



House Standing Committee on Infrastructure, Transport, Regional Development and Local Government

INQUIRY INTO COASTAL SHIPPING POLICY AND REGULATION

THE CURRENT AND FUTURE IMPACT OF HYDROGRAPHIC SURVEY PRACTICES AND POLICY ON THE ECONOMIC VIABILITY OF AUSTRALIA'S COASTAL SHIPPING SECTOR

1. The competitiveness and efficiency of Australia's shipping sector has been, and will continue to be dependent upon its ability to maximise the use of navigable waterways. The status, control, regulation and policy of hydrographic surveying in Australia has consistently been divorced from its primary users with a predominate focus on hydrographic surveying for Defence priority regions and military surveying.
2. The Committee inquiry into coastal shipping policy and regulation should consider the impact of Australia's limited hydrographic coverage and nautical charting policy. Recommendations from this inquiry must provide guidance for future hydrographic policy with a view to demanding a minimum survey output from the Australian Hydrographic Service (AHS) in order to maintain viability and provide increased efficiencies for the Australian shipping sector. This submission will raise the following:
 - Background information to provide context and relevance to the inquiry demonstrating that the current rate of hydrographic survey progress is incapable of adequately supporting Australia's expanding shipping industry.
 - A minimum improvement in the current hydrographic survey program will be proposed to achieve meaningful improvement to support expansion of trade.
 - The current Royal Australian Navy hydrographic survey program provides little capability to maximise trade routes due to its predominant Defence focus.
 - Defence is currently failing to meet its obligations and responsibility for all Commonwealth hydrographic surveying and charting functions.

Background

3. Summary of the background information detailed in this section:
 - The Royal Australian Navy (RAN), through the AHS is responsible for all hydrographic surveying and charting in Australia's internationally recognised area of responsibility.
 - There is no legislative background supporting or requiring the AHS to meet a minimal level of achievement.
 - The hydrographic survey program is set, approved and funded by Defence.
 - The total area of navigational significance to Australia (ie <200m) is 762,000 sq nm.
 - The total area surveyed to date 35 % (2008).
 - In the last ten years this equates to a decrease of 3 %. (see table)
 - The calculated AHS rate of effort is 4,500 sq nm annually or 0.6%.
 - It will take the RAN at least 250 yrs to complete survey work for all depths <200m.
 - It will take at least another 250 yrs for the RAN to survey the remaining 11 million sq nm.
 - The Australian Hydrographic Service no longer reports its annual survey statistics to the public domain.
 - Recent policy decisions in other countries acknowledge that areas surveyed prior to 1994 (introduction of differential GPS surveying) will require resurvey. The adoption of this policy by Australia would result in <9% adequately surveyed (this figure is considered optimistic – in reality it would be <5%).

4. The AHS was founded in 1920, originally as an off shoot of the British Admiralty. In its early years surveys were conducted by a combination of RAN and HM vessels with chart creation conducted in Britain. During the war years charting was transferred to Australia for obvious strategic reasons. In 1946, recognising the requirement and considerations identified before the war, Cabinet, directed that:

“the RAN should continue to be the Charting Authority in connection with the Hydrographic Surveys in Australian waters and spheres of influence in the Pacific”

The RAN thus assumed full responsibility for all survey and charting. In the 1980s the Commonwealth mapping, charting and surveying agencies were reviewed, and following the Richardson review the Government subsequently reaffirmed the RAN's responsibility for all Commonwealth hydrographic surveying and charting functions in 1988.

5. The above points are important to note as to this day there is no legislative background to hydrographic surveying and charting in Australia's area of responsibility. The RAN remains the provider of the hydrographic survey program and charting for Australia's area of responsibility, and whilst industry requests are considered as a courtesy, the program is set, approved and funded

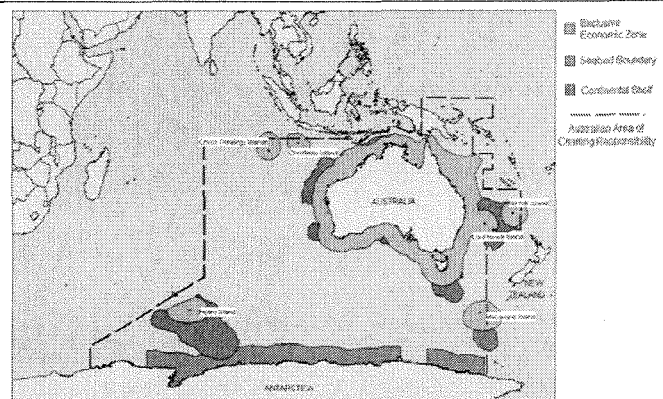
by Defence. The 1946 decision anticipated 60% Defence funding and 40% funding from other departments which has never eventuated.

