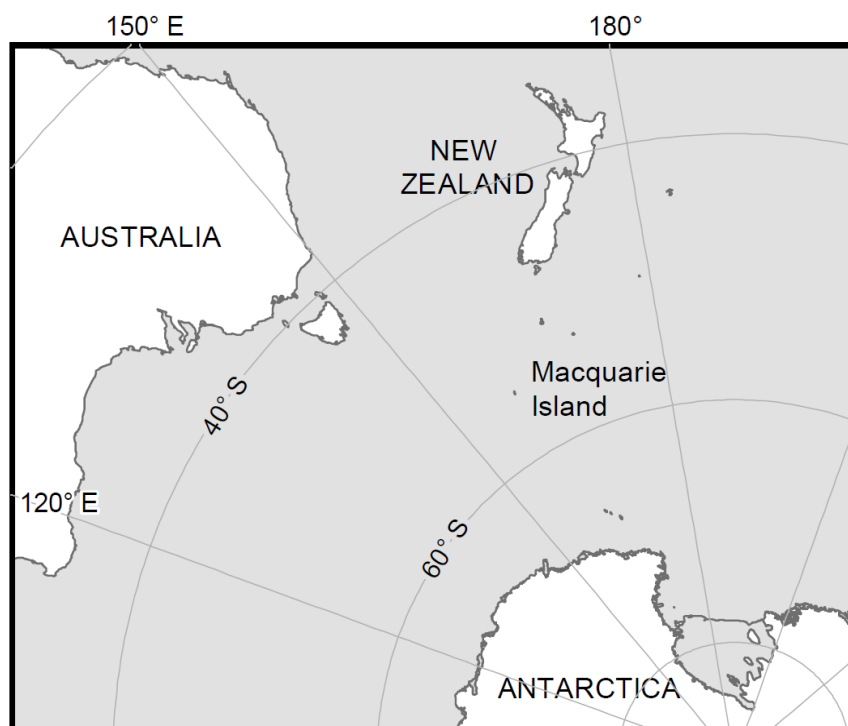
Recommendation 33 - Australia should support fisheries surveillance and enforcement operations in the French and Australian Exclusive Economic Zones in the Heard Island-Kerguelen Island region, and in the surrounding areas of the Convention on the Conservation of Antarctic Marine Living Resources in accordance with the Treaty with France.

Recommendation 34 - The Australian Antarctic Division of the Department of the Environment should provide the Government with a carefully considered budget for conducting priority research at Heard Island and McDonald Islands and surrounding waters and supporting Australia's presence in the Territory.

Priority research in this region should be considered part of the core responsibilities of the Australian Antarctic Division as the region is strategically important for Australia, has important fisheries resources, and is important for wildlife conservation.

11 - Macquarie Island

The Australian Antarctic Division of the Department of the Environment maintains a research station on Macquarie Island in the sub-Antarctic south of Tasmania. Macquarie Island is part of the State of Tasmania (not an Australian External Territory), is declared a nature reserve under Tasmanian legislation¹⁵, and is on the World Heritage List¹⁶. There is a Commonwealth marine protected area in Commonwealth waters surrounding Macquarie Island.



The Australian Antarctic Division of the Department of the Environment has maintained a permanent base on Macquarie Island since 1948. Macquarie Island and its surrounding Exclusive Economic Zone are not within the Antarctic Treaty area, nor the area covered by the Convention on the Conservation of Antarctic Marine Living Resources. It sits, therefore, as an oddity in Australia's Antarctic program. It is not directly a Commonwealth responsibility (as are the Australian Antarctic Territory and the Territory of Heard Island and McDonald Islands); it is directly administered as part of the State of Tasmania and managed by the Tasmanian Parks and Wildlife Service, but the research facilities are run and maintained by the Commonwealth.

There are a number of research projects carried out on Macquarie Island, which are funded through the Australian Antarctic Science Grants scheme, and the Commonwealth has in recent years invested heavily in feral pest eradication programs on Macquarie Island (\$12.3 million). Most importantly, the Commonwealth maintains internationally significant facilities on Macquarie Island for the Bureau of Meteorology, the Australian Radiation Protection and Nuclear Safety Agency and Geosciences Australia.

¹⁵ *Nature Conservation Act, 2002*

¹⁶ Macquarie Island World Heritage Area

It is difficult to argue, other than on historical grounds, that the Macquarie Island research station, as it is now configured and maintained, is either fully a Commonwealth responsibility or part of the core functions of the Australian Antarctic Division.

Recommendation 35 - The operation of the research station on Macquarie Island should be reviewed as part of the Australian Antarctic Division's modernisation project.

This review should be done before significant Commonwealth investments are made to renew or rebuild infrastructure on Macquarie Island. The review should explicitly address the Commonwealth's responsibilities at Macquarie Island, as well as those of the State of Tasmania, including meteorology and other Commonwealth responsibilities, research and protected area management.

Until this review is completed, funding for operations at, or in support of the Macquarie Island research station should be separately accounted for by the Australian Antarctic Division of the Department of the Environment.

