

Operations and logistical support

- 3.1 The physical isolation of the Antarctic continent from other continents, its extreme climate, and the harsh conditions of the Southern Ocean, make Antarctica a difficult environment to access. Transporting personnel and cargo to the continent constitutes a major activity and also a highly expensive one. Once on the continent, providing infrastructure for expeditioners and transporting scientists to where the science needs to be done is also an expensive and often difficult practice.
- 3.2 Table 2.2 which provides a breakdown of the AAD's budget by function revealed that almost half of the budget is allocated to providing logistics in support of Antarctic research. Logistic support of ships and aircraft accounts for 29 per cent of the AAD's budget while station and infrastructure and management accounts for a further 17 per cent.
- 3.3 The Operations Branch of the AAD encompasses many elements which include: the provision of transport for expeditioners to and from their Antarctic destinations; station infrastructure including accommodation, communications and land transport vehicles; provision of field equipment and support; and coordinating and conducting a training program for expeditioners.¹
- 3.4 The transport of personnel, equipment and supplies to and from Antarctica is currently undertaken by ship, and the AAD has a long-term lease on the *RSV Aurora Australis*, which was purpose-built for

¹ Australian Antarctic Division, 2004, *About Us*, Australian Antarctic Division, Kingston, Tasmania, viewed 13 July 2004, <<http://www.aad.gov.au/default.asp?casid=18>>.

the Division in 1989. The AAD also leases other vessels according to each season's needs. For example, the 2004-05 shipping schedule included four voyages by the *Aurora Australis* and one voyage by the *Vasiliy Golovnin*, a Russian transport ship hired specifically for a two-month resupply journey. In the past, scientists have also utilised tourist cruises which operate from New Zealand to access Macquarie Island.² The Operations Branch is also responsible for the transportation of personnel within the AAT – whether it be between Australian bases or to field experiment locations.

- 3.5 It is anticipated that the ongoing challenge of meeting the diverse needs of the Antarctic science community will be alleviated in part by the introduction of an inter-continental air transport system. However, the air transport system will not resolve all the challenges facing an increasingly dynamic Antarctic program. This chapter addresses those areas concerning logistics which have been identified as requiring additional funding and highlights their importance for achieving the Australian Government's goals for the Antarctic.

The Air Transport project

Background

- 3.6 One of the key recommendations of ASAC's 1997 Foresight Report was the development of an intra-continental air transport system to be served by an inter-continental air link from Australia.³ ASAC argued that the introduction of such a service 'would provide the transportation flexibility which an innovative and responsive future Antarctic Program requires'.⁴ In 1998 the Government accepted ASAC's recommendation, acknowledging that:

...if Australia is to continue to be a leading Antarctic nation in the future, options for a transport system that is more flexible

2 Australian Antarctic Division 2004, *Shipping schedule 2004-05*, Australian Antarctic Division, Kingston, Tasmania, viewed 25 August 2004, <<http://www.aad.gov.au/default.asp?casid=16230>>.

3 See Recommendation 4, Antarctic Science Advisory Committee, 1997, *Australia's Antarctic Program Beyond 2000: A Framework for the Future: A Report to the Parliamentary Secretary for the Antarctic*, p 46.

4 Antarctic Science Advisory Committee, 1997, *Australia's Antarctic Program Beyond 2000: A Framework for the Future: A Report to the Parliamentary Secretary for the Antarctic*, p xv.

and efficient than the present one ship system, must be actively examined.⁵

3.7 The Government requested that the AAD undertake a scoping study of inter-continental air transport options. The resultant report short-listed 12 options as feasible and efficient, and after an assessment of the operational, environmental and financial implications of each option, was further reduced to four.⁶ The study recommended that these four options be subject to further investigations and market testing through a competitive tender process.⁷ Field investigations were undertaken in the 1999-2000 summer season which determined that the air transport system should include the following core components:

- Construction and use of a compressed snow runway at Casey as the primary long-term destination for wheeled intercontinental aircraft flights from Hobart;
- Initial use of the blue-ice runway site at the Bunger Hills⁸ to gain experience of intercontinental flights from Australia;
- Following construction of the Casey runway, continued operation of the Bunger Hills blue-ice runway as a secondary intercontinental runway and as the required transit and refuelling location for intracontinental flights to Davis and Mawson;
- Use of ski/wheel-equipped aircraft to provide the intracontinental link from Casey via the Bunger Hills to Davis and Mawson; and
- Operation of sea-ice skiways/runways at Davis and Mawson for early to midseason intracontinental flights, followed by use of local blue-ice runways when the sea-ice deteriorates later in the season.⁹

5 Commonwealth Government, 1998, *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 Parliamentary Secretary for the Antarctic*, p 6.