- In reviewing the Australian hydrographic program the total area of responsibility needs to be taken into account:

	Square Nautical Miles	Square Kilometres
Agreed area of charting responsibility	13 335 470	≈ 46 million
EEZ Area	2 609 596	≈ 9 million
Navigationally significant area ie less than 200m deep	762 640	≈ 2.6 million
<i>Figures taken from official RAN Hydrographic Office presentations or publications.</i>		

The survey area completed is reported to the International Hydrographic Organisation (IHO) and published in Special Publication 55 (SP55). This document is readily available off the WEB. Since the 1998 edition Australia has reported its hydrographic survey progress in depths <200m as this depth band is navigationally significant. Results are detailed below:

	Percentage Completed	Difference
1998 Edition	38 %	-
2004 Edition	35 %	-3 %
2008 Edition	35 %	0
<i>Source: IHO SP 55 1998, & 2007. RAN Hydrographic Office presentations</i>		



- Reviewing previous AHS Annual Reports it is calculated the current survey rate is approximately 4,500 sq nm annually. The survey rate cannot be calculated accurately as the AHS no longer provides this information in its annual report or elsewhere to the public domain. This rate of effort is achieved with 2 Hydrographic Ships, 4 Survey Motor Launches, and 1 Laser Airborne Depth Survey aircraft.
- The survey rate figures provided online by the AHO are misleading and inaccurate. The figures indicate that since 1970, 242,967 sq nm have been surveyed - an average of 6,500 sq nm annually. All areas surveyed prior to 1970 require resurvey with modern techniques and it is arguable that all areas since 1994 require resurvey due to the introduction of the Global Positioning

System and its use for Hydrographic Surveying. Of interest, the USA recently announced that all surveys performed prior to 1993 will be re-surveyed to ensure full bottom coverage and compliance with current standards for their nautical charting program.

9. It is arguable that Australia's reporting of 35% adequately surveyed in IHO SP 55 is optimistic. Assuming the total area surveyed in navigationally significant areas was reset from 1994 then in the last 14yrs only 63,000sq nm would have been surveyed or approximately 8%.
10. The following is an excerpt from the IHO web site and provides an indication of Australia's hydrographic effort in comparison to allies, neighbours and countries who have achieved similar percentages.

IHO S-55: Summary Report on Status of Hydrographic Surveys for areas between 0 and 200 m.

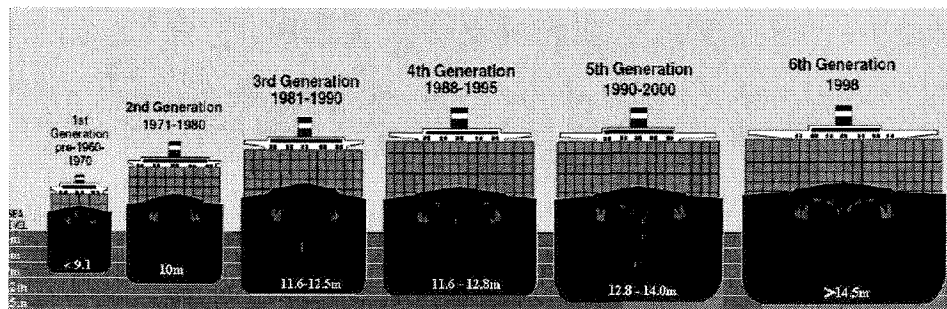
A1 = % which has been adequately surveyed B1 = % which requires re-survey at larger scale or to modern standards C1 = % which has never been systematically surveyed An entry of -1 in column A1 indicates inland waters.