12 - Case Studies

Australia's Successful Role in the Commission for the Conservation of Antarctic Marine Living Resources: Countering Illegal, Unreported and Unregulated Fishing

In the late 1990s the Commission for the Conservation of Antarctic Marine Living Resources had to take decisive action to counter substantial illegal, unreported and unregulated fishing that was depleting fish stocks and undermining the Convention on the Conservation of Antarctic Marine Living Resources.

Australia as a Member that was significantly affected by illegal, unreported and unregulated fishing (specifically, illegal fishing inside the Heard Island and McDonald Islands Exclusive Economic Zone) took a leading role in seeking international endorsement of key measures to combat illegal, unreported and unregulated fishing.

Through Australian efforts the Commission has adopted a comprehensive suite of measures to combat illegal, unreported and unregulated fishing. These include: licensing and inspection of fishing vessels; port inspections; automated satellite-linked Vessel Monitoring Systems; the Catch Documentation Scheme; the scheme to promote compliance by Contracting Party vessels; the scheme to promote compliance by Contracting Party nationals; the notification system for transshipment; and the procedures for compliance evaluation.

In 1997, noting the urgency of stopping the high level of illegal, unreported and unregulated fishing, the Commission adopted a non-binding resolution on vessel monitoring. In 1998, following further negotiations, a binding Conservation Measure on an automated satellite-linked Vessel Monitoring System was adopted. In the subsequent years through Australia's leadership the Commission was able to make significant improvements to the Vessel Monitoring System including centralising the system, and, in some instances, voluntarily applying it outside the Convention Area.

Australia also provided leadership in developing a Catch Documentation Scheme to track trade in toothfish and in 1999 the scheme was adopted through a binding Conservation Measure, together with a policy to enhance cooperation between Members and non-Contracting Parties to the Convention. The Catch Documentation Scheme allowed for Members to track legally-caught toothfish product from time of capture, through to entry into the market, thus also allowing Members to clearly identify for the first time illegal, unreported and unregulated-caught product entering domestic and international markets.

Throughout the 2000's the Commission continued to improve its management of fisheries and measures to combat IUU fishing, including measures such as the introduction of vessel blacklists. Many of these initiatives were introduced by Australia.

The Commission for the Conservation of Antarctic Marine Living Resources is a world leader in combating illegal, unreported and unregulated fishing. However some problems still persist, albeit at a much reduced level than during its peak in the late 1990's and early 2000's. Measures such as the centralised-Vessel Monitoring System and the Catch Documentation Scheme have significantly reduced illegal, unreported and unregulated fishing in the Convention Area.

Continued action by the Commission as a collective voice against illegal, unreported and unregulated fishing will need to continue to avoid any resurgence as global market demand for fish increase. Australia's continuing role as a champion in combating illegal, unreported and unregulated fishing will be critical for the Commission and the sustainable management of marine living resources of the Antarctic.

Resupply of Japan's Syowa Station

In January – February 2009 a joint Australia-Japan voyage on *Aurora Australis* was undertaken for the purposes of resupplying personnel, provisions and equipment to Japan's Syowa Station and to conduct incidental and collaborative science en route. Japan was, at the time, waiting for construction of its new icebreaker to be completed. The Memorandum of Understanding between the Australian Antarctic Division of the Department of the Environment and the Research and Development Bureau in the Ministry of Education, Culture, Sports, Science and Technology of Japan provided for the use of *Aurora Australis* to carry out cooperative and collaborative Antarctic research programs and to transport personnel and supplies during the 2008/09 season. A total of about 90 tons of cargo was transported from *Aurora Australis* to Syowa by three helicopters chartered in Australia.

A number of opportunistic science projects were undertaken en route, contributing to major international collaborative efforts such as deployment of a Continuous Plankton Recorder and sampling associated with the international Census of Antarctic Marine Life being coordinated by Australia for the International Polar year.

Departing from Fremantle and returning to Hobart, the voyage demonstrated the flexibility and efficiency of Australia's marine science and resupply capability. It enhanced what was already a close working relationship between the Australian and Japanese Antarctic programs and was a clear acknowledgement and demonstration of Australia's logistical capability.



International Collaborations on Board *Aurora Australis*: Sea Ice Physics and Ecosystems Experiments

The Sea Ice Physics and Ecosystems Experiment 1 (SIPEX I) was a landmark project led by Australia during the International Polar Year (2007-2009). It involved some 45 scientists from 12 different countries and included a 55 day sea ice voyage aboard *Aurora Australis*. The project was jointly led by the Australian Antarctic Division and the Antarctic Climate and Ecosystem Cooperative Research Centre and focussed on understanding the relationship between sea ice physical processes and the biological environment within and under the ice.

Sea ice thickness is a key climate variable and understanding how sea ice is changing contributes to our knowledge of the impacts of climate change on the Antarctic environment. In addition, changes to the amount of sea ice produced each year may affect the formation of the cold, salty water that helps drive global ocean circulation, and may also impact on animals and organisms that are dependent on the sea ice habitat.