6 Shevlin, J. & Johnson, J., 1999, *Antarctic Air Transport Scoping Study*, Antarctic Air Transport Taskforce, Australian Antarctic Division, Kingston, Tasmania, p 46, <<http://www.aad.gov.au/default.asp?casid=3026>>, viewed 24 January 2005.

7 Hill, R (Minister for the Environment and Heritage) 1 Sept 1999, *Antarctic Air Link a step closer*, media release, Parliament House, Canberra.

8 The Bunger Hills is an area of several hundred square kilometres of ice-free rock located on the east coast of Antarctica, 440km west of Casey station.

9 Shevlin, J., 2000, *Antarctic Air Transport: 1999/2000 Field Investigations*, Antarctic Air Transport Taskforce, Australian Antarctic Division, Kingston, Tasmania, p 40, <<http://www.aad.gov.au/default.asp?casid=3026>>, viewed 24 January 2005.

- 3.8 In late 2000 the procurement process for a suitable aircraft commenced and in February 2002 the Australian Government announced that its preferred option for air transport between Australia and Antarctica was a proposal by the Sydney-based company Skytraders Pty Ltd. Skytraders' proposal involved a 16-passenger Falcon 900 jet, with the capacity to fly non-stop from Hobart to Casey Station and return without the need for re-fuelling. The aim of the project was to provide 25 return flights to Casey Station each summer season, with personnel bound for other Australian Antarctic stations transferring to ski-equipped CASA-212¹⁰ aircraft for intra-continental flights. However, the Government's 2002 announcement included the caveat that 'further work [by the AAD] will now be undertaken to see how the service can best be provided and funded'.¹¹
- 3.9 While Skytraders' original proposal involved the use of a Falcon 900, in May 2004 the AAD told a Senate Estimates hearing that it was subsequently considering larger aircraft that 'might meet the Antarctic Division's needs and also some broader needs - in other words, of government.'¹²
- 3.10 On 30 December 2004, two CASA-212 aircraft completed their inaugural landing at the ski-way at Casey Station, accomplishing a significant milestone for Australian Antarctic science. The CASA-212s provide an air link between Australia's three stations on the Antarctic continent, as well as some stations operated by other Antarctic nations. For example, in January 2005, one of the CASA-212s completed a mission to the French station, Concordia, 3233 metres above sea level, with operating temperatures as low as -35° C.¹³
- 3.11 The \$5.9 million cost associated with the introduction of the CASA-212s was to be absorbed within the AAD's budget by an internal

10 Construcciones Aeronáuticas S.A. (Spain). A subsidiary of the European Aeronautic and Defence and Space Company, makers of Airbus, Ariane and Eurocopter.

11 Stone, S (Parliamentary Secretary for the Environment and Heritage) 2002, *Sydney Company Chosen to Progress Antarctic Air Link*, media release, Parliament House, Canberra, 21 February.

12 Australia. Parliament. Senate. Environment, Communications, Information Technology and the Arts Legislation Committee, Budget Estimates Hearings, *Transcript*, 27 May 2004, pp 50-53.

13 Australian Antarctic Division, 2005, *Air Transport Project*, Australian Antarctic Division, Kingston, Tasmania, viewed 14 February 2005, <<http://www.aad.gov.au/default.asp?casid=2189>>.

reallocation of funds and priorities, largely within the logistics program. In June 2004, the AAD stated:

...Our shipping budget will come down somewhat, as will helicopters, to make way for the two CASAs. There will be some other efficiencies, but it is mostly by rearrangement of our logistics.¹⁴

- 3.12 However, the AAD informed the Committee that it was not in a position to fund the inter-continental component of the air link from within its current resources.¹⁵ The inter-continental component requires the construction of an ice-cap runway at Casey Station to facilitate the safe landing of the aircraft. The AAD provided a Senate Estimates Committee with approximate details of funding required for the inter-continental air link. The AAD stated that:

The indicative cost for the runway work would be \$4 million over two years, or \$8 million, and for the service probably between \$9 and \$11 million per annum.¹⁶

- 3.13 The AAD also informed the Estimates Committee that it had sought money for the inter-continental air link in the 2003-04 and 2004-05 budget rounds but was ultimately unsuccessful.¹⁷ If funding for the inter-continental flights were secured, the AAD stated that it would take three summer seasons of work to complete the Casey Station runway to meet Civil Aviation Safety Authority standards and undertake test flights.¹⁸

Antarctic science community's views on the air link

Potential benefits of the air link

- 3.14 Throughout the development of the air link proposal there has been widespread support from stakeholders in Australia's Antarctic program. According to the Antarctic science community, one of the

14 Australian Antarctic Division (Allen R), *Transcript*, 23 June 2004, p 9.

15 Australian Antarctic Division (Press A), *Transcript*, 23 June 2004, p 10.

16 Australia. Parliament. Senate. Environment, Communications, Information Technology and the Arts Legislation Committee, Budget Estimates Hearings, *Transcript*, 27 May 2004, p 77.