Nation/Area	INT	Region A1	B1	C1	Surveyed	Resurvey
Unsurveyed						
Malaysia	90	10	0			
New Zealand	80	5	15			
USA	60	35	5			
UK	48	22	30			
Japan	40	53	7			
Iraq	40	60	0			
Australia	35	20	45			
Greece	35	55	10			
Trinidad and Tobago	35	65	0			
Canada	30	10	30			
Papua New Guinea	25	0	75			
Solomon Islands	10	30	60			
Samoa	5	65	30			
Fiji	5	70	25			
Tonga	2	28	70			

Minimum Required Improvement

11. The following summarises the current AHS hydrographic survey rate of effort and the increase required to maximise the use of shipping routes:
 - A minimum of 10,000 sq nm is required annually to progress the national survey task.
 - Annual survey should comprise 7,600 sq nm (1%) of new survey with 2,400 sq nm (0.3%) for resurvey.
 - The RAN cannot hope to achieve this rate of effort with the current vessels nor on completion of the current upgrade program.
 - RAN current annual survey achievement is approximately 4,500 sq nm with 6,500 sq nm expected annually upon completion of the upgrade program.
 - The survey shortfall of approximately 4,000 sq nm annually must be achieved by private industry.
 - Private industry requires a long term funding stream to justify the investment in infrastructure and training to support an expanded industry and offer the Commonwealth value for money for contracted hydrographic surveys.
12. Improvements in trading efficiency require maximising the use of navigable water. Maximising navigable water requires a national hydrographic program to meet the needs of all customers, defence and trade. It is arguable the current program fails to meet the minimum necessary output to improve trading efficiency whilst barely meeting the needs of Defence.
13. The current rate of effort for hydrographic surveys must realistically improve to support drives for greater efficiency by trade and industry. In a perfect world, 3% or 23,000 sq nm should be achieved annually. Realistically this is not an option and it is believed by this author that a sustainable minimum achievement of 10,000 sq nm is required annually. This assumes a minimum of 1% (7,600sq nm) new survey with an additional 0.3% (2,400 sq nm) component as resurvey.
14. The RAN currently achieves only 4,500 sq nm annually with 6 surface units and one aircraft. The aircraft and 4 surface units are currently within a modernisation program and contrary to Defence assurances; they will not achieve greater than 6,500 sq nm annually upon completion of the upgrade program. The full details and reasoning behind this statement are irrelevant to the scope of this enquiry, although additional information can be provided if Defence refutes this claim.
15. The current minimum shortfall of 4,000 sq nm annual hydrographic survey achievement could be provided by industry to supplement the survey program currently performed by the AHS. A long term funding stream for contract hydrographic survey will realise significant cost savings and provide value for money to the Commonwealth.

16. Resurvey is an important requirement for navigationally constrained waterways. The most obvious examples are Torres Strait and Harbour approaches where tide, weather, and the transit of shipping results in continual movement of the seabed and in some cases the available depth of water for navigational purposes. The Thompson and Clarke Shipping Report recommended the adoption of an Under Keel Management System within Torres Strait. The report highlighted that significant savings were achievable by industry should such a system be implemented. A critical factor to achieving this aim is the improvement in hydrographic information required. At present the RAN does not have a survey platform capable of efficiently conducting this work. The Hydrographic Ships are too large, the Survey Motor Launches are too slow and fitted with obsolete survey systems, and the Survey Motor Boats are too small with all units incapable of achieving the necessary survey accuracies.
17. The Torres Strait will require a systematic program of resurvey in order to maximise the benefits of an Under Keel Management System. Implementation of such a system prior to completion of at least 1 yrs resurvey program is considered nugatory and potentially dangerous. Models of seabed and sand wave movement in the critically constrained navigable routes within the Strait do not exist.



18. The above picture (Thompson and Clarke Shipping Report) depicts the changes in the size of shipping, and with it illustrates that 6th generation vessels have draughts that are now up to 2m closer to the seabed than those of 4th generation vessels of the early 1990s. This has forced even tighter survey requirements on surveyors who are charged with the responsibility for ensuring the navigational safety of the shallow waterways which are used by these deep draft vessels.

RAN Hydrographic Survey Program – Limited impact on improving trade

19. Summarising the impact of the RAN Hydrographic Survey Program on trade:

- The national survey program is prioritised, approved, and funded by Defence.
- The official survey program whilst comprehensive is misleading as it indicates an optimistic program incapable of being achieved in any realistic time frame.
- The program has a large Defence component.

- Of the 26 vessel surveys listed, only 9 are for commercial purposes.
 - No allowance has been made for resurvey in the survey program.
20. The national survey and charting program “HYDROSCHEME” is published by the AHS annually and is available online. The program is described as a three year rolling plan and to the uninitiated the program appears well developed and complete. The following is not readily apparent:
- The majority of the surveys listed have been included for at least the last 10 years or have been recycled from previous years.
 - It will take at least 50 years to survey only those areas where total survey area is stated. This is <50% of the surveys listed, and a fraction of the 762,000 sq nm requiring survey.
21. HYDROSCHEME is produced after consultation with numerous agencies although it must be remembered the program is compiled, prioritised, approved and funded by Defence. The current hydrographic program contains only new surveys. There are no planned, systematic resurvey of depth constrained, navigationally significant areas such as Torres Strait or other areas. This fact highlights the pressure on the current program by funding and personnel shortfalls and Defence operational requirements. It should be noted that a resurvey program for Torres Strait was first implemented in the 1970s. This lasted only a few years and yet has not continued or been reinstated despite the maximum draft of vessels significantly increasing.
22. Clearly the current program primarily supports Defence needs. Government must decide if this priority is warranted or whether greater support is required to seaborne trade considering it impacts Australia’s economy by at least \$200b annually.