SIPEX I also had an important outreach and education function with 12 PhD students participating and working with other scientists and students in related disciplines. Two secondary school teachers participated in the SIPEX I project as part of the Teachers Experiencing Antarctica program and provided a direct link between scientific research in Antarctica and classrooms in Australia and around the world. A website, which was updated daily from the ship, enabled students and the general public to follow the progress of the voyage and to learn about Antarctic research first hand.

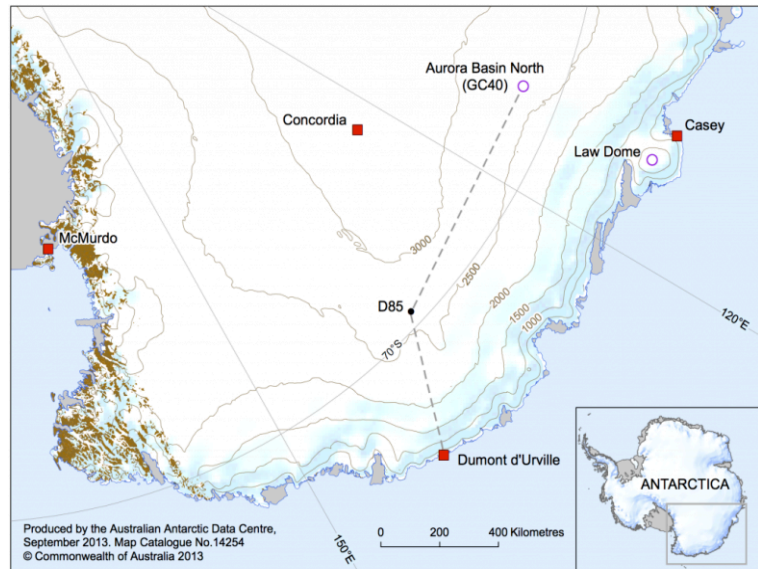
A number of new technologies were used, adapted and deployed as part of the program, including the Surface and Under Ice Trawl, used to sample live krill immediately under the ice; airborne laser and radar altimetry for measuring sea ice 'freeboard' (height of ice above the water) and snow cover over tens to hundreds of kilometres; and instrumentation on a Remotely Operated Vehicle for exploring the presence of algae and krill immediately under the ice. These technologies demonstrated the Australian Antarctic Program's capability for conducting high quality, innovative field work in the Antarctic sea ice zone.

This work was continued and extended in 2012 with a two month SIPEX II voyage during which Autonomous Underwater Vehicles were deployed to map the surface beneath a sea ice floe to learn more about its thickness and volume. SIPEX-II brought together scientists from Australia, Japan, New Zealand, United States, France, Germany, Belgium and Canada.

Both projects involved the complex coordination of shipping, air transport, helicopter support and scientific measures and techniques (including satellite technology) to gather some of the most detailed and significant data on the dynamics of sea ice in East Antarctica. Australia's capacity to lead the SIPEX I and II projects not only demonstrated its scientific credentials but also its capacity to lead multi disciplinary international collaborations with coordinated complex science and logistics.

2013/14 Aurora Basin North Ice Core Drilling Project: Australia leads an important international research project

A major science project of the 2013/14 season was the ice core drilling project at Aurora Basin North. The aim of the project was to drill an ice core that would give a 2000 year climate history from the atmospheric gases, particles and other chemical elements that were trapped in snow as it fell and compacted to form ice. As well as obtaining critical information about the temperature under which the ice formed, storm events, solar and volcanic activity, sea ice extent, and the concentration of different atmospheric gases over time, the project represented a particularly complex and ambitious logistical challenge.



The location of the drill site, some 500 kilometres inland from Casey Stations required a traverse convoy of vehicles hauling heavy equipment, fuel, camp set up, and supplies to transit from the French station at Durmont D'Ville in order to make camp and clear a suitable runway site before air transport could be established to the site. The logistical project was an Australian-French collaboration, with Australia utilising French expertise and equipment to make the traverse a success. As well as the collaboration with the French project for logistical support, the Aurora Basin project involved 15 partner organisations contributing from six nations: Australia, China, Denmark, France, Germany and the United States of America.



The success of the five week field project at Aurora Basin and the international logistical and scientific collaboration provided an excellent basis for more ambitious ice core drilling project in the future including obtaining a 1 million year old ice core that would provide critical climate information including the frequency of ice ages, and regional and global climate records.

Krill Aquarium at the Australian Antarctic Division: World class research to support Antarctic fisheries and conservation

The marine research aquarium and laboratory at the Australian Antarctic Division is a world-leading facility for the study of Antarctic marine organisms and in particular the physiology, behaviour and reproduction of krill. Krill are a critical part of the Southern Ocean ecosystem, providing the staple diet of many animals including seals, whales, fish, squid, penguins and other seabirds. There is also a significant although as yet underexploited krill fishery in the Southern Ocean, regulated by the Commission for the Conservation of Antarctic Marine Living Resources.