17 Australia. Parliament. Senate. Environment, Communications, Information Technology and the Arts Legislation Committee, Budget Estimates Hearings, *Transcript*, 27 May 2004, pp 76-77.

18 Australian Antarctic Division (Pitt K), *Transcript*, 23 June 2004, p 13.

key advantages of an air link is that it will attract a wider spectrum of researchers to the continent. ASAC, in its 2003 evaluation of Australia's Antarctic science program, stated that the development of the air link would represent 'the most significant change to achieve greater participation in the Australian Antarctic science program'.¹⁹ This includes participation by senior scientists whose responsibilities at their home institutions have previously deterred them from participating in the current long ship-based journey.

- 3.15 The overhead associated with the amount of unproductive time scientists spend on board re-supply vessels or waiting at stations in the AAT will be greatly reduced by the advent of air transport. For example, in discussions with expeditioners the Committee learnt of a recent situation where a biologist spent winter at one of the stations on the continent, simply because there was no ship scheduled to bring her in early enough in the summer to start her science program. The Committee acknowledges that this kind of situation would be unlikely to occur once an inter-continental air transport system is operational. Professor Bruce Mapstone stated that the provision of an air link would:

...cut away a lot of the lost time that is currently associated with having people sitting on vessels not doing the things that they are on their way to do. That arises simply because at the moment we have a program which necessarily has to compromise science, resupply and transporting personnel to and from Antarctica all on the one trip.²⁰

Economic benefits for Hobart

- 3.16 The Tasmanian Government was highly supportive of the proposed air link route between Hobart and Casey Station due to the obvious economic benefits it would bring to the state. The State Government also believed that the air link would encourage other nations' Antarctic programs to base their operations in Hobart and help to recover some of the costs associated with the air link:

...The most exciting aspect of this project is its capacity to draw members of other nations' Antarctic institutions to

19 Antarctic Science Advisory Committee, 2003, *Evaluation of Australia's Antarctic science program*, Kingston, Tasmania, p 14.

20 Antarctic Climate and Ecosystems Cooperative Research Centre (Mapstone B), *Transcript*, 16 March 2004, p 24. See also National Committee on Antarctic Research (Allison I), *Transcript*, 16 March 2004, p 51.

Hobart and its ability to expose these members to all that Australia and Tasmania have to offer to the Antarctic community. The Tasmanian government believes that the air link can provide a powerful incentive for other national Antarctic programs to consider using Hobart as the preferred gateway to the east Antarctic region. It will also deliver tangible political, economic and social benefits.

For example, the French Antarctic program, which is comparatively small scale, currently spends in excess of \$2 million annually on goods and services sourced from Tasmania. Russia, China, Italy, Japan and Estonia could reasonably be expected to contribute in the order of \$8 million to the Tasmanian economy if they were to take advantage of the air link.²¹

- 3.17 However, the Tasmanian Government acknowledged that such arrangements are unlikely to develop in the short term, and usually take place 'over many years of negotiations between nations'.²² Therefore, the Tasmanian Government urged that the Australian Government needed to invest in the air link now with a view to recouping costs down the track.

Cultural Change

- 3.18 The Committee held informal discussions with winter expeditioners at Davis and Mawson Stations in March 2004, and discussed the impact that the advent of an air link would have on the work and culture of staff at the stations. While expeditioners at Mawson station were highly supportive of the air link proposal, they noted that it would herald a major cultural change at stations as personnel would be coming and going far more frequently than is currently the case. It was further acknowledged that the handover of systems and welcoming and farewelling rituals would need to change to accommodate the increase in staff turnover.