Failure of the AHS to meet its’ obligations for all Commonwealth hydrographic surveying and charting functions.

23. Numerous examples, past and present can be provided in support of the above statement. For over six years, the two main survey platforms operated by the RAN, have been routinely removed from their primary role of hydrographic survey to perform military and border protection type duties in Support of Operation ‘Relex’ and more recently – Operation ‘Resolute’. Whilst these are viewed by Defence as important roles for these vessels, Defence has made no effort to fill the survey void that exists without these vessels being employed in their primary role of hydrographic surveying. Consequently, the shipping industry is suffering from continual delays in having important shipping routes adequately surveyed.
24. Until recently, the AHS had the responsibility of maintaining the GEBCO (General Bathymetric Chart of the Oceans) plotting sheets in Australia’s area of responsibility. A lack of manpower and resources resulted in these GEBCO sheets not being amended for at least 5 years prior to AUSLIG having to assume responsibility for their maintenance in the late 1990s.

25. In accordance with the Cabinet decisions of 1946 and 1988, the AHS had responsibility for the maintenance of the nation's tidal database and annual tidal almanac. Again, a lack of manpower and resources necessitated this function being passed to the National Tidal Facility at the Flinders University in the 1980s. In 2004 the University decided that tides were no longer a core business. The AHS was not in a position to reassume this responsibility due to a lack of funding and personnel. Consequently, the Bureau of Meteorology has assumed the national tidal responsibility.
26. Inadequate funding and personnel resourcing continue to limit the effectiveness of the AHS. There is presently a recruitment freeze in Defence leaving the AHS with approximately 25 personnel short or 20%. The AHS continues to struggle to fill vacant positions within the organisation. At the heart of the AHS is a Digital Hydrographic Database (DHDB) which was introduced into service several years ago to streamline chart production and provide efficiencies. Delivery of the system has suffered numerous delays and setbacks and today is considered a failure and obsolete. The system looks set to remain this way with no funding available to repair, upgrade or replace the system.
27. The consequences of these issues are significant. At present there are several hundred surveys in storage awaiting validation and charting action by the AHS. So whilst the survey vessels of the RAN may be out collecting small volumes of survey data, this data is not making it to the chart for many years after the survey has been completed. This should be a major concern for the Australian shipping industry that relies on these charts for the safe and efficient movement of raw materials and cargo around the country.
28. So long as the national hydrographic function is funded by Defence, and the function of hydrography is not considered a 'Core Business' of Defence, it is probable that the current funding and resource shortfalls will continue to plague the AHS well into the future.

Conclusion

29. It was previously noted that the original Cabinet intention for hydrographic surveying was for 60% to be provided by Defence and 40% by 'non-Defence' users. Current Defence priorities and operational commitments demonstrate no significant increase in funding will be supplied by Defence. Funding provided by other Government agencies would allow the AHS to contract out hydrographic surveying to enable an increase in the number of square nautical miles sounded per year. It would also allow the AHS to better address the validation and charting of completed surveys and ensure that the data from these completed surveys benefits the Australian shipping industry as soon as possible.
30. The Department of Defence, through the RAN and AHS is directly responsible for the conduct of hydrographic surveying and charting in Australia's

internationally recognised area of responsibility. The AHS is a small component of the RAN. Without a direct stake in the competitiveness of the shipping industry, it has arguably failed to deliver adequate and timely hydrographic support to the commercial sector. This failure is most evident in the past 10 years with little likelihood of improvement in the longer term (10-20 yrs) due to continued pressure on Defence to meet increasing Government cost efficiencies.

31. It is imperative for the success and competitiveness of the Australian shipping industry that the AHS be provided additional funding for the sole purpose of performing hydrographic survey in support of the Australian shipping industry. This Committee has the potential to influence future AHS funding and policy that could result in substantial efficiencies for the Australian Coastal shipping sector.

Yours truly,



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