Understanding how much krill is in the Southern Ocean, how it responds to changing ocean conditions, and how the population fluctuates are important questions for the sustainability of the krill population and for the broader ecosystem. Research at the aquarium focuses on understanding biology and physiology of krill, including their growth, ageing and production, and for assessing impacts of ocean changes on this organism. The research provides important inputs to the mathematical models used to manage the krill fishery, and has a direct impact on the quality of the scientific advice available to the Commission for the Conservation of Antarctic Marine Living Resources. This information helps the Commission decide harvesting catch limits and conservation measures.

The research undertaken at the krill research aquarium at the Australian Antarctic Division complements at-sea studies undertaken on board *Aurora Australis*. The combination of survey work, experimental research and theoretical analysis provides a comprehensive and world-leading approach to the study of krill and is an important contribution to protecting the Antarctic environment. Australia is at the forefront of krill research and is globally recognised for its expertise in this field.



Attachment A - Key dates in Australian Antarctic History

1820—1822	Sealing Captain, Richard Siddons, makes first Australian visit to the Antarctic
24 January 1895	Australians, Henrik Bull and Carsten Borchgrevink claim the first landing on continental Antarctica (at Cape Adare)
1899	Louis Bernacchi, Tasmanian scientist, becomes the first Australian to overwinter in Antarctica
10 March 1908	First ascent of Mt Erebus made by Mawson and others during the Shackleton expedition
16 January 1909	South Magnetic Pole first reached by Douglas Mawson (Shackleton expedition)
2 December 1911	Mawson's Australasian Antarctic Expedition (AAE) sails from Hobart on <i>Aurora</i>
December 1911	AAE establishes a station and wireless masts on Macquarie Island
8 January 1912	Mawson lands at Cape Denison in Antarctica to establish a winter station
Nov 1912—Feb 1913	Mawson's famous sledging journey and remarkable solo survival
February 1913	Mawson's AAE makes world's first radio communication from Antarctica
26 February 1914	AAE returns to Hobart
29 June 1914	Mawson knighted in London for his achievements on the AAE
16 November 1928	Australian Sir Hubert Wilkins makes first aircraft flight in Antarctica
1929—1931	British, Australian and New Zealand Antarctic Expedition (BANZARE) — led by Mawson
13 January 1930	Douglas Mawson's proclamation of Antarctic territory on Proclamation Island
7 February 1933	Order in Council transferring Antarctic Territory to Australia
24 August 1936	Proclamation of the Australian Antarctic Territory through the entry into force of the <i>Antarctic Territory Acceptance Act 1933</i>
17 November 1947	Departure from Melbourne of first Australian National Antarctic Research Expedition (ANARE) voyage — landed at Heard Island 11 December 1947
26 December 1947	Heard Island and McDonald Islands (that had previously been claimed by the United Kingdom in 1910) was transferred from Britain to Australian 'government, administration and control', at the opening of the ANARE station on Heard Island. This was later confirmed in an exchange of notes in 1950.
8 February 1948	Departure of first ANARE voyage to the Antarctic continent
7 March 1948	ANARE landing on Macquarie Island to establish a permanent station
May 1948	Antarctic Division of the Department of External Affairs established
13 February 1954	Mawson station opened — the Antarctic continent's first permanent station
13 January 1957	Opening of Davis station, Australia's second permanent station in Antarctica
1957—1958	International Geophysical Year
3 January 1958	Departure of first (and only) ANARE voyage to explore entire coast of the Australian Antarctic Territory
4 February 1959	Australia takes over control of Wilkes Base, established by the US in 1957
1 December 1959	Signing of the Antarctic Treaty by 12 nations including Australia
23 June 1961	Antarctic Treaty enters into force
10 July 1961	First meeting of the Antarctic Treaty Consultative Meeting held in Canberra. Opening of the meeting addressed by Prime Minister R.G. Menzies
19 February 1969	Casey station opened, to replace Wilkes which had become buried by snow