Concerns over the air link

- 3.19 While the Antarctic science community appears to be genuinely excited about the potential benefits an air transport system will bring to the science program, some concern has been expressed that there

21 State Government of Tasmania (Giddings L), *Transcript*, 16 March 2004, p 4.

22 State Government of Tasmania (Giddings L), *Transcript*, 16 March 2004, p 6.

may be cuts to the science program in order to supplement the air link. Scientists from the Australian Academy of Science, CSIRO, the Australian Marine Sciences Association and NCAR all argued that without additional funding for the air link, the science program would be at great risk of failing to deliver the Government's goals for Antarctica.²³

- 3.20 In particular, concerns were expressed over the impact of air transport on the marine science program. CSIRO, for example, urged that the introduction of air transport 'must complement the present scientific effort and not draw from it'.²⁴
- 3.21 Dr John Runcie, a researcher with an interest in Antarctic science, noted that the likelihood of there being more scientists in Antarctica as a result of the air link would increase the demand on logistics and support services. He expressed concern that unless there was increased funding specifically for logistics, the air link could result in a decline in safety and research quality.²⁵

Albany proposal

- 3.22 While most of the work on the air link project to date was undertaken on the assumption that any air link to the Antarctic continent would operate out of Hobart, the Committee received submissions supporting the establishment of a link from Albany in Western Australia, possibly connecting with Mawson or Davis Stations. While the Government has already confirmed its support of the Hobart/Casey option, the City of Albany and the Great Southern Development Commission (GSDC) asked that consideration be given to using Albany as a supplementary base of operations for inter-continental flights.²⁶ Albany is 410 kilometres south of Perth – four hours by road and less than one hour flying time. The Committee held inspections and a public hearing in Albany on 29-30 April 2004.
- 3.23 The primary argument used to support Albany as the base of Australia's Antarctic air transport operations is its significantly closer

23 See Commonwealth Scientific and Industrial Research Organisation, National Committee on Antarctic Research, Australian Marine Sciences Association, Submissions.

24 Commonwealth Scientific and Industrial Research Organisation, Submission no. 14, p 4.

25 Runcie, John., Submission no. 7, p 1.

26 The City of Albany and the Great Southern Development Commission, Submission no. 3, p 2.

proximity to two of Australia's bases on the continent – Davis and Mawson – than Hobart.²⁷

- 3.24 The proponents of Albany identified the following range of infrastructure as suitable for Antarctic operations:
- a large regional aerodrome including facilities for Boeing 737 aircraft and a new Instrument Landing System allowing all-weather landing;
 - a major regional port including a new \$21 million berth – although the port does not include an overhead gantry system for loading containers onto ships;
 - quarantine inspection facilities;
 - port support industries including engineers who currently support Austral Fisheries' operations in the sub-Antarctic;
 - closer proximity to Heard and McDonald Islands and surrounding fisheries, making Albany a strategic base for surveillance operations; and
 - medical facilities at Albany Regional Hospital.²⁸
- 3.25 There was also evidence from the City of Albany which suggested that Albany would have the capacity to undertake management of waste returned to Australia as a result of efforts to clean up former sites.²⁹ However, this would be contingent on community consultation and the type and magnitude of the waste.³⁰ Any undertaking along these lines would also be subject to scrutiny by the Australian Quarantine Inspection Service (AQIS).
- 3.26 The City of Albany also questioned the choice of Casey Station as the landing point for inter-continental flights, noting that Davis Station houses the largest number of Antarctic personnel and is mid-way between Casey, Mawson, and other field sites in Antarctica. The location of Davis may also make it an attractive landing site for other nations' expedition teams – particularly the Japanese and South

27 Australian Antarctic Data Centre, 2000, *Great circle distances to and within East Antarctica*, Australian Antarctic Division, Kingston, Tasmania, viewed 25 January 2005, <http://aadc-maps.aad.gov.au/database/mapcat/antarctica/circle_distances.pdf>.

28 See The City of Albany and the Great Southern Development Commission, Submission no. 3, and Wallace Engineering Pty Ltd, Submission no. 27.

29 City of Albany (Hammond A), *Transcript*, 30 April 2004, p 3.

30 City of Albany (Hammond A), *Transcript*, 30 April 2004, p 3.

African bases. The City of Albany argued that it may be possible to establish international hubbing arrangements for flights based out of Albany for these other nations with a stake in Antarctica.³¹

- 3.27 The Committee subsequently questioned representatives of the AAD about the feasibility of inter-continental flights being routed to Davis rather than Casey station. The AAD pointed to 1997 report evaluating the merits of construction of a Davis runway which found that it would involve a cost of around \$40 million.³² The AAD told the Committee:

...there is an acceptance that on occasion it may be efficient to fly out of Albany. But that does not consider infrastructure costs or any of the difficulties or costs of moving people across the Australian landmass if we were to operate out of Albany.³³