27 January 1971	First recorded landing on the McDonald Islands
13 February 1977	First Australian tourist charter sightseeing flight to the Australian Antarctic Territory
20 May 1980	Convention on the Conservation of Antarctic Marine Living Resources adopted
1980/81	First International Biological Investigations of Marine Antarctic Systems and Stocks (BIOMASS) Experiment - first major Australian Antarctic marine research voyage since BANZARE (1929)
22 April 1981	The Australian Antarctic Division moves from Melbourne to Tasmania and the new headquarters for the Australian Antarctic Division is opened.
18 January 1987	Law Base opened in the Larsemann Hills
1 January 1988	First live television broadcast from the Australian Antarctic Territory
20 December 1988	New Casey station opened
22 May 1989	Australia announces that it will not sign the Antarctic minerals convention
18 September 1989	<i>Aurora Australis</i> launched — Australia's first icebreaker
4 October 1991	Antarctic Treaty parties adopt the Protocol on Environment Protection to the Antarctic Treaty (the Madrid Protocol) which bans mining
1997	Australia commences fisheries patrols off Heard Island
6 December 1997	Heard Island inscribed on the World Heritage List
16 January 1998	Entry into force of the Antarctic Treaty's environmental protocol
16 October 2002	Heard Island and McDonald Islands Marine Reserve proclaimed
22 June 2004	Mawson Station listed on the Commonwealth Heritage Register
15 November 2004	Antarctic data lodged with Commission on the Limits of the Continental Shelf (along with the rest of Australia's Extended Continental Shelf data)
10 January 2005	Mawson's Huts Historic Site entered on the National Heritage List
11 May 2005	Prime Minister announces the development of an air link between Hobart and Casey
24 January 2008	Official opening of Wilkins Runway
7 February 2008	75 th anniversary of the Order-in-Council establishing the Australian Antarctic Territory
16 January 2009	100 th anniversary of attainment of South Magnetic Pole by Douglas Mawson
17 February 2009	110 th anniversary of first landing by an Australian in Antarctica (Bernacchi)
1 December 2009	50 th anniversary of the signing of the Antarctic Treaty
23 June 2011	50 th anniversary of entry into force of the Antarctic Treaty
24 August 2011	75 th anniversary of the Proclamation of the Australian Antarctic Territory
11-20 June 2012	Australia hosts Antarctic Treaty Consultative Meeting (Hobart)
2011—2014	Various 100 th anniversaries of Mawson's Australasian Antarctic Expedition
26 February 2014	100 th anniversary of the return to Australia of Mawson's Australasian Antarctic Expedition

Attachment B - Legislation Relevant to Australia's Antarctic Governance

(non-exhaustive)

Australian Antarctic Territory legislation and Ordinances (for the good governance of the AAT)

- Australian Antarctic Territory Acceptance Act 1933
- Australian Antarctic Territory Act 1954
- Weapons Ordinance 2001 (AAT)
- AAT Criminal Procedure Ordinance 1993 (AAT)

Antarctic/Environment Specific Commonwealth Legislation (implementing Australia's international obligations)

- Antarctic Treaty Act 1960
- Antarctic Treaty (Environment Protection) Act 1980
- Antarctic Treaty (Environmental Protection) (Environmental Impact Assessment) Regulations 1993
- Antarctic Treaty (Environmental Protection) (Waste Management) Regulations 1994
- Antarctic Treaty (Environment Protection) Proclamation 2007
- Antarctic Treaty (Environment Protection) (Historic Sites and Monuments) Proclamation 2007
- Antarctic Marine Living Resources Conservation Act 1981
- Antarctic Marine Living Resources Conservation Regulations 1994
- Environment Protection and Biodiversity Conservation Act 1999
- Environment Protection and Biodiversity Conservation Regulations 2000
- Protection of the Sea (Prevention of Pollution From Ships) Act 1983

Heard Island and McDonald Islands Legislation and Ordinances

- Heard Island and McDonald Islands Act 1953
- Environment Protection and Management Ordinance 1987 (HIMI)
- Weapons Ordinance 2001 (HIMI)
- Criminal Procedure Ordinance 1993 (HIMI)

Attachment C – Vessels Recently Active in the East Antarctic Sector of the Southern Ocean¹⁷

Flag	Vessel	Vessel Type	Details
Australia	<i>Aurora Australis</i>	Research and Resupply	Launched - 1989. Length - 94.9m Weight - 3911 tonnes Cruising speed - 13 knots PAX - 116 Icebreaking capacity – 1.23m 59 voyages from Hobart since May 2007
	<i>Investigator</i>	Science Research	Length: 94 metres Days at sea: Up to 300 Scientific berths: 40 Endurance: 60 days Cruising speed: 12 knots Range: 10,000 nm Extent of operating area: Ice edge
China	<i>Xue Long</i>	Science Support & Resupply	Built -1993 Gross tonnage – 14997 Length – 167m Max Speed – 18 knots Range – 20 000nm PAX 128 + 34 crew Port visit Hobart - 2013, Fremantle 2010, 2012, 2013
France	<i>L’Astrolabe</i>	Science Support & Resupply Multipurpose Offshore Vessel	Length – 65.06 Max Speed – 14.2 knots PAX – 62 Ice Class 1 61 voyages from Hobart since October 2007
Japan	<i>Shirase II</i>	Science Support & Resupply Icebreaker	Commissioned - 2009 12,650-ton 138 meters Capacity - 3 knots, breaking up ice 1.5 meters thick. The new ship uses seawater to clear the snow on the ice, allowing it to move smoothly for better fuel-efficiency, and has a double-walled fuel tank to prevent leaks.
	<i>Umitaka Maru</i>		Built 1973 Length – 93m Gross Tonn – 1828 Power 3320 HP, Aux power 480 HP Range 5000nm Endurance – 35 days Cruise speed 15kt PAX - 79 Port visit Hobart - 2014
South Korea	<i>RV Araon</i>	Science Support & Resupply Icebreaker	Commissioned 2009 KR PL-10(DAT -30)grade research ice breaker (identical with DnV Polar 10 grade) capable of continuous breaking of 1m thick flat ice at the speed of 3knot Gross Tonnage 7487 t Service Speed 12 knots PAX 85 Endurance 20000nm Generator 3400KW X 4ki Span 110m
New Zealand	<i>Tangaroa</i>	Science Research Vessel	Built – 1991 Classification Ice IC (light ice) Length 70m Hull – ice strengthened Gross Tonnage 2291 t Crusing speed – 10.5 knots Main engines - 2 x Cummins QSK60 1800 kW (1,440 kWe) PAX 40 Endurance – 60 days
Russia	<i>Akademik Shokalskiy</i>	Passenger ship	Built 1982 Gross Tonnage 1764 Length 71m Speed 14 kt Passengers - 68
	<i>Akademik Feodorov</i>	Science Support & Resupply	Built 1987 Gross Tonnage – 12660 international Length – 141.20

¹⁷ Not including fisheries vessels

Flag	Vessel	Vessel Type	Details
	<i>Kapitan Khlebnikov</i>	Passenger/Icebreaking Ship	Built 1981 Gross Tonnage – 12288 international Length – 121.30m Port visit Hobart - 2005, 2006, 2009, 2011
	<i>Vasiliy Golovnin</i>	Vitas Bering Class Icebreaker	Built 1988 Sister ship to Xue Long Gross Tonnage 13514 international Length – 163.9m Speed – 15.9 Port visit Hobart - 2003-4, 2004/05, 2006 She can carry in her holds the equivalent of 305 standard containers and has 5 deck cranes, a stern ramp and an aft helideck and hanger
	<i>Anderma</i>	Ro-ro Cargo	Built 1983 Gross tonnage: 18627t Summer DWT: 23024t Length 177m Voyage from Hobart 2009
United States	<i>Polar Star</i>	Polar-class icebreaker	Built 1976 (refitted 2012) Length 399ft Speed - 18 knots (33 km/h; 21 mph) 3 knots (5.6 km/h; 3.5 mph) in 6-foot (1.8 m) ice Range - 16,000 nautical miles (30,000 km; 18,000 mi) at 18 knots (33 km/h; 21 mph) 28,275 nautical miles (52,365 km; 32,538 mi) at 13 knots (24 km/h; 15 mph) 187 PAX Aircraft carried – 2 HH-65A Dolphin helicopters Port visit Sydney - 2014
	<i>Nathaniel B. Palmer</i>	Research	Commissioned 1992 Classification Ice Class A2 Length – 94m PAX 68 Capable of carrying twenty, 20 ft cargo containers Voyage from Hobart 2014
	<i>Polar Pioneer</i>	Tourist vessel	Capacity 56 + 40 crew Operated by Aurora Expeditions (Australia) Length 71.6
	<i>Spirit of Enderby</i>	Tourist vessel	Capacity 58 + 22 crew Operated by Heritage Expeditions (NZ) Ice strengthened Length 71.6m 2 voyages from Hobart 2011-2012
	<i>Orion</i>	Tourist vessel	Launched 2003 Length – 103m Iced reinforced hull Capacity 106 + 79 crew Operated by Orion Expedition Cruises (Australia) 25 voyages from Hobart since December 2007