- 3.28 The Committee also questioned the AAD about the practicalities of the Casey airstrip being located some 60kms from the station itself. The AAD assured the Committee that people and equipment would easily be transported via modified four-wheel-drive vehicles which have already been tested and proven in the terrain.³⁴

- 3.29 During a hearing in Hobart, representatives of the Tasmanian Government and the University of Tasmania argued that the reasons which led the Australian Government to confirm Hobart as the most suitable departure point in 1998 still applied. Professor Andrew Glenn stated that:

...there is a very substantial critical mass of people who are working in Antarctic and marine science who are based in Hobart and I think there are some very substantial benefits that we will derive from that proximity.³⁵

- 3.30 The scoping study which addressed environmental and practical considerations of the inter-continental air transport system confirmed Hobart as the preferred location as the gateway to Antarctica, but did not rule out the possibility of Western Australia playing some role:

31 City of Albany (Hammond A), *Transcript*, 30 April 2004, p 7.

32 Australian Antarctic Division (Press A), *Transcript*, 23 June 2004, p 4.

33 Australian Antarctic Division (Pitt K), *Transcript*, 23 June 2004, p 12.

34 Australian Antarctic Division (Pitt K), *Transcript*, 23 June 2004, p 4.

35 University of Tasmania (Glenn A), *Transcript*, 16 March 2004, p 14.

Hobart, as the logistical and scientific centre of Australia's Antarctic program, is the preferred departure point for inter-continental aircraft operations from Australia to Antarctica - however, depending on the destination (and the inter-continental distances involved), there may be safety advantages in routing some flights from Hobart via Western Australia to 'top up' with fuel.³⁶

- 3.31 The Committee also questioned the AAD on the viability of any possible alternatives to the proposed air link, such as the possibility of using existing intra-continental flights, such as those operated by the US Government to McMurdo Station. Under such a proposal, Australia could seek to establish an alliance with the US to charter its flights from New Zealand to the US McMurdo Station. The new Australian intra-continental aircraft (CASA-212s) could then be used for transport between McMurdo and the Australian stations.
- 3.32 The AAD advised the Committee that this option was not feasible, because the distance between McMurdo and Casey stations (1174 nautical miles) meant that the CASA 212 aircraft would be unable to make such a long flight without refuelling and ground support en route. This refuelling and ground support would need to be provided at the international Concordia Dome C base, or the French base Dumont D'Urville, resulting in a round trip from McMurdo to Casey of five to seven days. This and other factors such as weather delays would make the link with other nations' intercontinental flights impractical.³⁷

Federal Budget 2005-06: Air link commitment

- 3.33 On 10 May 2005, Senator the Hon. Ian Campbell, Minister for the Environment and Heritage, announced that the Commonwealth Government had committed funding of \$46.3 million over four years in the 2005-06 Budget to develop an inter-continental air link between Australia and Antarctica.³⁸

36 Shevlin, J. & Johnson, J., 1999, *Antarctic Air Transport Scoping Study*, Antarctic Air Transport Taskforce, Australian Antarctic Division, Kingston, Tasmania, p 7, <<http://www.aad.gov.au/default.asp?casid=3026>>, viewed 24 January 2005.

37 Department of the Environment and Heritage, Submission no. 37, p 1.

38 Campbell, I (Minister for the Environment and Heritage) 10 May 2005, *Air link helps Antarctic research take flight*, Parliament House, Canberra.

- 3.34 Funding allocated to the Department of Environment and Heritage will meet capital costs associated with construction of an ice runway, the costs of related infrastructure and the costs of leasing a suitable aircraft.³⁹ The breakdown of the funding commitment is shown in Table 3.1 below.

Table 3.1 Australia-Antarctica Air Link

Measure	Appropriations Budget 2005-06 (\$'000)	Appropriations Forward estimate 2006-07 (\$'000)	Appropriations Forward estimate 2007-08 (\$'000)	Appropriations Forward estimate 2008-09 (\$'000)
Australia-Antarctica Air link*	6,820	10,669	10,858	10,989
Australia-Antarctica Air link – equity injection	4,805	2,195	-	-

* Excludes funding for depreciation (\$0.581m for 2005-06, \$0.774m for 2006-07, \$0.764m for 2007-08 and \$0.711m for 2008-09) that will be met through departmental output appropriation.

Source Department of the Environment and Heritage, Portfolio Budget Statements 2005-06.

Committee comment: Hobart-Casey Air Link

- 3.35 The Committee acknowledges and applauds the news that the Australian Government is committing funding to construct a new glacial blue-ice runway near Casey Station and to fund an inter-continental air link which will operate out of Hobart.
- 3.36 If Australia is to maintain its high standing among Antarctic nations and continue to build on its reputation as a leader in Antarctic affairs, it is imperative that an inter-continental air transport link be established.
- 3.37 A comparison with other key players in the Antarctic reveals that Australia is one of very few nations with Antarctic bases that are virtually totally dependent on ship-based transport.⁴⁰ The Committee was concerned that the continued absence of an air link placed the program at great risk of losing credibility.

39 Australian Government, *Budget Measures 2005-06, Budget Paper No. 2*, Department of the Treasury, Canberra, p 151.

40 Council of Managers of National Antarctic Programs, 2005, *Member countries*, Council Of Managers of National Antarctic Programs Secretariat, viewed 28 January 2005, <<http://www.comnap.aq/comnap/comnap.nsf/P/Country/>>.

- 3.38 The potential benefits of the air link to Australia's Antarctic program have been well documented. On the basis of evidence the Committee has received, there is every indication that the air link will attract a range of quality scientists to the continent who, at present, are deterred by the length of trip due to other work commitments. The air link is also likely to attract international scientists allowing Australia to enhance its partnerships and improve prospects for logistical sharing arrangements. In addition, the air link will allow science to be conducted in remote areas which have previously been inaccessible.
- 3.39 The Committee maintains that the ongoing costs associated with the operation of the air link must not be achieved by reducing expenditure in the science program.

Committee comment: Albany Proposal

- 3.40 The Committee took the opportunity to visit Albany to view the opportunities available there as outlined in submissions from the State Government of Western Australia and other stakeholders. The Committee acknowledges the high standard of the presentations by the City of Albany and the GSDC. In terms of the air link, the Committee believes that, ultimately, the critical mass of Antarctic-related organisations and scientists already working out of Hobart indicates that the greatest efficiency will be achieved by operating any air link out of Hobart. The Committee notes that Albany has suitable facilities to accept the type of aircraft being considered for inter-continental flights between Australia and Antarctica. Should the need arise, such as in the event of an emergency, Albany offers a suitable alternative for the arrival or departure of inter-continental flights.

Logistical support for Australia's Antarctic marine research program

- 3.41 Marine research in support of Australian science is primarily conducted on the research vessels *Southern Surveyor* and *Aurora Australis*. While the *Southern Surveyor* (which is owned and operated by CSIRO) commenced operations as Australia's new Marine National Facility in 2003, the vessel does not possess any ice-breaking

capacity and 'is more intended as a cost-effective platform for work around the Australian mainland'.⁴¹

- 3.42 As a result, marine research in support of Australian Antarctic science is largely dependent on the *Aurora Australis*, a research and resupply vessel which is chartered by the AAD from P&O Polar Australia. Therefore, much of the marine research program in the Antarctic and Southern Ocean is scheduled to coincide with the provisioning of Australia's Antarctic bases. Hence voyages are usually multi-purpose, with the *Aurora* acting as cargo ship, people-mover and marine science vessel. According to the Antarctic Climate and Ecosystems CRC, this versatility generates difficulties:

...Such multi-functionality might appear at first glance to be a good efficiency measure but, on reflection, historically this has rarely been the case.⁴²

- 3.43 ASAC Chairman, Professor Kurt Lambeck stated:

...If ships get stuck in the ice while they are doing marine work, it plays havoc with the entire program for the rest of the season.⁴³

- 3.44 According to the Antarctic Climate and Ecosystems CRC, the multi-purpose nature of Australia's Antarctic research voyages makes them 'amongst the longest regularly scheduled research voyages by ships from any institute in the world'.⁴⁴

- 3.45 Both the Antarctic Climate and Ecosystems CRC and CSIRO called for a separation of resupply and transport operations from marine science activities, to the maximum extent possible.⁴⁵

- 3.46 ASAC's 1997 Foresight Report envisaged that marine science research will play a pivotal role in addressing the Government's four goals for Australia's Antarctic Program over the next five years.⁴⁶ In the report, ASAC stated:

41 Geoscience Australia, Submission no. 15, p 3.

42 Antarctic Climate and Ecosystems Cooperative Research Centre, Submission no. 12, p. 4.

43 Antarctic Science Advisory Committee (Lambeck K), *Transcript*, 23 June 2004, p 22.

44 Antarctic Climate and Ecosystems Cooperative Research Centre, Submission no. 13, p 51.

45 See Commonwealth Scientific and Industrial Research Organisation, Submission no. 14, p 3 and Antarctic Climate and Ecosystems Cooperative Research Centre, Submission no. 13, p 51.