Attachment D - Antarctic Treaty System List of Parties

Country ¹⁸	Antarctic Treaty Entry into force	Antarctic Treaty Consultative status	Environment Protocol	Convention for the Conservation of Antarctic Seals	Convention on the Conservation of Antarctic Marine Living Resources Member Status
Argentina	23 Jun 1961	23 Jun 1961	14 Jan 1998	7 Mar 1978	27 June 1982
Australia	23 Jun 1961	23 Jun 1961	14 Jan 1998	1 Jul 1987	7 Apr 1982
Belgium	23 Jun 1961	23 Jun 1961	14 Jan 1998	9 Feb 1978	23 March 1984
Chile	23 Jun 1961	23 Jun 1961	14 Jan 1998	7 Feb 1980	7 Apr 1982
France	23 Jun 1961	23 Jun 1961	14 Jan 1998	19 Feb 1975	16 Oct 1982
Japan	23 Jun 1961	23 Jun 1961	14 Jan 1998	28 Aug 1980	7 Apr 1982
New Zealand	23 Jun 1961	23 Jun 1961	14 Jan 1998		7 Apr 1982
Norway	23 Jun 1961	23 Jun 1961	14 Jan 1998	10 Dec 1973	5 Jan 1984
Russian Federation	23 Jun 1961	23 Jun 1961	14 Jan 1998	8 Feb 1978	7 Apr 1982
South Africa	23 Jun 1961	23 Jun 1961	14 Jan 1998	15 Aug 1972	7 Apr 1982
United Kingdom	23 Jun 1961	23 Jun 1961	14 Jan 1998	10 Sep 1974	7 Apr 1982
United States	23 Jun 1961	23 Jun 1961	14 Jan 1998	28 Dec 1976	7 Apr 1982
Poland	23 Jun 1961	29 Jul 1977	14 Jan 1998	15 Aug 1980 (Acceding State)	27 Apr 1984
Germany	05 Feb 1979	03 Mar 1981	14 Jan 1998	30 Sep 1987 (Acceding State)	23 May 1982
India	19 Aug 1983	12 Sep 1983	14 Jan 1998		17 Jul 1985
Brazil	16 May 1975	27 Sep 1983	14 Jan 1998	11 Feb 1991 (Acceding State)	27 Feb 1986
Uruguay	11 Jan 1980	07 Oct 1985	14 Jan 1998		21 Apr 1985
China	08 Jun 1983	07 Oct 1985	14 Jan 1998		19 Oct 2006
Italy	18 Mar 1981	05 Oct 1987	14 Jan 1998	2 Apr 1992 (Acceding State)	28 Apr 1989
Spain	31 Mar 1982	21 Sep 1988	14 Jan 1998		9 May 1984
Sweden	24 Apr 1984	21 Sep 1988	14 Jan 1998		6 Jul 1984
Korea (ROK)	28 Nov 1986	09 Oct 1989	14 Jan 1998		28 Apr 1985
Finland	15 May 1984	20 Oct 1989	14 Jan 1998		6 Oct 1989 (Acceding State)
Peru	10 Apr 1981	09 Oct 1989	14 Jan 1998		23 Jul 1989 (Acceding State)
Netherlands	30 Mar 1967	19 Nov 1990	14 Jan 1998		25 Mar 1990 (Acceding State)
Ecuador	15 Sep 1987	19 Nov 1990	14 Jan 1998		
Bulgaria	11 Sep 1978	05 Jun 1998	21 May 1998		1 Oct 1992 (Acceding State)
Ukraine	28 Oct 1992	04 Jun 2004	24 Jun 2001		22 May 1994
Czech Republic	14 Jun 1962	01 Apr 2014	24 Sep 2004		
Denmark	20 May 1965				
Romania	15 Sep 1971		05 Mar 2003		
Papua New Guinea	16 Mar 1981				
European Union					21 May 1982
Hungary	27 Jan 1984				
Cuba	16 Aug 1984				
Greece	08 Jan 1987		14 Jan 1998		14 Mar 1987 (Acceding State)
Korea (DPRK)	21 Jan 1987				
Austria	25 Aug 1987				
Canada	04 May 1988		13 Dec 2003	4 Oct 1990 (Acceding State)	31 Jul 1988 (Acceding State)

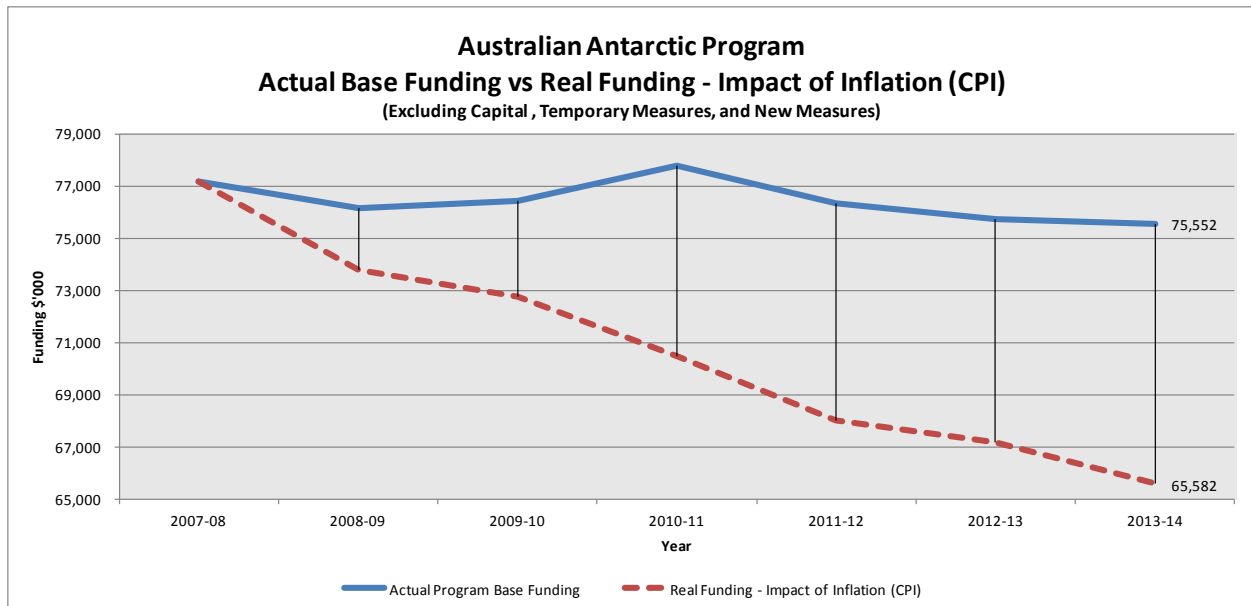
¹⁸ Bold indicates original signatories to the Antarctic Treaty. Shaded indicates Consultative Parties at the time of the adoption of the Madrid Protocol