46 Antarctic Science Advisory Committee, 1997, *Australia's Antarctic Program Beyond 2000: A Framework for the Future: A Report to the Parliamentary Secretary for the Antarctic, Department of the Environment*, Canberra, p 47.

For Australia to maintain a significant presence in the Southern Ocean there is likely to be a need for a dedicated ship for surveys and for the support of biological, oceanographic, glaciological and geological research.⁴⁷

- 3.47 ASAC recognised that there is a strong desire for more ship time for conducting marine research and that the reliance on the *Aurora* is inhibiting Australia's Antarctic science effort.⁴⁸
- 3.48 CSIRO Marine Research has warned that while Australia currently has the skill base required to conduct marine research, 'this skill base will deteriorate if access to the appropriate research infrastructure is not available'.⁴⁹

Committee comment

- 3.49 The Committee notes that in discussions, the AAD suggested that the nature of marine science today means that the list of equipment which could potentially be installed on a marine science vessel is so vast that it would be impossible for one vessel to satisfy the needs of the entire marine science community. However, the Committee acknowledges that the current logistical arrangements in support of marine science are far from ideal.
- 3.50 The Committee also notes that, as raised in evidence, an inter-continental air link may improve the efficiency of conducting marine science by enabling scientists to board the vessel in Antarctica, carry out marine surveys, and then fly back to the mainland.⁵⁰ While the Committee understands that regardless of the introduction of an air link, the *Aurora Australis* will continue to be needed for resupplying Australia's bases in the Antarctic and sub-Antarctic, the air link may facilitate the capacity for the *Aurora* to spend more time at sea conducting marine research.
- 3.51 This notwithstanding, on the basis of evidence considered, the Committee encourages the Australian Government to examine the

47 Antarctic Science Advisory Committee, 1997, *Australia's Antarctic Program Beyond 2000: A Framework for the Future: A Report to the Parliamentary Secretary for the Antarctic*, Department of the Environment, Canberra, p xiv.

48 Antarctic Science Advisory Committee, 1997, *Australia's Antarctic Program Beyond 2000: A Framework for the Future: A Report to the Parliamentary Secretary for the Antarctic*, Department of the Environment, Canberra, p xv.

49 CSIRO Marine Research, *Submission to 2003 DEST Infrastructure Review*, p 2.

50 Australian Marine Sciences Association, Submission no. 6, p 2.

possibilities for an additional dedicated marine science vessel that would best meet the requirements of a diverse research community.

- 3.52 In the interim, the Committee believes that the AAD must seek to best accommodate marine research within its existing shipping program, and continue to seek partnerships which will enhance the marine research component of the science program.

Recommendation 1

- 3.53 **The Committee recommends that the Australian Government makes funding available in the 2005-06 financial year to enable a scoping study to be conducted to determine the need for a new dedicated marine research vessel to advance marine science in general and, the Australian Government's goals for Australia's Antarctic program in particular.**

Potential for consolidating Australia's Antarctic stations

- 3.54 In the Foresight Report, another of ASAC's recommendations concerning logistical arrangements was that Australia should maintain at least one continental station in operation year-round, and that the use of automated data collection systems should be encouraged.⁵¹ Automated monitoring systems allow for many more readings to be taken than is physically possible by scientists on the ground, and certain science programs in Antarctica can be monitored by researchers at laboratories on the Australian mainland. In evidence to the Committee, ASAC stated:

A lot of the observational systems can be automated ... these can include seismic stations that measure the activity of the region, nuclear monitoring systems and anything dealing with upper atmosphere and meteorological observations. I believe all of these can be automated in the fullness of time.⁵²

51 Antarctic Science Advisory Committee, 1997, *Australia's Antarctic Program Beyond 2000: A Framework for the Future: A Report to the Parliamentary Secretary for the Antarctic*, Department of the Environment, Canberra, p 47.