Country ¹⁸	Antarctic Treaty Entry into force	Antarctic Treaty Consultative status	Environment Protocol	Convention for the Conservation of Antarctic Seals	Convention on the Conservation of Antarctic Marine Living Resources Member Status
Colombia	31 Jan 1989				
Switzerland	15 Nov 1990				
Guatemala	31 Jul 1991				
Slovak Republic	01 Jan 1993				
Turkey	24 Jan 1996				
Venezuela	24 Mar 1999				
Namibia					29 Jul 2000 (Acceding State)
Vanuatu					19 Aug 2001 (Acceding State)
Estonia	17 May 2001				
Mauritius					2 Oct 2004 (Acceding State)
Cook Islands					19 Nov 2005 (Acceding State)
Belarus	27 Dec 2006		15 Aug 2008		
Monaco	31 May 2008		31 Jul 2009		
Portugal	29 Jan 2010				
Malaysia	31 Oct 2011				
Pakistan, Islamic Republic of	01 Mar 2012		31 Mar 2012		22 Feb 2012 (Acceding State)
Panama, Republic of					19 April 2013 (Acceding State)

Source: Secretariat of the Antarctic Treaty (http://www.ats.aq/devAS/ats_parties.aspx?lang=e),
Secretariat of the Commission for the Conservation of Antarctic Marine Living Resources
(<http://www.ccamlr.org/en/organisation/membership>)

Appendix 1 – Budget Figures

Australian Antarctic Program Expense Summary	\$'000		
(Excludes Temporary Measures and Capital)	2013-14	%	%*
Departmental Program Expenses (Net)			
Total Station Operating Costs	24,299	21%	21%
Total Logistics Costs - Shipping and Aviation	43,460	38%	59%
Total Station Management and Support Costs	11,665	10%	69%
Total Property, Insurances, and Other Fixed Costs	9,354	8%	77%
Total Administration Costs	7,502	7%	84%
Total Scientific Research Costs	15,270	13%	97%
Total Australian Antarctic Science Grants	1,050	1%	98%
Total Antarctic Policy Support Costs	2,633	2%	100%
Total Departmental Program Expenses (Net) **	115,233	100%	
* Cumulative Percentage			
** Expenses exclude depreciation and other expenses not requiring appropriation			



Appendix 2 – Consultations and Submissions

The development of this report included a broad consultation process and a public call for submissions. Unclassified submissions were subsequently posted on the 20 year Australian Antarctic Strategic Plan website: <http://20yearplan.antarctica.gov.au/home>

Direct consultations included:

Attorney-General’s Department	The Governor of Tasmania, His Excellency
Australian Antarctic Division of the	[the late] Peter Underwood AC
Department of the Environment	The Treasury
Australian Maritime Safety Authority	Professor Michael Stoddart
Australian Strategic Policy Institute	University of Tasmania (including the
BP Marine	Australian Maritime College and the
Bureau of Meteorology	Institute for Marine and Antarctic
Caltex Australia	Studies)
Department of Agriculture	Virgin Australia
Department of Defence	William Adams Pty Ltd
Department of Finance	
Department of Foreign Affairs and Trade	
Department of Industry (Chief Scientist)	
Department of Infrastructure and Regional	
Development	
Department of Immigration	
Department of Prime Minister and Cabinet	
Geosciences Australia	
Hobart Airport Corporation	
IP Australia	
Joint Commonwealth and Tasmanian	
Economic Council	
Southern Waste Solutions	
Skytraders	
Tasmanian Antarctic Gateway	
Tasmanian Chamber of Commerce and	
Industry	
Tasmanian Polar Network (and many of its	
members)	
Tasmanian Ports Corporation (TasPorts)	
Tasmanian State Government – Department	
of State Growth	

Formal submissions¹⁹ were received from:

- Antarctic and Southern Ocean Coalition
- Antarctic Community Council
- Antarctic Science Advisory Committee
- Australian Academy of Science
- Australian Academy of Technological Sciences and Engineering
- Australian Customs and Border Protection Service
- Brendan Holding
- Bureau of Meteorology
- Cooperative Research Centres Committee
- CSIRO
- Department of the Environment
- Department of Defence
- Department of Foreign Affairs and Trade
- Department of Industry
- Dr Julia Jabour, Institute for Marine and Antarctic Studies
- Gavin Brosche
- Geoscience Australia
- Group Captain Glenn Natrass (Ret)
- Hobart Airport
- Hobart City Council
- International Fund for Animal Welfare
- Integrated Marine Observing System
- New Zealand Antarctic Research Institute and Antarctica New Zealand
- Professor Marcus Haward
- Professor Matt King
- Professor Stephen Nicol AAM
- The Hon. Sir Guy Green AC KBE CVO
- Tasmanian Department of Economic Development, Tourism and the Arts
- Tasmanian Polar Network
- University of Tasmania
- WWF-Australia

¹⁹ A number of informal submissions were also received.