52 Antarctic Science Advisory Committee (Lambeck K), *Transcript*, 23 June 2004, p 20.

- 3.55 As discussed in Chapter One, the AAD operates four permanent stations: Mawson, Davis and Casey stations on the Antarctic continent, and Macquarie Island station in the subantarctic region. Field operations are also conducted in Antarctica at Prince Charles Mountains, the Amery Ice Shelf, Law Dome South, Larsemann Hills, Bunger Hills, and at Heard Island.⁵³ At present, approximately 300 expeditioners travel south as part of Australia's Antarctic program with the AAD each summer with about 70 expeditioners remaining over the winter.⁵⁴
- 3.56 During the winter season, the Antarctic stations are primarily supported by expeditioners of various trades and disciplines as well as Bureau of Meteorology staff who perform ongoing meteorological observations. According to ASAC:
- ...The current station arrangements impose significant restrictions on where science can be carried out, and do not encourage the flexibility which needs to be at the heart of the future of the Australian Antarctic Program.⁵⁵
- 3.57 While inspecting the AAD's facilities in Kingston, the Committee held informal discussions with expeditioners at Mawson and Davis stations via a phone hook-up. During these discussions, the issue of whether increased automation may potentially enable one or more of Australia's Antarctic stations to operate without a full-time human presence was considered. The view from the expeditioners was that there would be no real benefit, in monetary or time terms, in 'winterising' the stations. Expeditioners pointed out that, while there are a number of automated experiments occurring over the winter period, they require people on the ground to maintain the power generation and to provide support when glitches in the system occur. It was also suggested that shutting down the stations over winter would require the summer expeditioners to arrive much earlier and leave much later than happens at present, in order to go through all the necessary procedures to power up/shut down the station. As Dr Allison from the National Committee on Antarctic Research stated:

53 Department of the Environment and Heritage, Submission no. 24, pp 11-12.

54 Stone, S (Parliamentary Secretary for the Environment and Heritage) 2004, *Antarctic station leaders announced for 2005*, media release, Parliament House, Canberra, viewed 2 February 2005, <<http://www.deh.gov.au/minister/ps/2004/psmr12jul04.html>>.

55 Antarctic Science Advisory Committee, 1997, *Australia's Antarctic Program Beyond 2000: A Framework for the Future: A Report to the Parliamentary Secretary for the Antarctic*, Department of the Environment, Canberra, pp 39-40.

...if you are going to put a lot of researchers in and focus this on having them in the summer, some preparation is required of facilities for them to use when they get there.⁵⁶

- 3.58 AAD Director, Dr Tony Press, stated that the Division liked to keep its options open for the way it operated in Antarctica, while acknowledging that a shift to automation would make it easier for the Division to reduce the number of people residing at the stations.⁵⁷ Dr Press did not rule out the possibility that one or more of Australia's Antarctic stations may eventually be fully automated:

...if we were able to operate from a particular area without having to support the infrastructure costs of maintaining a station, then we would certainly take that on as an option.⁵⁸

AAD operations at Macquarie Island

- 3.59 The Tasmanian Government raised concerns that the AAD is considering downscaling its operations at Macquarie Island. The Tasmanian Government has one to two full-time park rangers on Macquarie Island (depending on the season). The Tasmanian Government also funds specific scientific and environmental protection programs, such as eradication of pests. However, its overall funding for Island programs is small (\$180 000 per year) and the Tasmanian Government relies on the AAD for logistical support (such as housing for its rangers, transport to and from the Island, etc).⁵⁹ Ms Lara Giddings, then Parliamentary Secretary to the Tasmanian Deputy Premier, told the Committee:

...We understand...that the AAD is considering winding back its operations on Macquarie Island in favour of funding research program priorities on the Antarctic continent and on Heard and McDonald Islands. Any attendant loss of logistical support work would have major implications for the ongoing management and protection of Macquarie Island. The Australian government must be aware that any downsizing of its present financial commitment to Macquarie Island will

56 National Committee on Antarctic Research (Allison I), *Transcript*, 16 March 2004, p 55.

57 Australian Antarctic Division (Press A), *Transcript*, 23 June 2004, p 16.

58 Australian Antarctic Division (Press A), *Transcript*, 23 June 2004, p 16.

59 State Government of Tasmania, Submission no. 20, p 6.

have a devastating effect on Tasmania's ability to continue its current management on the island.⁶⁰

- 3.60 Dr Press assured the Committee that there were no immediate plans to cease the AAD's activities at Macquarie Island, although he did acknowledge that the Division was looking to increase its program in the HIMI region.⁶¹

Committee comment

- 3.61 On the basis of evidence presented to the Committee, there appears to be little merit in closing down any of Australia's Antarctic stations at this time, either permanently or over the winter season. With the emergence of new technologies, the Committee appreciates that this may present a viable cost-saving measure in the future.
- 3.62 The Committee also notes that other Antarctic states have, at times, lent their redundant facilities to the new emerging Antarctic programs of developing nations.
- 3.63 The Committee believes that this issue should be revisited once both the intra- and inter-continental air transport systems are fully functional, and a more flexible approach to the logistical operations of Australia's Antarctic program is in place.

60 State Government of Tasmania (Giddings L), *Transcript*, 23 June 2004, p 2.

61 Australian Antarctic Division (Press A), *Transcript*, 23 June 2004, p 3.

